

**RAILWAY
AND SIGNAL
SUPPLIES**

CATALOGUE No. 16

1911



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BRYANT ZINC COMPANY

MANUFACTURERS

CHICAGO

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CATALOGUE No. 16

BRYANT ZINC COMPANY

(INCORPORATED 1895)

MANUFACTURERS

**RAILWAY AND SIGNAL
SUPPLIES**

CHICAGO

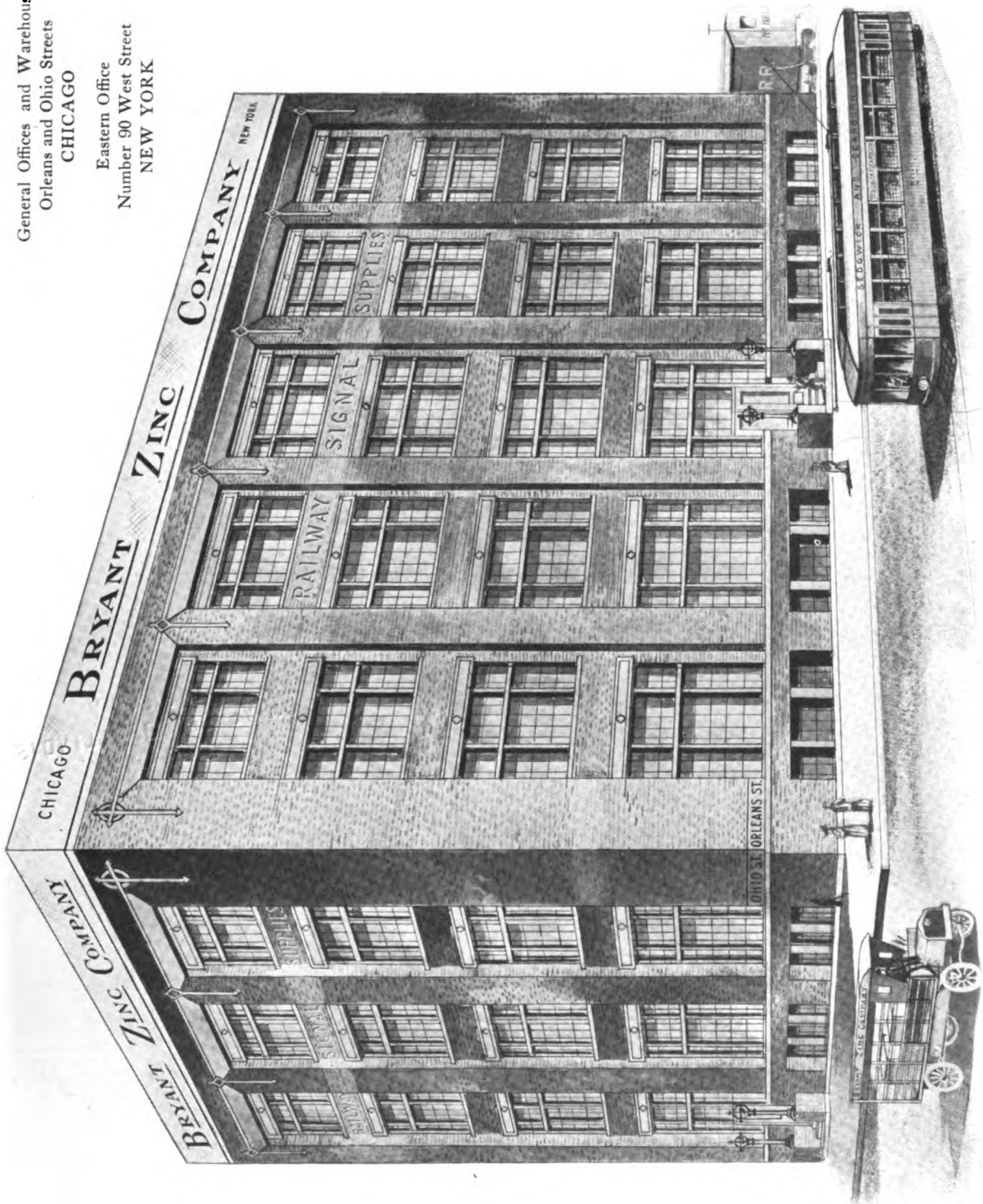
NEW YORK

1911

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General Offices and Warehouse
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CHICAGO

Eastern Office
Number 90 West Street
NEW YORK



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INTRODUCTION



WE submit herewith our Catalogue No.16 and call attention to our very complete line of supplies and specialties used in the construction and maintenance of automatic signals and railway crossings. We are prepared to manufacture and furnish specially designed equipment and apparatus. We will furnish drawings and specifications upon application. Under the several index classifications will be found complete descriptions and list prices. Regular trade discounts submitted upon request. We will be pleased to quote special prices in quantities.



13 Dec. 1916,

347014

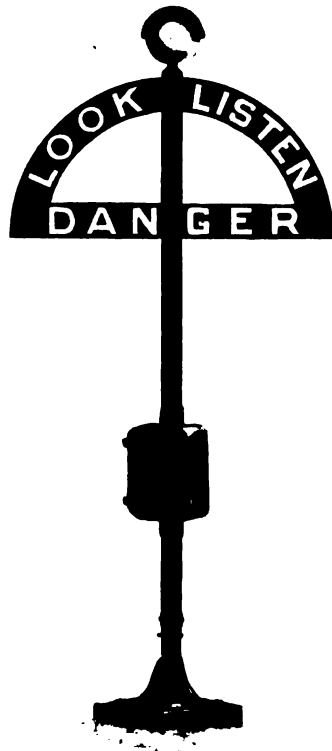
General Index

Section

1. Highway Crossing Signals, Crossing Bells and Circuits
2. Relays, Indicators, Annunciators, Switches, Strap Keys
3. Relay Boxes, Cable Posts, Battery Boxes, Battery Chutes, Locks, New Way Elevators
4. Batteries, Caustic Soda, Storage, Gravity, Dry Cells, Battery Supplies
5. Connectors and Terminals
6. Rail Bonding Supplies, Wood Trunking, Packing Boxes, Oil Inlets, Nut Locks, Fibre Insulation
7. Tape, Tags, Flux, P. & B. Paint, Electric Bells, Counters
8. Lightning Arresters and Ground Plates, Cones and Rods, Cable Clips, Wires and Cables
9. Orangeburg Fibre Conduit
10. Concrete Vaults, Concrete Boxes, Foundations, Concrete Trunking Stakes
11. Testing Instruments
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Section 1

HIGHWAY CROSSING
SIGNALS



CROSSING BELLS
AND
CIRCUITS

BRYANT ZINC COMPANY

MEMORANDA

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GENERAL DESCRIPTION OF HIGHWAY CROSSING SIGNALS.

Nos. 71, 73, 105, 107, 109, 158 and 160.

These Highway Crossing Signals are manufactured of high grade material and consist of steel poles which are drilled, tapped and fitted with necessary bushings to protect the wires where they enter the pole. A heavy cast iron base is used in connection with concrete foundations with four iron anchor bolts making a permanent and rigid construction. An iron pinnacle on top adds greatly to the appearance of the outfit. All signs are made of heavy cast iron with raised letters, painted white.

No. 71 Outfit shows our No. 999 bell in connection with the outfit and our No. 704 relay box, in which can be housed one or two relays, together with lightning arresters, etc.

No. 73 Outfit shows our No. 666 style A bell attached to the side of the pole. A double cast iron battery chute is used for a foundation, in which are placed the batteries used in connection with the bell.

No. 105 Outfit has a square sign with the words "LOOK OUT FOR THE CARS" cast thereon with a single relay box clamped to the side of the pole and a pipe support used for a foundation, which can be either set in the ground or in concrete as desired.

No. 107 Outfit is practically the same as No. 71 outfit with a larger and more conspicuous sign and a No. 666 bell clamped to the side of the pole.

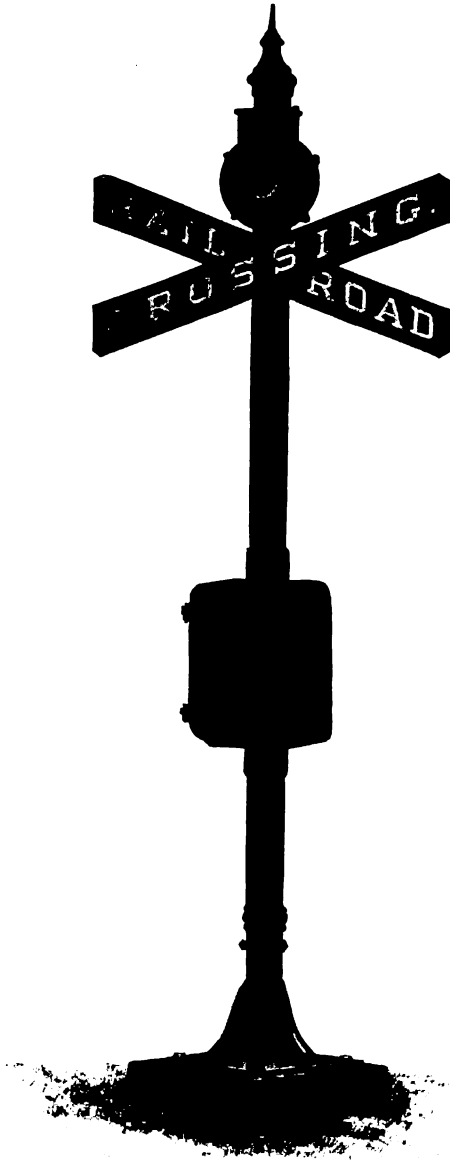
No. 109 Outfit shows a sign with the words "LOOK LISTEN DANGER" and a No. 666 style B bell fastened to the top of the pole.

No. 158 Outfit is supported by anchor plates which are bolted to the bottom of the pole and used instead of a base and concrete foundation.

No. 160 Outfit is similar to No. 158 with the exception of the signs.

The material used in all these outfits is interchangeable, 3½-inch pipe above, 4-inch pipe below being used in all the outfits with the exception of No. 105 where 3-inch pipe is used. Special outfits made to suit your requirements.

Highway Crossing Signal No. 71



Number		List Price
71	Highway Crossing Signal, complete as shown.....	\$140.00
701	Pinnacle for 3½-inch pipe	4.50
702	Top steel post, 3½ inches diameter, 5 feet long.....	10.00
703	Lower steel post, 4 inches diameter, 4 feet long.....	9.50
704	Relay Box, inside dimensions 14x20x9 inches, 2 shelves.....	35.00
704B	Relay Box, inside dimensions 16½x20x9 inches, 2 shelves.....	35.00
705	Crossing Signs, cast iron, raised letters	20.00
706	Base, cast iron, for 4-inch pipe	18.00
707	4 iron bolts, size 30x¾ inches	3.50
999	Bell, malleable iron case, complete with U bolts.....	40.00
666	Bell, complete	40.00



Highway Crossing Signal No. 73

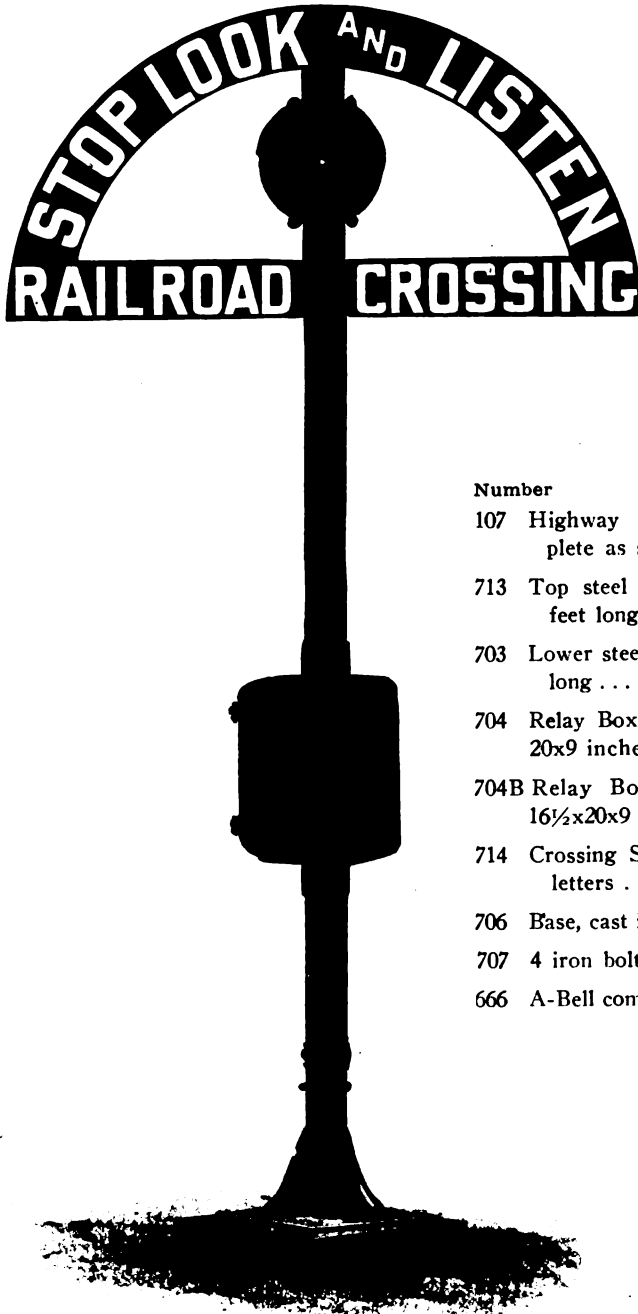
Number	List Price
73 Highway Crossing Signal, complete as shown	\$184.00
701 Pinnacle for 3½-inch pipe.....	4.50
702 Top Steel Post, 3½-inch diameter, 5 feet long	10.00
703 Lower steel post, 4-inch diameter, 4 feet long	9.50
704 Relay Box, inside dimensions 14x20x9, 2 shelves.....	35.00
704B Relay Box, inside dimensions, 16½x20x9, 2 shelves	35.00
705 Crossing Signs, cast iron, raised letters	20.00
719 Cast Iron Pole Support with 4 bolts	6.00
720 Cast Iron Double Chute, 7 feet long	53.00
708 Wooden Elevators, complete (2 required). Each	6.00
666 Bell, complete with U bolts.....	40.00

Highway Crossing Signal No. 109



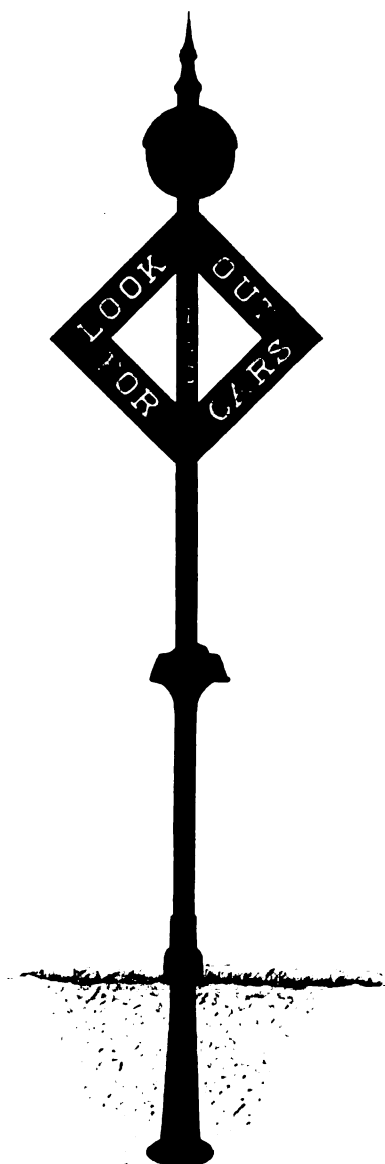
Number	List Price
109 Highway Crossing Signal complete as shown	\$151.50
713 Top steel post 3½ inches by 6½ feet long	11.00
703 Lower steel post 4 inches by 4 feet long	9.50
704 Relay box, inside diameter 14x20x 9 inches, 2 shelves	35.00
704B Relay Box, inside dimensions, 16½x20x9 inches, 2 shelves	
715 Crossing Signs, 2 castings, raised letters	35.00
706 Base, cast iron, for 4-inch pipe	18.00
707 4 iron bolts, size 30x¾ inches	3.00
566 B-Bell complete with socket	40.00

Highway Crossing Signal No. 107



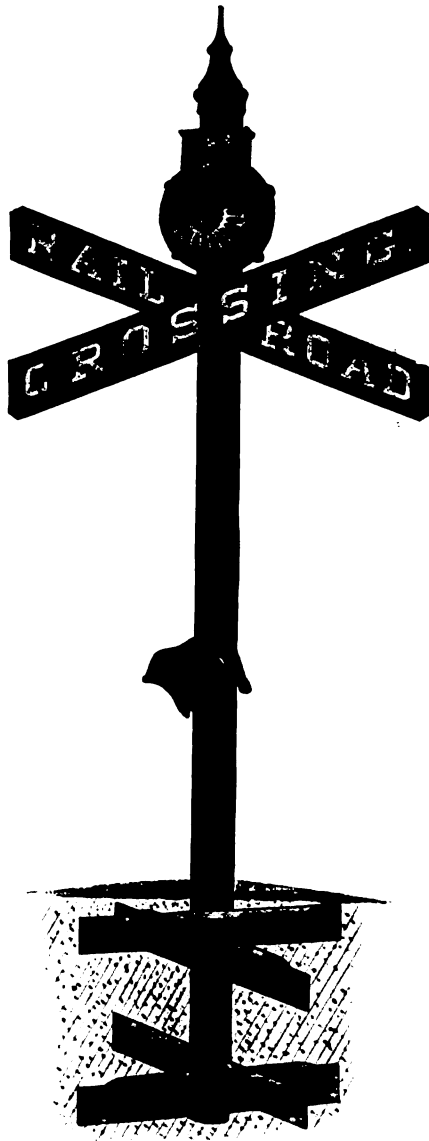
Number	List Price
107 Highway Crossing Signal, complete as shown.....	\$151.50
713 Top steel post 3½ inches by 6½ feet long	17.00
703 Lower steel post 4 inches by 4 feet long	9.50
704 Relay Box, inside dimensions 14x20x9 inches, 2 shelves.....	35.00
704B Relay Box, inside dimensions, 16½x20x9 inches, 2 shelves.....	
714 Crossing Signs, 2 castings, raised letters	35.00
706 Base, cast iron, for 4-inch pipe....	18.00
707 4 iron bolts, size 30x¾ inches....	3.00
666 A-Bell complete with U bolts.....	40.00

Highway Crossing Signal No. 105



Number		List Price
105	Highway Crossing Signal, complete as shown.....	\$101.75
709	Pinnacle for 3-inch pipe	4.00
710	Steel Post, 3 inches by 12 feet	15.00
711	2 Cast Iron Signs, raised letters.....	16.75
712	Cast Iron Pole Support with trunking entrance.....	16.00
1	Relay box, inside dim. 13½x6x7 inches high, cast iron, no lock.....	10.00
666	Bell, complete with U bolts	40.00

Highway Crossing Signal No. 158



Number	List Price
158 Highway Crossing Signal complete as shown.....	\$108.50
721 Pinnacle for 4-inch pipe.....	5.00
716 Steel post 4 inches by 16 feet long.....	17.50
2 Relay box, inside dimensions 16½x6½ inches by 6 inches high.....	11.00
705 Crossing signs, cast iron, raised letters.....	20.00
717 4 anchor plates with U bolts, complete.....	15.00
999 Bell complete with U bolts.....	40.00

Highway Crossing Signal No. 160

Number	List Price
160 Highway Crossing Signal, complete as shown.....	\$106.00
721 Pinnacle for 4-inch pipe	5.00
716 Steel post 4 inches by 16 feet long.....	17.50
2 Relay box, inside dimensions 16½x6½ inches by 6 inches high.....	11.00
718 Crossing signs, cast iron, raised letters.....	17.50
717 4 anchor plates with U bolts, complete.....	15.00
999 Crossing bell with U bolts	40.00

Highway Crossing Signal Lamp



No. 71 K. Price complete with socket\$8.00

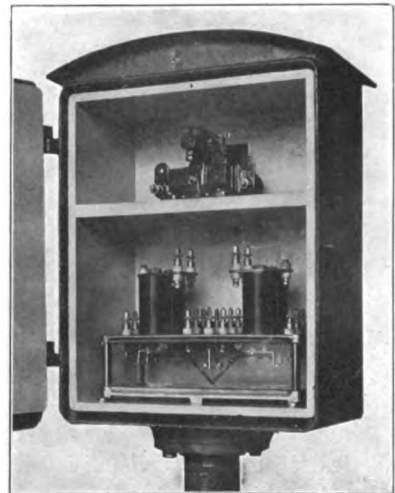
This lamp is placed on top of a crossing bell post and used in places where it is desired to give a visual indication in connection with a crossing bell. While the bell is ringing the lamp flashes. The lamp is equipped with a standard Edison porcelain base socket unless otherwise specified and with white, red or green lenses.

Combined Interlocking Relay and Highway Crossing Bell No. 18660

With Sign.



Without Sign.



Number	List Price
18660 Crossing bell and case with iron pipe support.....	\$100.00
20328 Crossing bell movement complete	35.00
20896 Crossing Sign complete	24.00
20320 Cast Iron Case complete; dimensions 18 inches by 14 inches by 9 inches	40.00
20327 Iron pole 3 inches by 8 feet long.....	8.50
20358 Cast Iron Base, 10½ inches (circular).....	15.00

**DESCRIPTION OF COMBINED INTERLOCKING RELAY AND
HIGHWAY CROSSING BELL No. 18660.****No. 18660.**

Case: Made of heavy cast iron, weather and dust proof, size 17 inches wide, 24 inches high, 15 inches deep, supported either by bracket or set iron post, as shown in picture, of any height and with a ladder attached if desired. The case is also arranged so that a danger sign can be easily attached to the top, also a lamp if desired. Inside of the iron case is a wooden box, which is removable, and to which the bell gong is mounted on the back side, the gong being sounded by a vertical movement clapper which strikes against the upper inside edge. A false back at the rear of the relay compartment provides a place where incoming wires can be crisscrossed as required, so they can be brought out of holes directly opposite the particular binding post to which each wire is connected. This facilitates neat wiring.

Bell Movement: Has the make and break platinum contacts which appear on the very top of bell movement, directly in front and easily accessible.

Relay: Interlocking, No. 30130.

The relay is of standard construction with the exception of the interlocking feature which is a distinct departure from present types. Coils are form wound, flexible connections are of ribbon copper, posts non-turning and all parts are rigidly held in place.

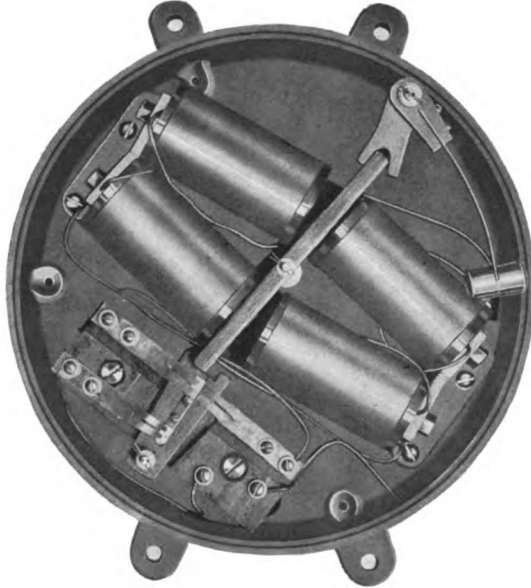
The interlocking parts consist of two small flat brass hooks which are suspended in such a manner that they are over-balanced and stand normally in one position. To each armature is rigidly attached an aluminum arm which engages the hook at the other end of the frame of the relay. None of the interlocking parts are used as a part of the circuit.

Under normal conditions, with both sets of coils energized, the two aluminum arms are held out of the way of the brass hooks. The dropping of either armature will raise the aluminum arm until it engages the hook which will be moved to such a position that it is directly under the armature, which is still energized. If, at this time the second set of coils is deenergized, its armature will drop and rest on the brass hook, which holds it in such a position that the back contact is not made. If the first set of coils is again energized, its armature will be attracted; the aluminum arm will be moved downward away from the hook, which is now held in place by the armature of the second set of coils, and which are still deenergized.

Current now being applied to the second set of coils will raise its armature, thus allowing the hook to resume its normal position.

Three front, three back contacts or any combination of these can be applied to both ends of the relay. In designing, the fact was kept in mind of building a relay which would be simple, rugged and absolutely reliable.

The standard resistance is 4 ohms but any resistance up to 1,000 ohms can be furnished. Pick-up and drop is in accordance with Railway Signal Association specifications, furnished either in the open type or glass enclosed.

Highway Crossing Bell No. 666-A

It is fastened to the side of an iron or wooden pole with U bolts or lag screws.

The mechanism of the bells illustrated on this and the following page is enclosed in an iron case having a machine fitted cover which makes it dust, bug, and weather proof.

The case is sufficiently strong to prevent breakage by bullet shots, etc.

The gong is 12 inches in diameter and has a loud, clear, and distinct tone.



No. 666-A for Side of Pole.

No. 666-A Bell complete with U-bolts (or lag screws for wood post) . . \$40.00

Highway Crossing Bell No. 666-B



No. 666-B for Top of Pole

This type is used on top of pole and takes the place of pinnacle.

The bell is composed of few parts and is rugged and simple in construction.

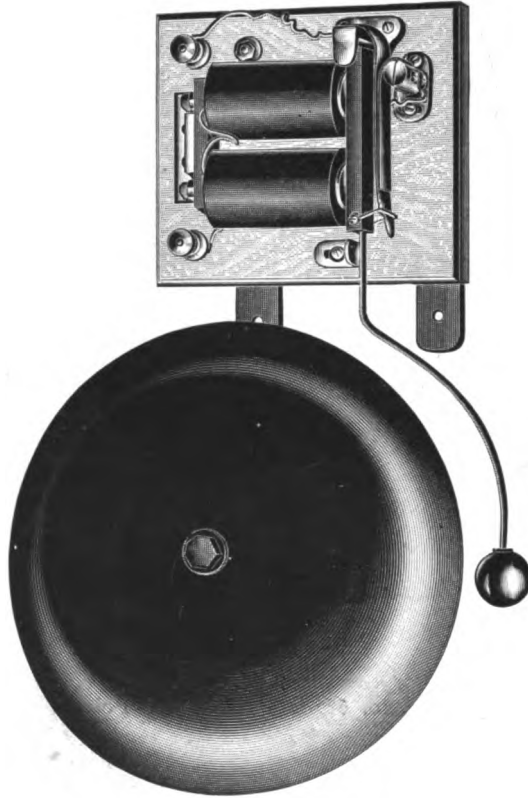
All moving parts are held in place by spring cotters and there is no chance of screws, nuts, etc., working loose.

All contacts are platinum to platinum, self cleaning and so made and arranged that no adjustments are necessary.

The standard winding of magnets is 10 ohms resistance; other resistances can be furnished when desired.

Number	List Price
No. 666-B. Bell complete	\$40.00

Highway Crossing Bell No. 999



No. 999

Movement

The moving parts of our No. 999 bell are mounted on a slate base. It is furnished with either carbon or platinum contacts. The magnets are wound to 12.5 ohms resistance. Any special resistance furnished.

Highway Crossing Bell No. 999

(Unbreakable)



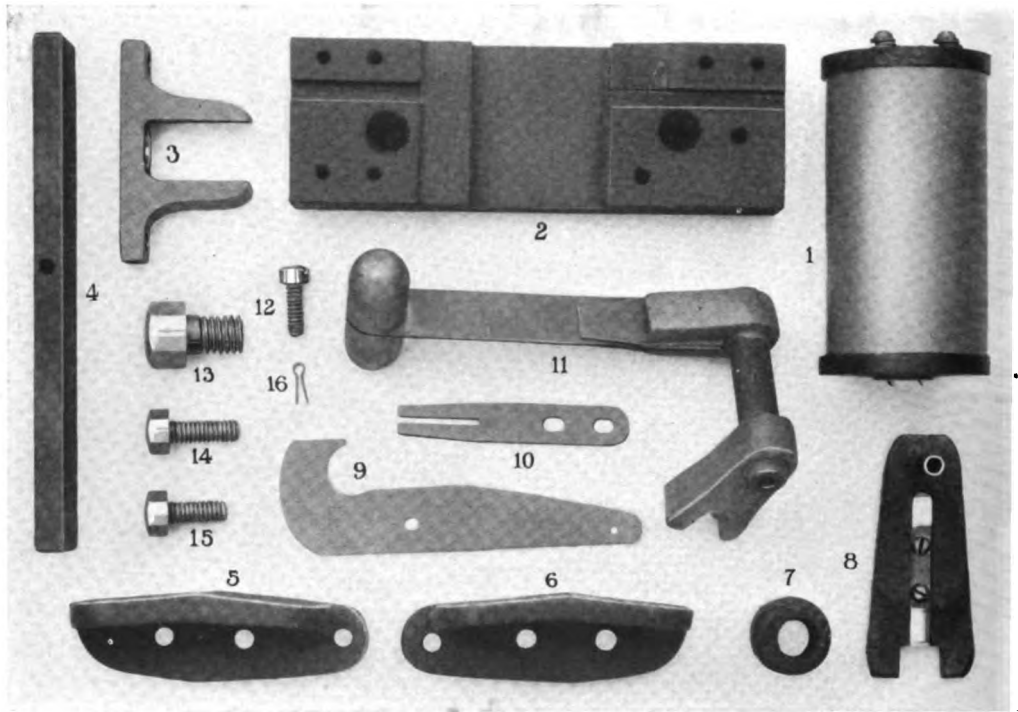
No. 999

Case

The case of our No. 999 bell, made of malleable iron, is sufficiently strong to prevent breakage by bullet shots, etc.

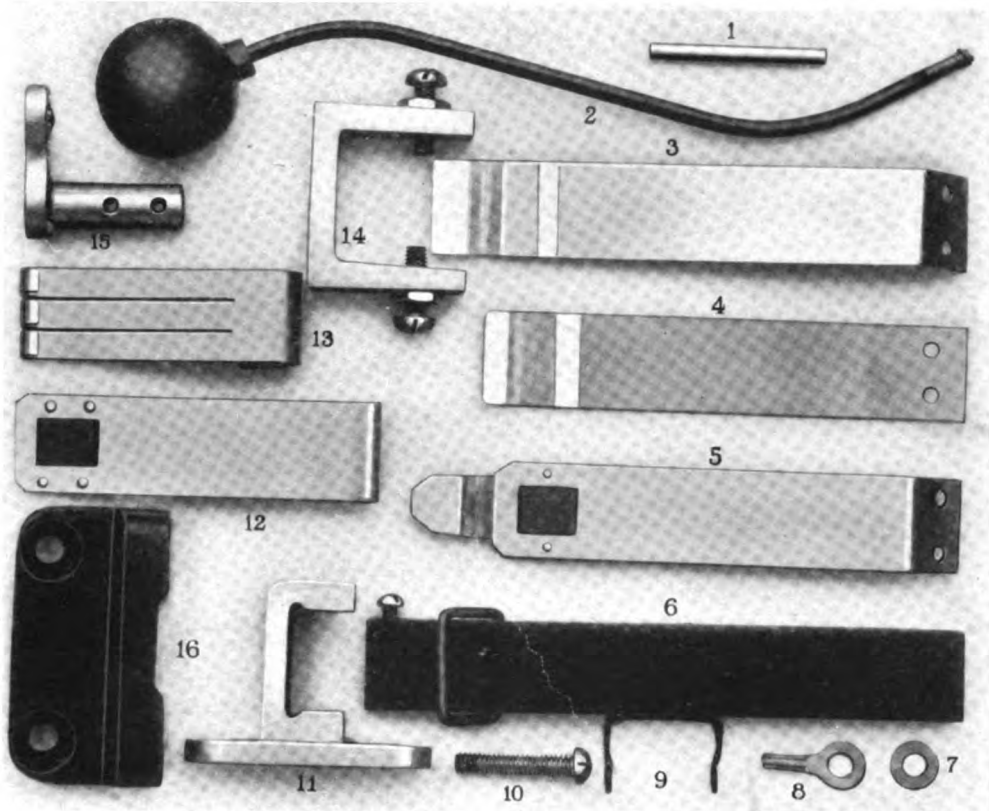
The gong is 12 inches in diameter and is made of pressed steel.

Number	List Price
No. 999. Bell complete with U bolts.....	\$40.00

Repair Parts For Highway Crossing Bell No. 666

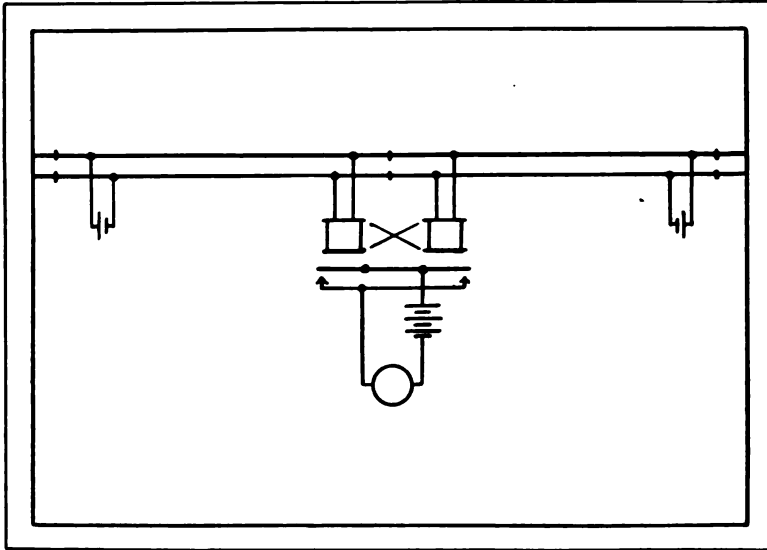
Number		List Price
1	Magnet	\$5.50
2	Contact Block	2.50
3	Armature Stop	1.25
4	Armature	2.50
5	Left Hand Bracket	1.25
6	Right Hand Bracket	1.25
7	Fibre Bushing	1.00
8	Swing Bar	5.00
9	Dust Guard	1.50
10	Contact Spring	2.50
11	Oscillator complete	6.00
12	Fillister Head Screw, 14-20 x $\frac{5}{8}$ inch.....	.20
13	Cap Screw, 1-2 x $\frac{3}{4}$ inch .....	.40
14	Cap Screw, 5-16 x $\frac{7}{8}$ inch .....	.30
15	Cap Screw, 5-16 x $\frac{3}{4}$ inch .....	.30
16	Cotter pin, 1-16 x $\frac{1}{2}$ inch .....	.10

Repair Parts For Highway Crossing Bell No. 999



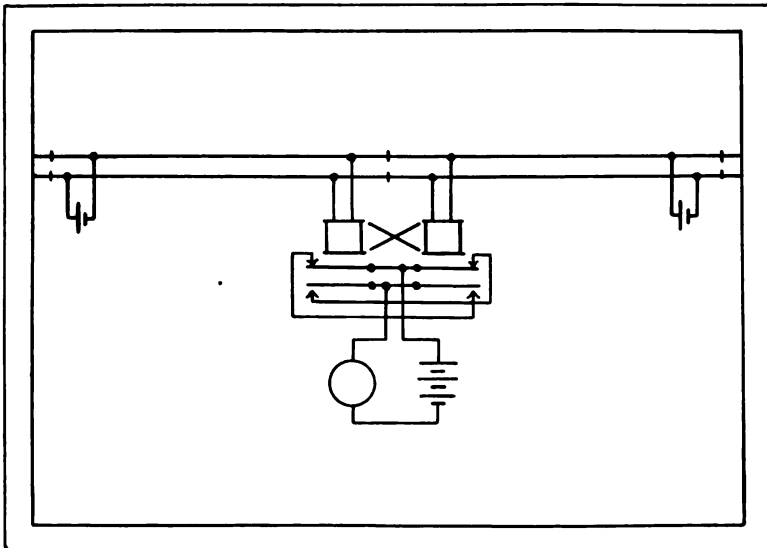
Number	List Price
1 Bearing Pin	\$.25
2 Hammer and Rod	2.50
3 Armature Spring - old style	4.50
4 Armature Spring	4.50
5 Armature Spring - carbon contact	4.00
6 Armature	3.50
7 Washer for Bearing Pin .....	.25
8 Terminal .....	.35
9 Spring Holder .....	.25
10 Round Head Screw, 1/4 x 24 .....	.20
11 Armature Bracket	4.00
12 Contact Spring - carbon point	4.00
13 Contact Spring - platinum point	4.50
14 Stop Yoke	3.50
15 Spring Holder for contact spring	4.00
16 Magnet Bracket	2.00

Circuits for Highway Crossing Bells



Circuit No. 1 For Single Track Movement.

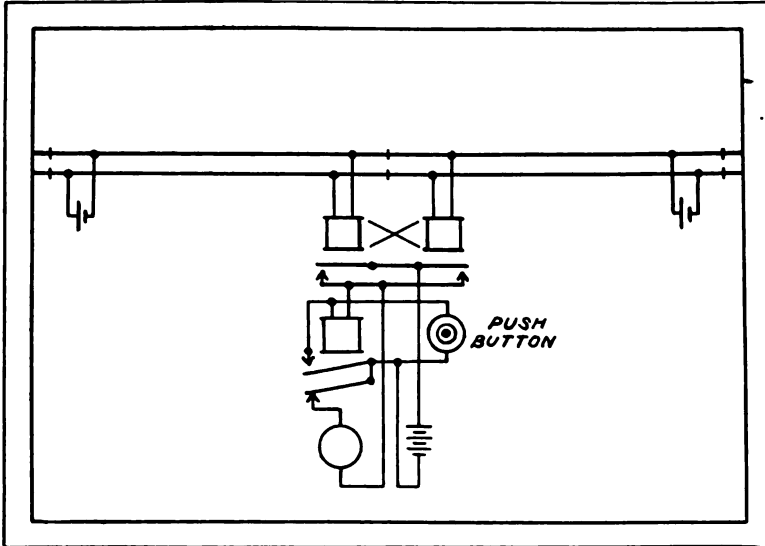
Bell starts ringing as the train approaches the crossing and stops ringing as it is passed by the last car. One No. 30130 relay required with one back contact on each end.



Circuit No. 2. For Single Track Movement.

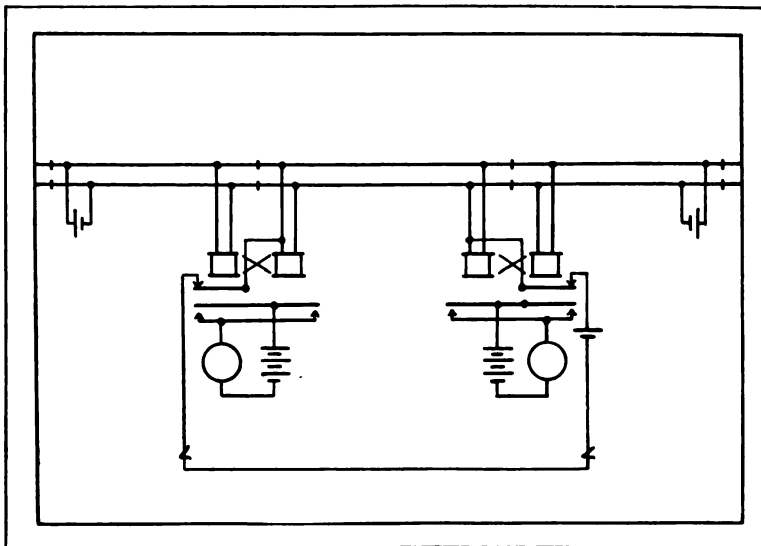
Bell starts ringing as the train approaches crossing and stops ringing as the engine reaches the crossing. One No. 30130 relay required with one front and one back contact on each end.

Circuits for Highway Crossing Bells



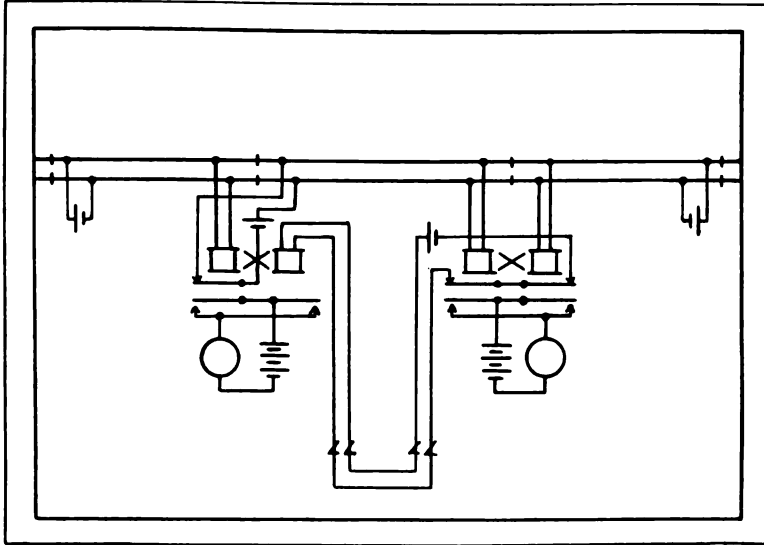
Circuit No. 3. For Single Track Movement.

Bell starts ringing automatically as train approaches crossing and is manually stopped by means of a push button. As the last car passes the crossing the circuit is automatically restored to its normal condition. Two relays required, one No. 30130 relay with one back contact on each end and one No. 13024 stick relay with one front and one back contact.

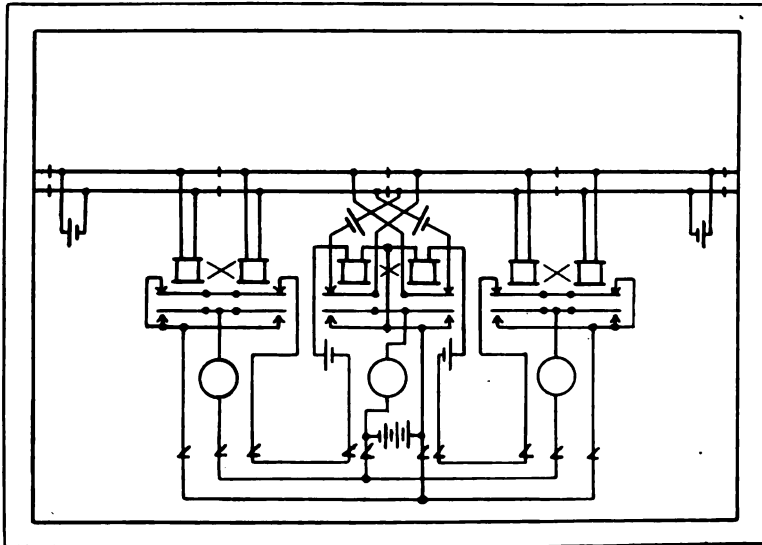


Circuit No. 4. For Two Bells On Single Track.

Both bells start ringing at the same time and each bell stops ringing as it is passed by the last car of the train. Two No. 30130 relays required. Each relay with one front and one back contact on one end and one back contact on the other end.

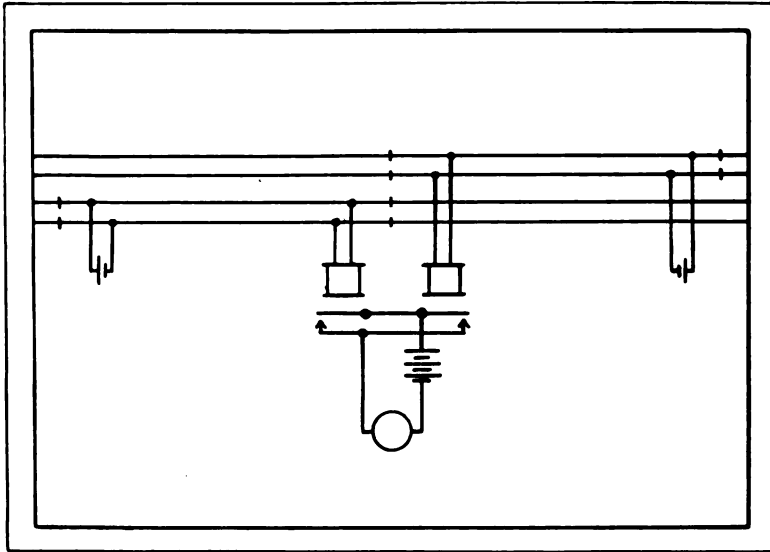
Circuits for Highway Crossing Bells**Circuit No. 5. For Two Bells On Single Track.**

Both bells start ringing at the same time and each bell stops ringing as it is passed by the last car. Two No. 30130 relays required. One with one front and one back contact on one end and one back contact on the other end. The other relay with one front and one back contact on each end.

**Circuit No. 6. For Three Bells On Single Track.**

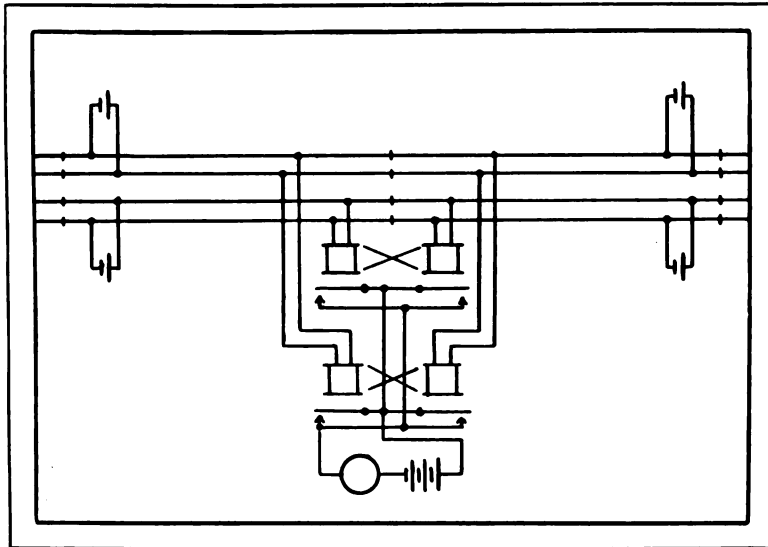
All bells start ringing at the same time and each bell stops ringing as it is passed by the last car. Three No. 30130 relays required, each with one front and one back contact on each end.

Circuits for Highway Crossing Bells



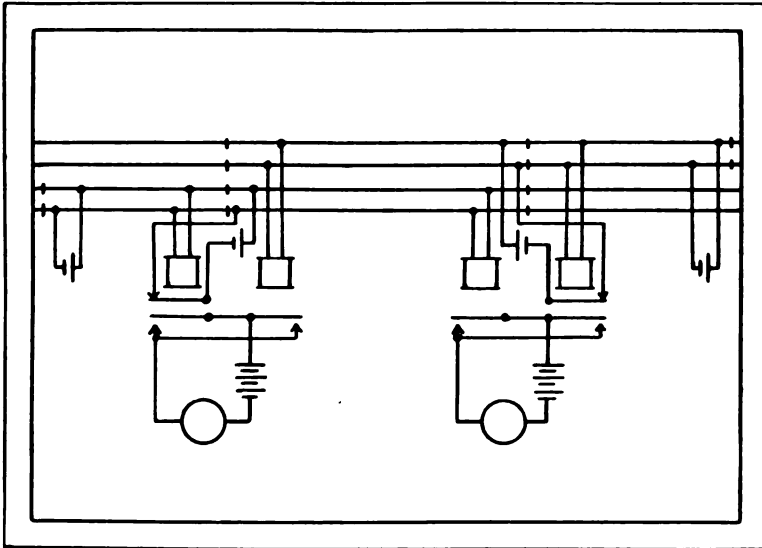
Circuit No. 7. For One Bell On Double Track.

Bell starts ringing as trains approach crossing on either track and stops ringing as it is passed by the last car. One No. 30130 relay required with one back contact on each end, with interlocking features removed.

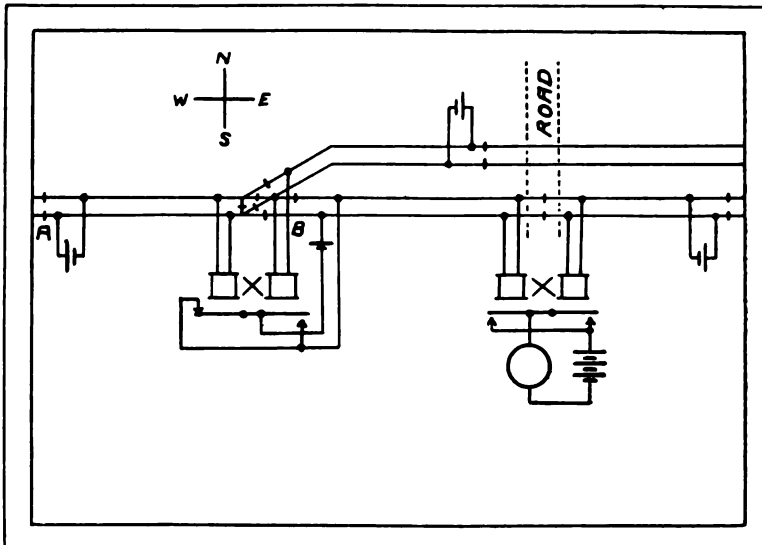


Circuit No. 8. For One Bell On Two Adjacent Single Tracks.

Bell starts ringing as trains approach crossing on either track and stops ringing as it is passed by the last car. Two No. 30130 relays required each with one back contact on each end.

Circuits for Highway Crossing Bells**Circuit No. 9. For Two Bells On Double Track.**

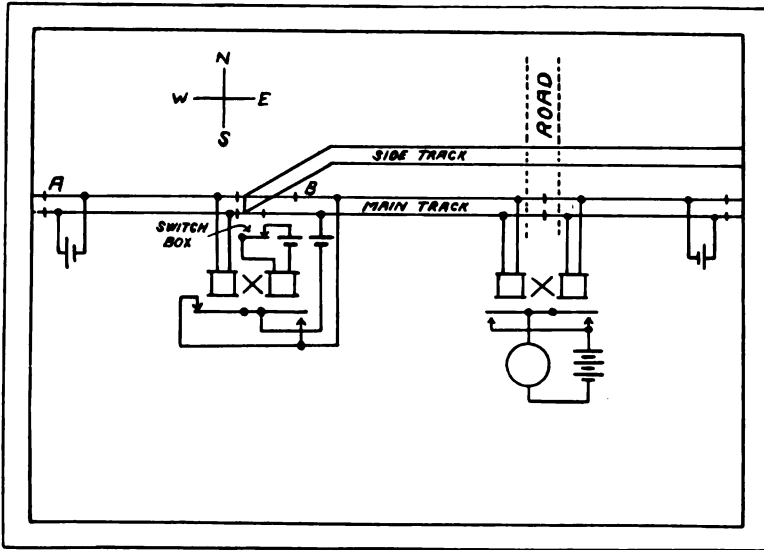
Both bells start ringing at the same time and each bell stops ringing as it is passed by the last car. Two No. 30130 relays required each with one front and one back contact on one end and one back contact on the other end with interlocking features of both relays removed.

**Circuit No. 10.****False Alarm Circuit For One Bell On Single Track, Using Short Track Section On Side Tracks.**

Train moving from siding to main track continuing west will not cause bell to ring. If train goes east after reaching main track, bell will start to ring when first trucks pass B. Through east bound trains start bell at A. Bell stops ringing as it is passed by the last car.

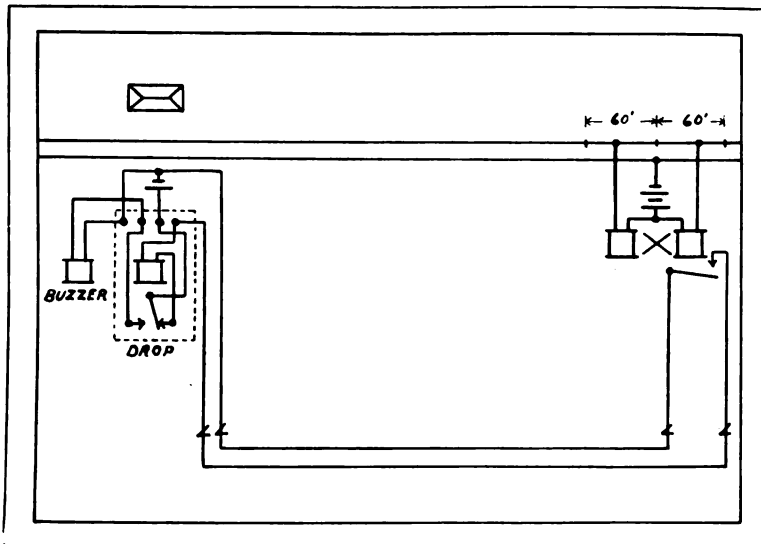
Two No. 30130 relays required, one with one front contact on one end and one back contact on the other end, other relay with one back contact on each end.

Circuits for Highway Crossing Bells



Circuit No. 11

False alarm circuit for one bell on single track using switch box operated by siding switch. The operation of this circuit and the relays required are the same as described for Circuit No. 10



Circuit No. 12.

For drop annunciator on single track. Announces only trains which are approaching the tower.

One No. 30130 relay arranged for open circuit required with one front contact on one end.

MEMORANDA

Section 2

RELAYS

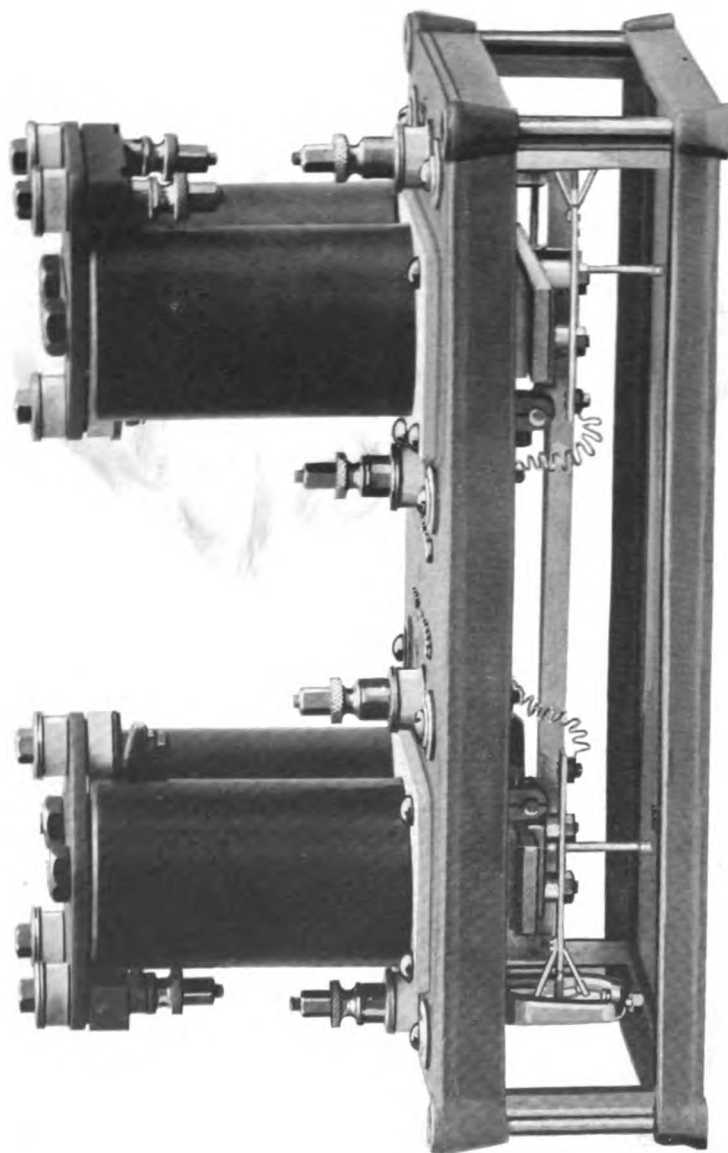
INDICATORS

ANNUNCIATORS

SWITCHES

STRAP KEYS

Interlocking Relay No. 30130



Patented.

Interlocking Relay No. 30130

This relay is of standard construction with the exception of the interlocking feature which is a distinct departure from present types. Coils are form wound, flexible connections are of ribbon copper, posts non-turning and all parts are rigidly held in place.

The interlocking parts consist of two small flat brass hooks which are suspended in such a manner that they are over-balanced and stand normally in one position. To each armature is rigidly attached an aluminum arm which engages the hook at the other end of the frame of the relay. None of the interlocking parts are used as a part of the circuit.

Under normal conditions, with both sets of coils energized, the two aluminum arms are held out of the way of the brass hooks. The dropping of either armature will raise the aluminum arm until it engages the hook which will be moved to such a position that it is directly under the armature which is still energized. If at this time the second set of coils is deenergized, its armature will drop and rest on the brass hook, which holds it in such a position that the back contact is not made. If the first set of coils is again energized, its armature will be attracted; the aluminum arm will be moved downward away from the hook, which is now held in place by the armature of the second set of coils, and which are still deenergized.

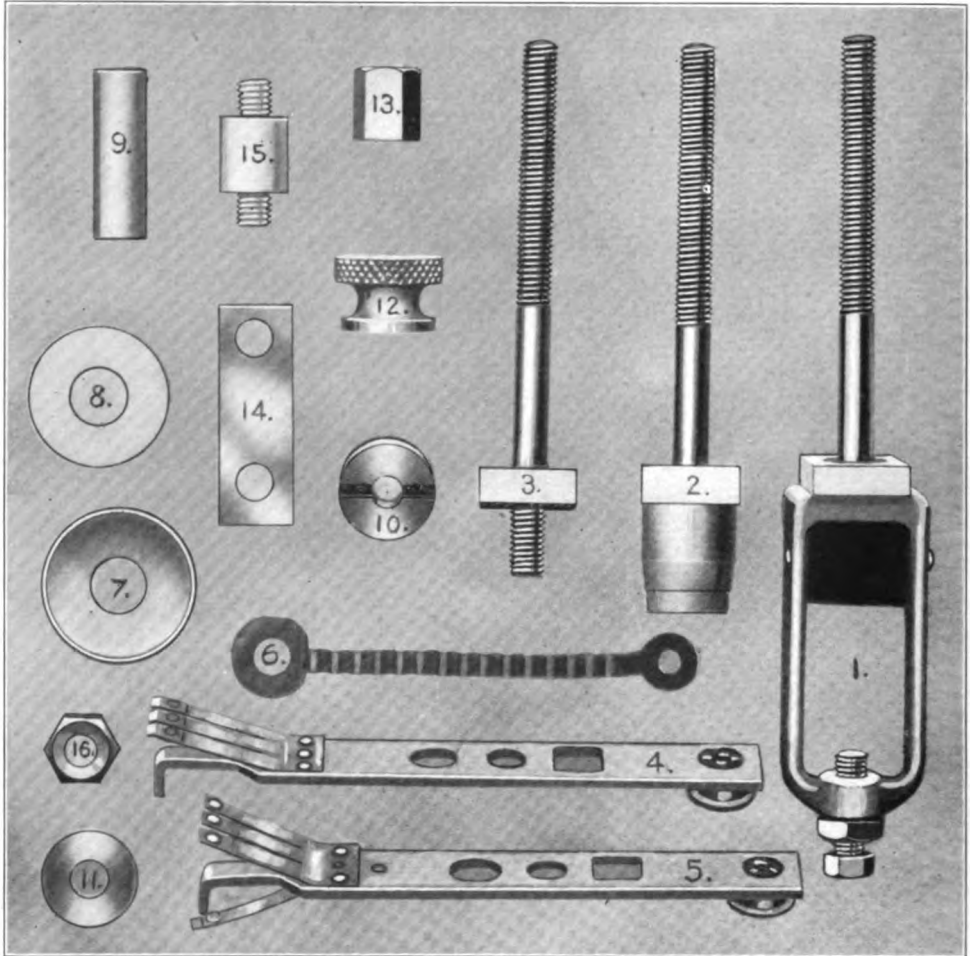
Current now being applied to the second set of coils will raise its armature, thus allowing the hook to resume its normal position.

Three front, three back contacts or any combination of these can be applied to both ends of the relay. In designing, the fact was kept in mind of building a relay which would be simple, rugged and absolutely reliable.

The standard resistance is 4 ohms but any resistance up to 1,000 ohms can be furnished. Pick-up and drop is in accordance with Railway Signal Association specifications, furnished either in the open type or glass enclosed. Size over all 12½ inches long, 6½ inches wide, 8 inches high.

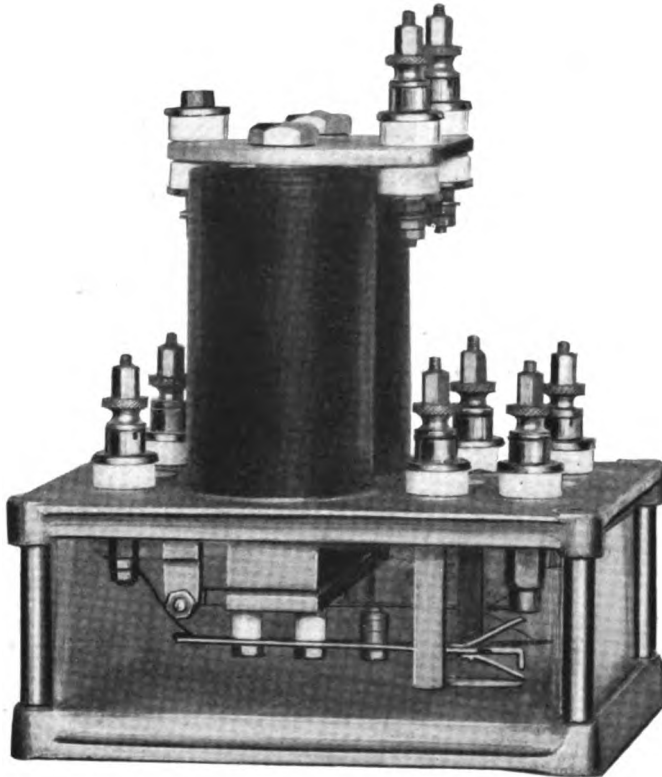
Number	List Price
30130 Interlocking relay with one back contact on each end.....	\$55.00

Each additional contact \$2.50 net. In ordering relays customers should state the number of contacts required, whether front or back and their relative positions.

Repair Parts for Interlocking Relay No. 30130

Number	List Price
1	\$2.50
2	3.00
3	1.25
4	4.00
5	5.00
6	1.25
7	.25
8	.40
9	.50
10	.50
11	.20
12	.50
13	.50
14	.20
15	1.00
16	.40

Neutral or Polarized Relay

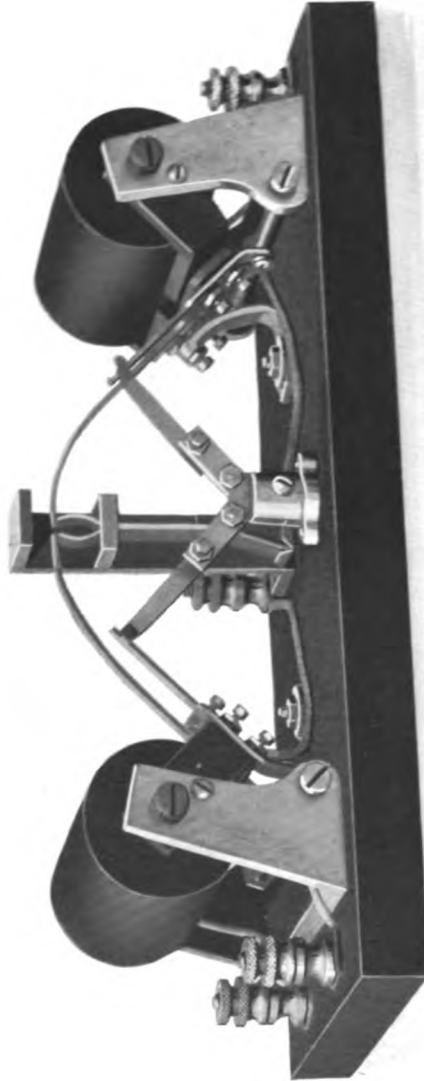


This relay is made with from one to four front and back contacts inclusive. It is furnished with carbon front and platinum back contacts. Neutral or Polarized.

Number	List Price
13020 Polarized Relay, 2 point neutral, 2 point polar, with 2 front and 2 back platinum contacts	\$60.00
13021 4 Point Neutral Relay with 4 front and 4 back contacts.....	50.00
13022 3 Point Neutral Relay with 3 front and 3 back contacts.....	45.00
13023 2 Point Neutral Relay with 2 front and 2 back contacts.....	40.00
13024 1 Point Neutral Relay with 1 front and 1 back contact.....	36.00

When ordering, specify resistance of magnets.

Interlocking Relay No. 7



Interlocking Relay No. 7

This relay can be used for single or double track bell circuits. It will operate successfully on .07 of an ampere. The contacts are self cleaning and made of platinum or carbon as desired. It operates by gravity and does not depend on springs for adjustment. Size of slate base 5 x 12 inches.

We are prepared to furnish special relays when required for complicated conditions.

Number	List Price
7 A Interlocking Relay with 1 back contact each end complete.....	\$50.00
7 B Interlocking Relay with 1 front and 1 back contact each end complete	60.00

REPAIR PARTS

Number	List Price
1 Brass Coil Yoke (Magnet supports).....	\$4.00
2 Pole Piece	1.75
3 Interlocking Finger	2.50
4 "Y" Contact Post	3.00
5 Armature complete with screws	3.00
6 Armature Contact Finger platinum point.....	2.75
7 "Y" Contact Post Finger platinum point.....	3.00
8 Interlocking Finger Stop	2.00
9 Binding Post .....	.75
10 Slate Base drilled and enameled.....	4.00
11 Magnet complete	6.00

Type S and T Indicators

-- Type T for Tower Use --

Type S Switch Indicator With Post.

Indicators

Type T for Tower Use

Type S Switch Indicator With Post.

These indicators are of the unit type and are furnished in iron cases.

The switch indicators are not equipped with contacts. The tower indicators can be furnished with from one to three front or back contacts or any combination of these.

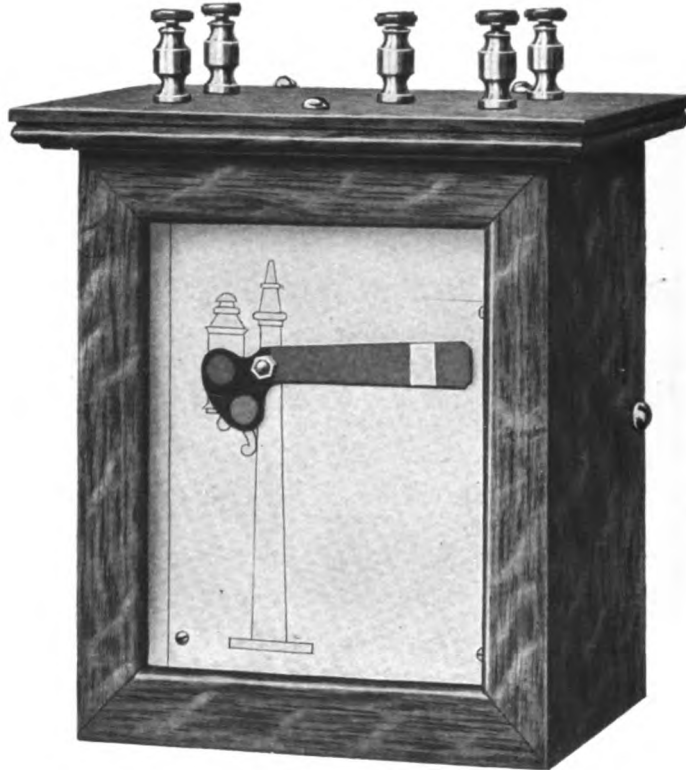
All parts of both types are easily accessible on removal of cover.

Either upper or lower quadrant 60 degree or 90 degree indication furnished. Unless otherwise specified, lower quadrant 60 degree indication will be furnished.

In ordering switch indicators specify resistance of coils. In ordering tower indicators, specify both resistance of coils and number of contacts.

	List Price
No. 303—Type T. Tower Indicator without contacts.....	\$36.00
Complete contacts for above, specify front or back, each, net.....	\$2.50
No. 304—Type S. Switch Indicator complete with 3-foot post as shown..	\$50.00

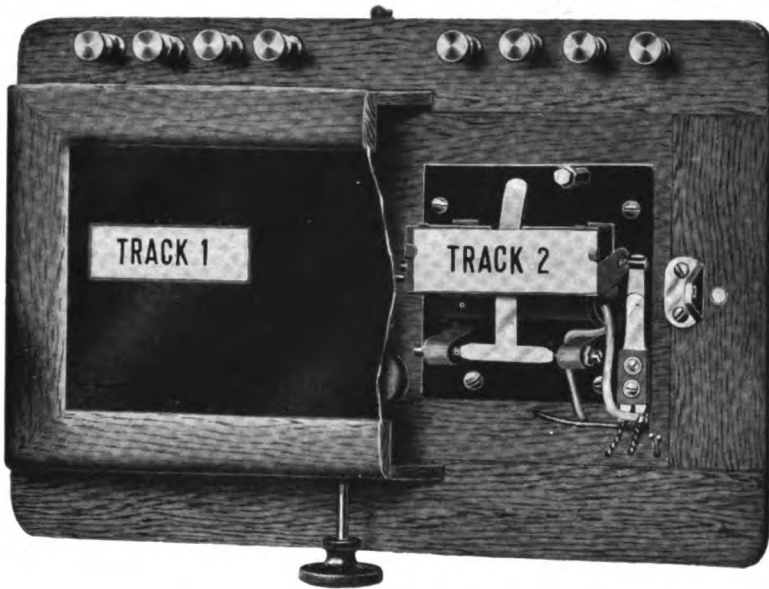
Indicator No. 9



These indicators are furnished in highly polished oak cases, size 6x7 inches, and are especially designed for use in interlocking towers and signal stations. Can be supplied with two contacts, either front or back. When wound to 50 ohms resistance it will operate on .03 of an ampere. The construction is simple and substantial. Either a 60 or 90 degree indication can be used.

No. 9. Indicator **List Price** \$45.00

Annunciator No. 18



These annunciators are furnished in highly polished oak cases and are especially designed for use in interlocking towers and stations. They are wound to 50 ohms resistance unless otherwise specified, for open or closed circuit, and either normally open or normally closed contacts are furnished as desired. Size, 8½x12½ inches.

List Price

No. 18. Annunciator, 2 drops, in polished oak case.....\$40.00

Type B Annunciator**No. 305.**

This is a small, compact annunciator of the "Unit" type and is furnished with an iron cover. The size over all is 4 inches by 4 inches by 6 inches. It is very simple in design and reliable in operation. The construction is such that the possibility of the shutter being released by vibration has been eliminated.

These annunciators are made to operate on either open or closed circuit and can be wound to any resistance up to 500 ohms.

Approaching trains release the shutter, displaying the card and closing local contacts for the operation of bells, buzzers, etc. The shutter is so arranged that the cards can be easily changed.

Unless otherwise specified, the coils will be wound to 25 ohms resistance.

	List Price
No. 305. Type B Annunciator	\$25.00

Rubber Base Switches

Number	List Price
No. 178A. 1 point	\$0.40
No. 178B. 2 point .....	.50
No. 178C. 3 point .....	.60
No. 178D. 4 point .....	.70

Number	List Price
No. 168A. 1 point	\$0.70
No. 168B. 2 point .....	.90
No. 168C. 3 point	1.20
No. 168D. 4 point	1.50

Number	List Price
No. 165. Rubber or Oak Base, back connection	\$1.50



No. 178. Square Base.

These switches have hard, polished rubber bases and nickel trimmings.



No. 168. Square Base with Binding Posts.



Pole Changing Switch.
No. 165.

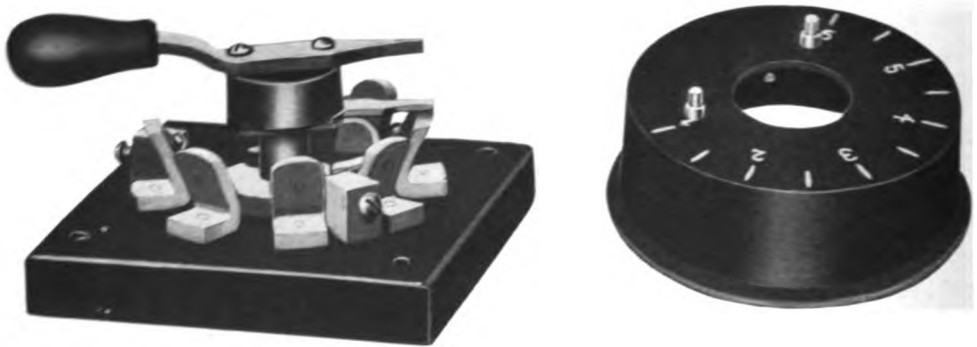
Knife Switches

Single, double or triple pole, mounted on slate or porcelain.

Number	List Price
No. 720A. Single pole, single throw, 15 ampere, porcelain base	\$0.40
No. 720B. Single pole, double throw, 15 ampere, porcelain base .....	.60
No. 720C. Double pole, single throw, 15 ampere, porcelain base .....	.50
No. 720D. Double pole, double throw, 15 ampere, porcelain base .....	.80
No. 720E. Triple pole, single throw, 15 ampere, porcelain base	1.00



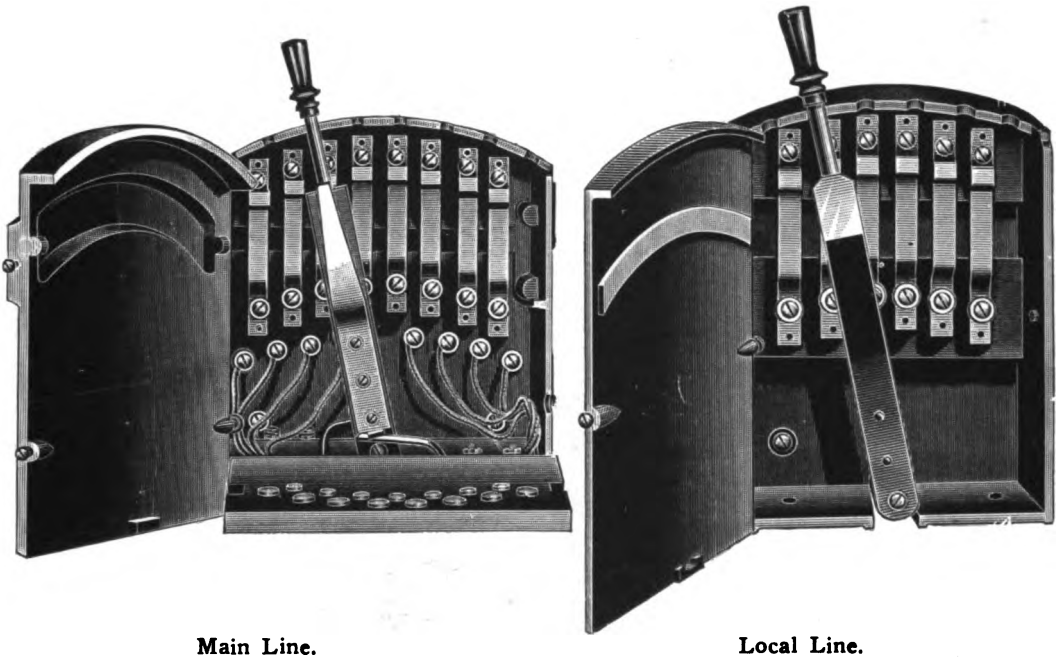
No. 720C. Knife Switch.

Iron Clad Switch No. 777

This switch is designed for use in connection with electric switch locks where a number of switches are controlled from one central point. It is arranged so that only one electric lock can be unlocked at a time, thus preventing more than one train entering the main track. It is made with slate base and all contacting parts are very heavy and substantial and are self cleaning. The contacts are inaccessible without removing the cover. Made with from two to six points. Size: 5 inches square, 3 inches high.

	List Price
No. 777. Switch with six contacts.....	\$20.00

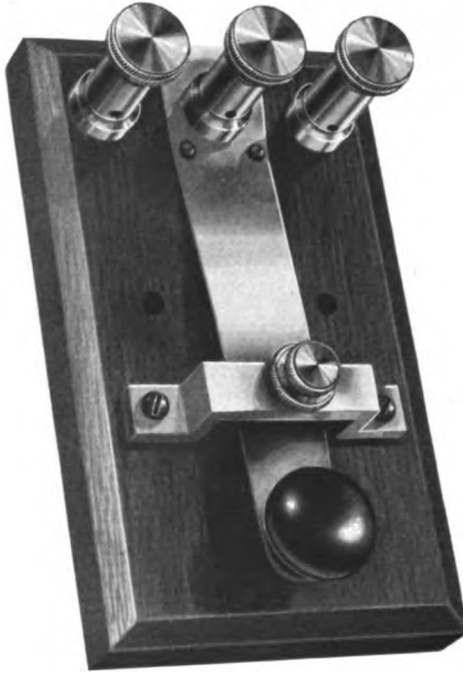
Ross Table Jack Switches



These Local and Main Line Switches are designed for use in telegraph offices where one operator works several wires. They save labor, time and money by increasing capacity of wires and amount of work done, no time being lost moving about from one instrument to another. Both switches are made of iron, thoroughly insulated, having no movable wires or cords to break and leave circuits open. The circuit is not broken when resonator set is switched in and out. Can be wired so that regular set is cut out when resonator set is cut in, no more instruments being added to line. The saving in time and money will pay for a switch in a very short time. The Local Switch is similar to Main, except the resonator sounder is switched to the several wires instead of full set, making it necessary to put all keys in reach of operator. Where one operator works more than four wires the main line switch is recommended.

List Price

- No. 10700. Ross Table Jack Switch for Local Line, capacity 4 lines.. \$18.00
- No. 10800. Ross Table Jack Switch for Main Line, capacity 8 lines.. 22.50

Strap Key No. 40

This strap key is substantially made with wooden base, three heavy brass binding posts and upper and lower platinum contacts. It is so arranged that it can be used for open or closed circuit or both.

	List Price
No. 40. Strap key	\$5.00

Section 3.

RELAY BOXES

CABLE POSTS

BATTERY BOXES

BATTERY CHUTES

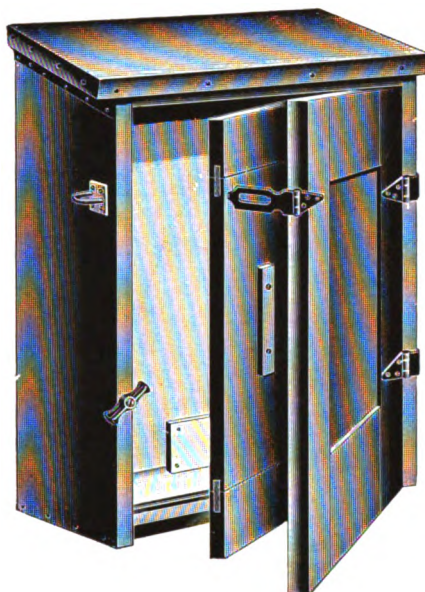
LOCKS

NEW WAY ELEVATORS

BRYANT ZINC COMPANY

MEMORANDA

Wood Relay Boxes



Number	List Price
8 Dimensions, inside meas., 13¼ in. wide, 18 in. high, 5 in. deep.....	\$13.50
9 Dimensions, inside meas., 16½ in. wide, 25 in. high, 11 in. deep.....	18.50
Galvanized iron shed roof.	
Painted black outside, white inside.	
Double doors, paneled.	

Iron Relay Boxes



Number	List Price
1 Relay Box, inside dim., 13½ in. long, 6 in. wide, 7 in. high.....	\$10.00
2 Relay Box, inside dim., 16½ in. long, 6 in. wide, 7 in. long.....	12.00
3 Relay Box, inside dim., 13½ in. long, 7½ in. wide, 9 in. high.....	16.50

The No. 1 box is used for our No. 7 Relay and the No. 3 box is used for our No. 30130 Relay.

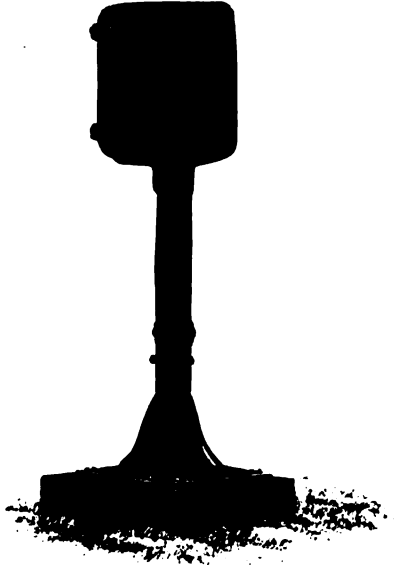
These relay boxes are made of heavy cast iron. They are weatherproof and are fastened to the pole by means of U bolts or lag screws. The entire tops are removable, allowing easy access to the relay.

Iron Relay Box and Posts

Inside dimensions of relay box 12 inches long, 10½ inches high, 9 inches deep.

Number	List Price
70	Double Relay Box complete with post for battery chute.....\$34.00
71	Double Relay Box complete with pedestal having trunking entrance. 42.00
72	Single Relay Box complete with post for battery chute..... 26.00
73	Single Relay Box complete with pedestal having trunking entrance 34.00
74	Double Relay Box only, wood lined..... 26.00
75	Single Relay Box only, wood lined..... 20.00
76	Double Relay Box complete with U bolts for mounting on side of 6-inch iron pole 28.00
78	Single Relay Box complete with U bolts for mounting on side of 4-inch iron pole 19.00
80	Relay Box Post, for use on battery chute..... 8.00
29	Pedestal with circular base, for mounting, in concrete..... 10.00

Relay Box and Post No. 76



- | | List Price |
|---|------------|
| No. 76. Complete | \$60.00 |
| No. 704. Relay Box, without post or base..... | 35.00 |

Relay Box, Post and Chute No. 12



- | | |
|---|----------|
| No. 11. Complete with single cast iron 7-foot battery chute and elevator. | \$ 75.00 |
| No. 12. Complete with double cast iron 7-foot battery chute and elevator. | 115.00 |

Cable Posts Nos. 7 and 8**No. 7****No. 8**

This outfit consists of a three-inch pipe, which is supported in a No. 706 iron base and mounted on a concrete foundation. The pinnacle is arranged so that it can be easily removed to get at the wires. For the support of the messenger wire a clamp is placed directly below the pinnacle.

No. 7. Complete **List Price**
\$19.50

This outfit consists of a No. 704 relay box mounted on a 4-inch pipe which is supported by an iron base No. 706 for mounting on a concrete foundation. A 3½-inch pipe is used on top of the relay box, on which is placed the pinnacle and messenger wire support.

No. 8. Complete \$50.00

We are prepared to furnish concrete foundations for use with cable posts Nos. 7 and 8 as follows:

No. 238. Size 5 feet high, 18x18 inches at top, 24x24 inches at bottom, fitted with fibre conduit trunking for wires and four anchor bolts ready for use. Weight 1850 lbs. \$11.50

No. 239. Same as above, with the exception of the height of foundation, which is 3½ feet high, and weight, 1400 lbs. 9.00

Cable Posts Nos. 9 and 10



No. 9.

This outfit is similar to No. 8 with the exception that the lower post is supported by a double iron battery chute and used instead of a base.

No. 9. Complete List Price
\$100.00

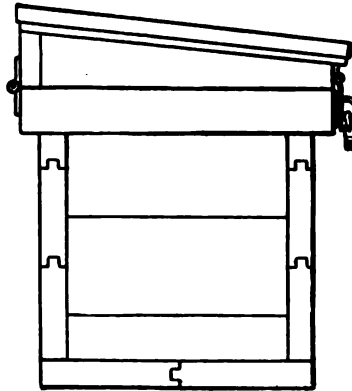
Outfit No. 10 is the same as No. 9 with a single battery chute used for a support instead of the double chute.

No. 10. Complete List Price
\$70.00

Cast Iron Battery Boxes

These boxes are waterproof. Have wooden floors and a trunking entrance cast on one end.

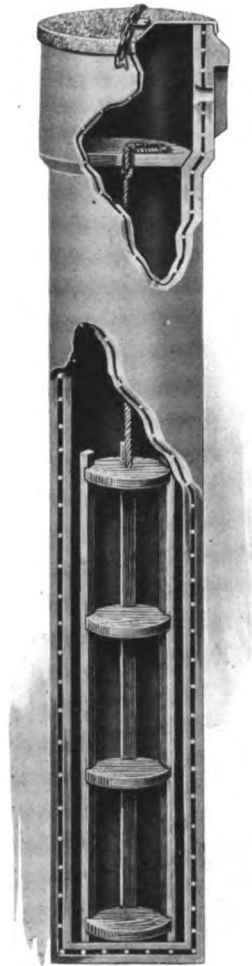
Number	List Price
14	To
Cast Iron battery box, inside measurements 15x15x28 inches. To hold 8 cells battery	35.00
16	To
Cast Iron battery box, inside measurements 16x16x39 inches. To hold 10 cells of battery.....	50.00

Wood Battery Box

These boxes are made of first-grade white pine wood, tongue and groove, and with iron shed roof. They are well painted inside and outside. Two sizes carried in stock and special sizes furnished when required.

Number	List Price
12	To
Wood Battery Box, inside measurements 30x12x12 inches, to hold 8 cells 6x8 inches battery	\$25.00
18	To
Wood Battery Box, inside measurements 45x18x12 inches to hold 18 cells 6x8 inches battery.....	30.00

Concrete Battery Chutes



These Concrete Battery Chutes are cast in substantially the same manner as battery vaults. They are completely reinforced and are absolutely waterproof.

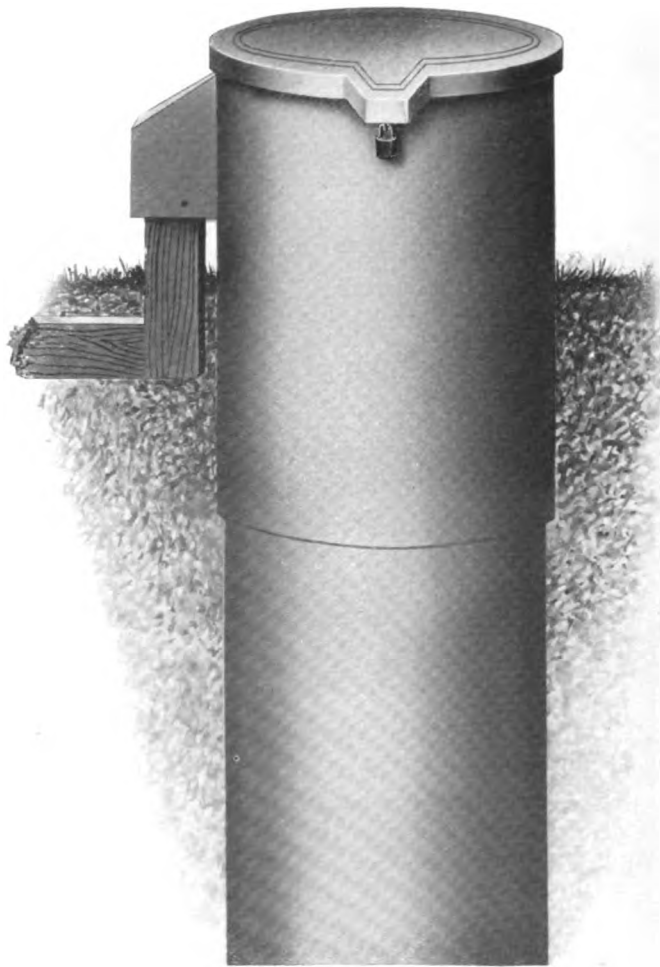
Elevators to accommodate two or three cells of battery, frost boards and covers are provided. Chain for locking furnished same as with concrete vaults.

The inside diameter is 10 inches, giving ample room for raising and lowering elevators. Weight of 7-foot chute 375 lbs.; 9-foot 400 lbs.

Number	List Price
141	Seven foot single concrete battery chute complete with elevator to hold two or three cells battery.....\$22.50
142	Nine foot single concrete battery chute complete with elevator to hold two or three cells battery..... 28.00

Battery Chutes

FIBRE—IRON



Battery Chutes

FIBRE—IRON

The body of this chute is made of "Orangeburg" Fibre and is fitted with a cap of cast iron which extends down 18 inches from the top, giving added mechanical protection to that part of the chute which remains above the ground. To this cap a cover of cast iron is fastened and a hood is cast on the side for holding the trunking.

These chutes are now being used by several of the leading railroads and we recommend them for the following reasons:

They are much warmer than iron chutes and keep the batteries at an even temperature.

They are non-conductors of electricity, therefore prevent grounds and short circuits.

No condensation of moisture takes place to cause corrosion of zinc and copper connections.

One man can handle this chute where at least four are needed to handle a cast iron chute.

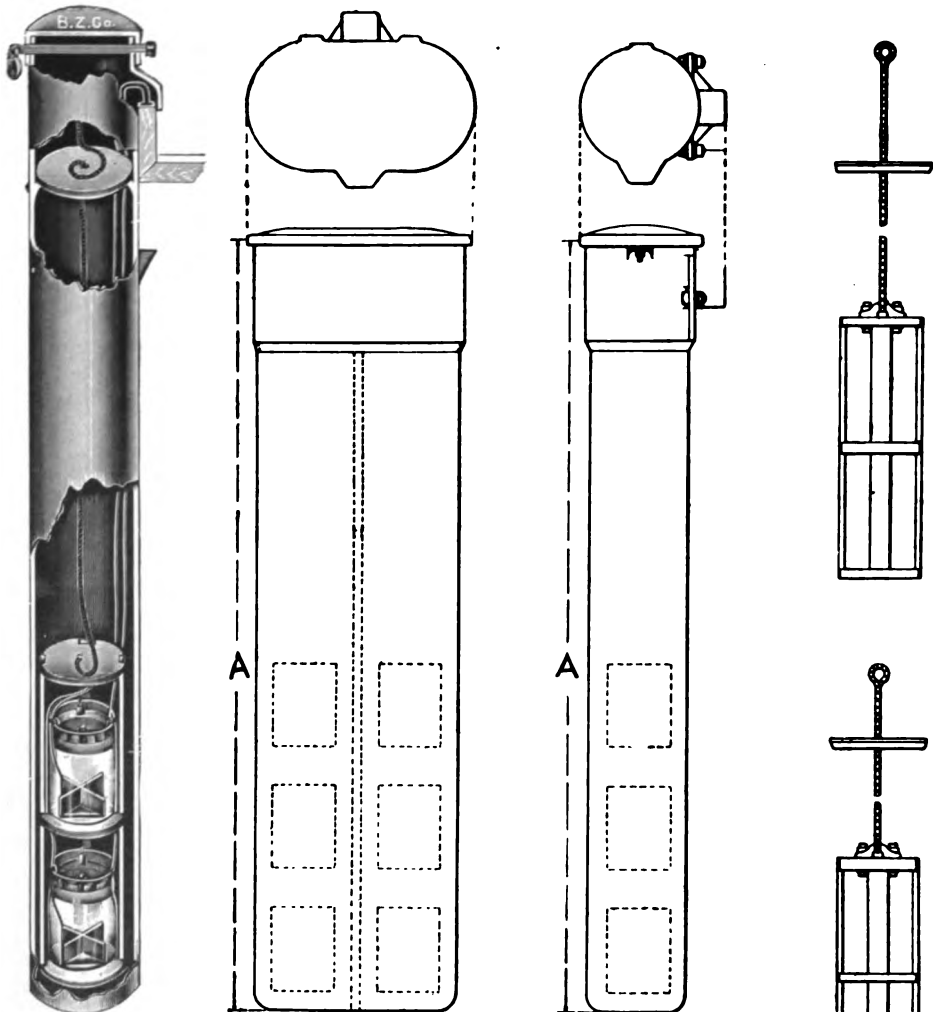
These Fibre chutes are absolutely waterproof and will not rust, therefore they last much longer than iron.

They are larger in diameter than cast iron chutes and the walls are smooth, allowing the elevators to work easier.

Number	List Price
31	Six foot single fibre battery chute complete with elevator and frost board, to hold two or three cells 6 inch x 8 inch gravity battery. . \$24.00
32	Seven foot single fibre battery chute complete with elevator and frost board, to hold two, three or four cells 6 inch x 8 inch gravity battery 27.00
33	Nine foot single fibre battery chute complete with elevator and frost board, to hold two, three or four cells 6 inch x 8 inch gravity battery 32.50

Battery Chutes

CAST IRON



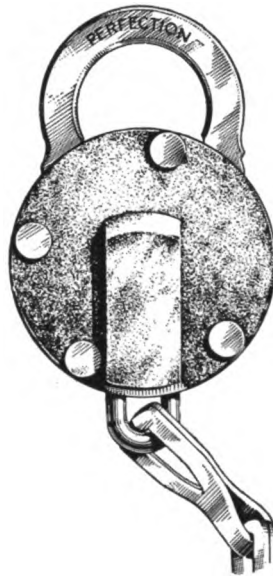
These battery chutes are furnished with improved covers, no hinges or lock rods necessary. Trunking hoods are furnished which can be removed when desired or when relay posts are to be used on the chutes. All our chutes have step or bracket on side to fasten and hold trunking.

Number	List Price	
15	Seven foot single cast iron battery chute complete with elevator and frost board, to hold two or three cells 6x8 inches gravity battery.	\$28.00
16	Nine foot single cast iron battery chute complete with elevator and frost board, to hold two or three cells 6x8 inches gravity battery.	32.00
17	Nine foot single cast iron battery chute complete with elevator and frost board, to hold four cells 6x8 inches gravity battery.	33.00
18	Seven foot double cast iron battery chute complete with elevator and frost board, to hold four or six cells 6x8 inches gravity battery.	60.00
19	Nine foot double cast iron battery chute complete with elevator and frost board, to hold six or eight cells 6x8 inches gravity battery.	70.00

Padlocks

CAST BRONZE

No 228



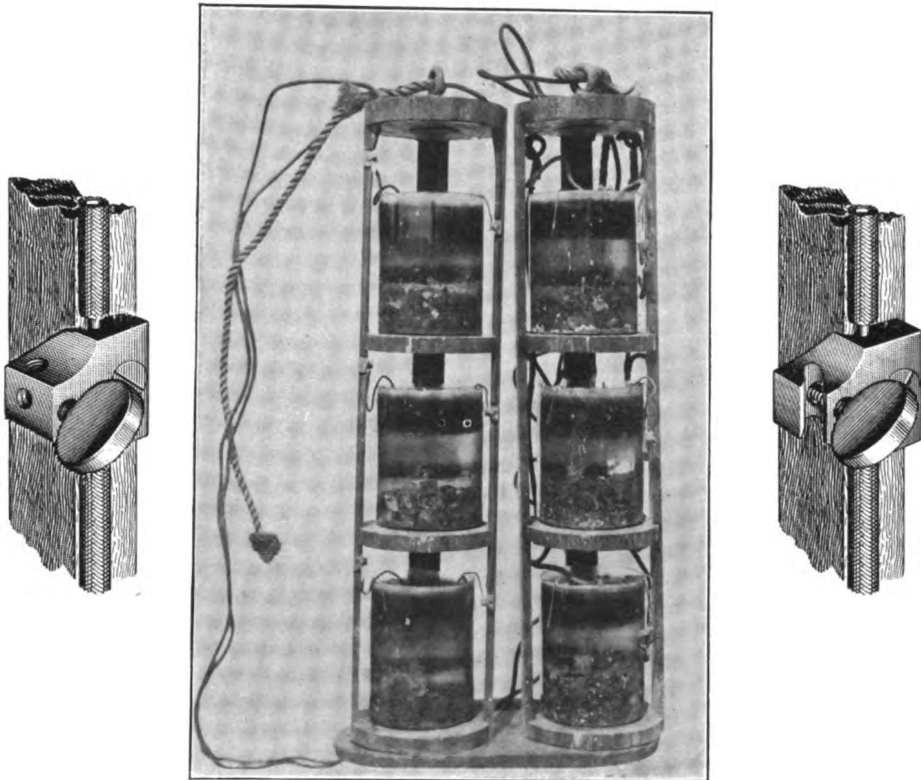
Perfection padlocks have 8 levers with two keys, locks are worked with double bitted key, turning indefinitely both ways. Cannot get out of order or get picked. Furnished with staple and 13-inch chain unless otherwise ordered.

Number	List Price
228. Perfection padlocks, complete, each	\$1.50

New Way Elevators and Connectors for Battery Chutes

Number	List Price
191	New Way elevator, completely wired, for two cells 6x8 inches gravity battery, with frost board and rope complete.....\$ 5.00
192	New Way elevator completely wired, for three cells 6x8 inches gravity battery, with frost board and rope complete..... 6.00
193	New Way elevator completely wired, for four cells 6x8 inches gravity battery, with frost board and rope complete..... 7.00
194	New Way Connectors only, per set of two complete..... .80
221	Single elevator only for two cells 6x8 inches gravity battery with rope and frost board 2.50
222	Single elevator only for three cells 6x8 inches gravity battery with rope and frost board 3.00
223	Single elevator only for four cells 6x8 inches gravity battery with rope and frost board 3.50

New Way Elevators and Connectors For Battery Chutes



In the cut the elevator at the right shows the old method of wiring with its congestion of wires and connections; at the left is shown our New Way elevator which is shipped completely wired for the batteries.

These connectors are made of heavy brass fitted with cast thumb screws and brass plates which are used under them to insure a solid connection with wire against the wood.

The New Way elevator has many advantages among which are the following:

Complete and perfect contacts which do not work loose.

Short circuits and grounds are prevented as the wires are held firmly in place and do not touch the chute.

The cost of installation and maintenance is very much less, both in labor and material.

It requires no solder or tape, only half the insulated wire and one-fifth of the time to install and maintain the batteries when New Way connectors are used.

MEMORANDA

Section 4

BATTERIES

CAUSTIC SODA

STORAGE, GRAVITY

DRY CELLS

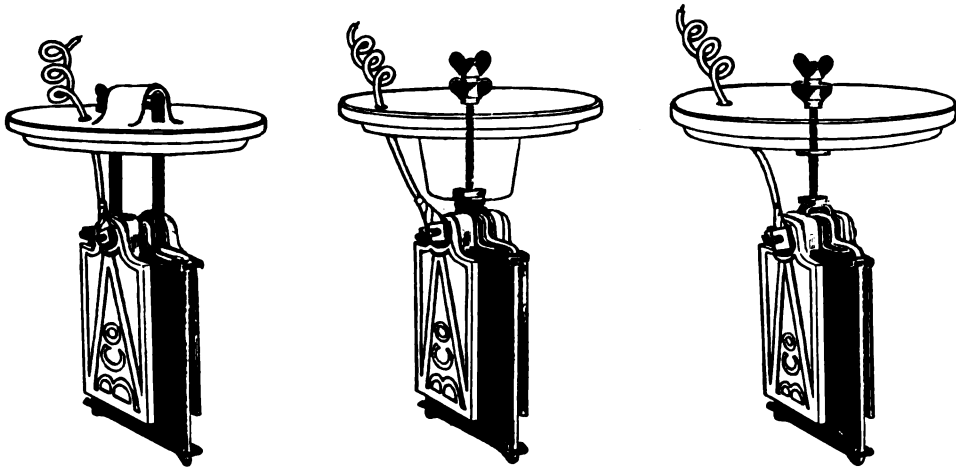
BATTERY SUPPLIES

Waterbury Primary Batteries**R. S. A. Signal Cell.**

Made in accordance with Railway Signal Association specifications. Furnished with porcelain or glass jars; size over all, $6\frac{3}{4} \times 12\frac{3}{4}$ inches; inside dimensions, $6 \times 10\frac{1}{2}$ inches.

Number	List Price
15 R. S. A. Signal Cell, complete with porcelain jar	\$4.30
25 R. S. A. Signal Cell, complete with heat resisting glass jar.....	4.55

Waterbury Universal Plate Type Renewals



Adaptable to all standard covers and jars.



Assembled element plate type. Zincs suspended in permanent relation to the oxide plate. 350 amp. hour capacity.

Waterbury Primary Batteries**PLATE TYPE****Special Heat Resisting Glass Jars with Porcelain Covers.**

Number		Size Over All	Inside Measurements	List Price
3	350 Amp. Hr.	6 $\frac{3}{4}$ x10 $\frac{3}{4}$	6 x 8	\$3.95
4	400 Amp. Hr.	7 $\frac{3}{4}$ x10 $\frac{3}{4}$	6 $\frac{1}{2}$ x 8 $\frac{1}{2}$	4.55
5	400 Amp. Hr.	6 $\frac{3}{4}$ x12 $\frac{3}{4}$	6 x10 $\frac{1}{2}$	4.55

LIST PRICE OF RENEWALS.

Number					
3	Copper Oxide..\$1.12	Zinc..\$0.52	Soda..\$0.28	Oil..\$0.08.....	\$2.00
4	Copper Oxide.. 1.28	Zinc.. .52	Soda.. .32	Oil.. .08.....	2.20
5	Copper Oxide.. 1.28	Zinc.. .52	Soda.. .32	Oil.. .08.....	2.20

Waterbury Primary Batteries

CYLINDER TYPE.



PORCELAIN JARS AND COVERS.

Number		Size over all	Inside Measurements	List Price
1	125 amp. hr.	4½ x 7¾	4 x 7	\$2.10
2	225 amp. hr.	5¾ x 8¾	5¼ x 7¼	3.10
3	350 amp. hr.	6¾ x 10¾	6 x 8	3.70
4	450 amp. hr.	7¾ x 10¾	6½ x 8½	4.30
5	450 amp. hr.	6¾ x 12¾	6 x 10½	4.30

LIST PRICE OF RENEWALS.

Number					List Price
1	Copper oxide	.54	Zinc .26	Soda .14	Oil .06.....\$1.00
2	Copper oxide	.84	Zinc .39	Soda .21	Oil .06..... 1.50
3	Copper oxide	1.12	Zinc .52	Soda .28	Oil .08..... 2.00
4	Copper oxide	1.28	Zinc .52	Soda .32	Oil .08..... 2.20
5	Copper oxide	1.28	Zinc .52	Soda .32	Oil .08..... 2.20

Waterbury Primary Batteries**GLASS JARS, TIN COVERS.**

Number		Size over all	Inside Measurements	List Price
1	125 ampere hour	4½x6¾	4¼x6.....	\$2.00
2	225 ampere hour	5½x 9¼	5 x7.....	2.75
3	350 ampere hour	6¾x10½	6 x8.....	3.50

LIST PRICES OF RENEWALS.

Number						List Price
1	Copper oxide	.54	Zinc .26	Soda .14	Oil .06.....	\$1.00
2	Copper oxide	.84	Zinc .39	Soda .21	Oil .06.....	1.50
3	Copper oxide	1.12	Zinc .52	Soda .28	Oil .08.....	2.00

Waterbury Primary Batteries



SOLUTION-TIGHT STEEL ENAMELED JARS AND PORCELAIN COVERS.

Number		Size over all	Inside Measurements	List Price
1	125 ampere hour	4½x 6¾	4¼x6	\$2.50
2	225 ampere hour	5¾x 8	5 x7	3.15
3	350 ampere hour	7¼x10	6 x8	4.40

LIST PRICES OF RENEWALS.

Number						List Price	
1	Copper oxide	.54	Zinc	.26	Soda	.14	Oil .06.....\$1.00
2	Copper oxide	.84	Zinc	.39	Soda	.21	Oil .06..... 1.50
3	Copper oxide	1.12	Zinc	.52	Soda	.28	Oil .08..... 2.00

Renewals and Permanent Parts For Waterbury Primary Batteries



Bottle of Mineral Oil.



Composite Mercury Zinc.



Cylinder Oxide of Copper.



Can of Caustic Soda.

PRICES OF PERMANENT PARTS.

Number		List Price
3	Porcelain Jars	\$1.00
4	Porcelain Jars	1.10
5	Porcelain Jars	1.50
3	Porcelain Cover .....	.48
4	Porcelain Cover .....	.54
5	Porcelain Cover .....	.48
5	R. S. A. Standard Porcelain Cover .....	.48
5	R. S. A. Standard Hexagon Nuts and Washers, complete.....	.30
5	Double Wing Nuts for Standard Waterbury Batteries.....	.35

Porcelain and Tin Covers for Waterbury Primary Batteries



Porcelain Cover with Integral Lug extending below Solution Line to prevent internal Short Circuiting at Solution Level.



Solution Tight Cover with Rubber Gasket for Steel Enamel Jars.



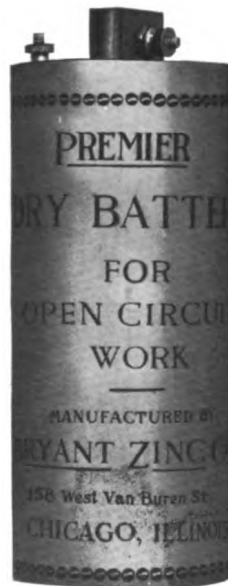
Tin Cover with Thread Interlocked Porcelain Bushings. Designed for Glass Jars.



Standard Porcelain Cover for R. S. A. Signal Cell.

BRYANT ZINC COMPANY

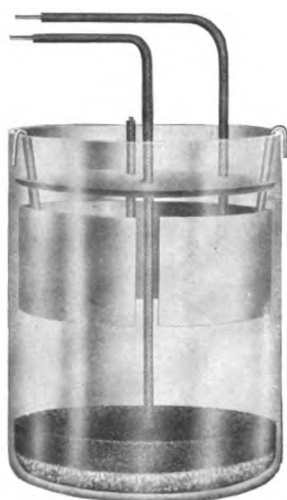
Dry Batteries



Number	List Price
6 Premier Dry Battery, 2½x6 inches	\$0.35
7 Premier Dry Battery, 3 x7 inches .....	.75
8 Premier Dry Battery, 3½x8 inches	1.00

Potash Track Batteries

(CLOSED CIRCUIT.)



This cell is designed for track circuit work. The elements consist of a circular amalgamated zinc, oxide of copper, caustic soda for the solution and a small bottle of oil used on top of the solution to prevent evaporation. A 6x8-inch glass jar is supplied with cells complete.

Number	List Price
1 Columbia Track Battery complete with 6x8-inch special heat resisting glass jar—350 ampere hours.....	\$2.80
1 Renewals, complete	1.48
1 Copper Oxide .....	.66
1 Zinc, with wire attached .....	.50
1 Soda and Oil .....	.32
1 Tin Disc .....	.12

Renewals For All Types of Caustic Soda Batteries



Caustic Soda.



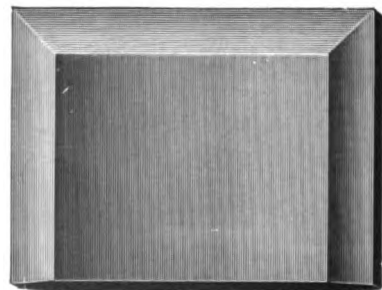
Mineral Oil.



**Zincs for
Lalande Batteries.**



Zincs for Gordon Batteries.



**Copper Oxide Plate for Lalande
Batteries.**

Renewals For All Types of Caustic Soda Batteries

	List Price
Lalande type RR copper oxide	\$0.75
Two zinc plates .....	.70
Caustic soda .....	.36
Oil .....	.12
Complete	1.93
Lalande type S and SS copper oxide.....	.84
Two zinc plates .....	.70
Caustic soda .....	.36
Oil .....	.12
Complete	2.02
Gordon type 1, 3 and 5 copper oxide.....	1.40
Cylinder zinc .....	.45
Caustic Soda .....	.36
Oil .....	.12
Complete	2.33
Gordon type A and AA copper oxide.....	1.45
Cylinder zinc .....	.50
Caustic soda .....	.36
Oil .....	.12
Complete	2.43
Gordon type 2, 4 and 6 copper oxide.....	.80
Cylinder zinc .....	.43
Caustic soda .....	.24
Oil .....	.08
Complete	1.46

Gould Storage Batteries

Undoubtedly the great success of the Gould Storage Battery is due very largely to the superior form and construction of the Gould Plate, which is simplicity itself and must appeal to battery users in general. This plate is of the well known Plante type. "Increased surface" being obtained by "spinning," which process does not remove any lead from the original blank or sheet. No grid of alloy is used, the entire plate being pure rolled lead. This construction makes it possible to operate at full rated capacity, practically until the lead is all consumed. This results in a large surface per ampere discharge, maximum retention of active material, mechanical strength and consequent long life. The Gould Plate is the only one enjoying this distinction.

The types shown here are especially designed for Railway Signal, Fire Alarm and Telegraph work. For larger sizes send for special catalogues.

ACCESSORIES.

Bolt Connectors, each	\$0.20
Hydrometer Syringe, each	3.00
Hydrometers, each	1.25
Electrolyte, per 100 lbs	3.00
Carboys, each net	2.00

Net packing charges extra.

Types W and GW, each.....	\$0.02
Type X, each .....	.04
Types Y, Z and WS, each .....	.10
Types XS, each .....	.20

Minimum packing charge, 25 cents.

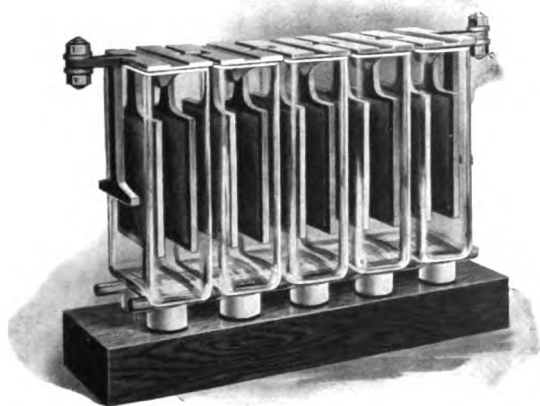
When ordering, note the following:

Price F. O. B. works, Depew, N. Y.
Packing charges extra.

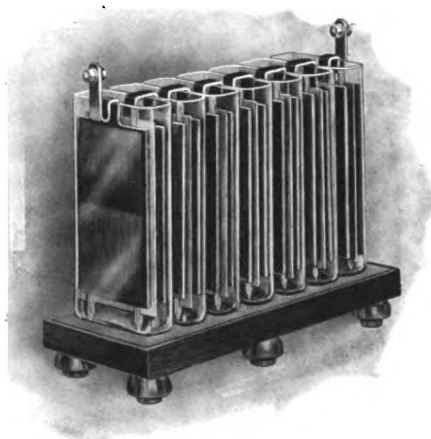
Electrolyte is shipped in carboys for which a charge of \$2.00 each net is made. Credit will be allowed for in full less cartage and transportation charges when returned in good order to original shipping point. Carboys shipped from Pacific Coast, \$2.50 each, net.

All prices subject to change without notice.

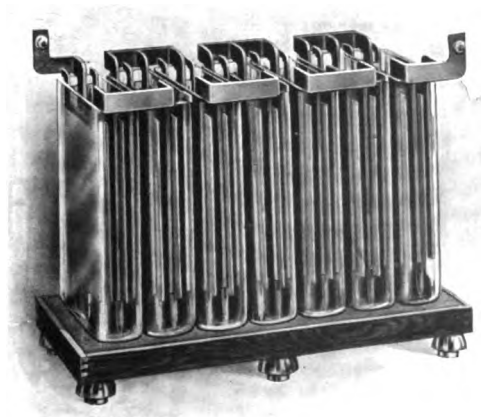
Gould Storage Batteries



Type GW.



Type Y.



Type XS.

Gould Storage Batteries



Glass Cover.



Separator Retainer.



Bolt Connector



Wood Separator.



Cover Support.



Negative Group.



Positive Group.



Glass Jar.

Oak Stand Tray With Sand Glass Insulators.

Gould Storage Batteries

Type	W	GW	X	Y	Z	WS	XS	
Number of Plates . . .	2	2	2	2	2	3	3	
Size of Plates	3x4	3x4	5x5	5x8½	7¼ x 7¼	6x7	8x9	
Discharge in Amperes	For 8 hours	¾	¾	1½	3	4½	4½	7½
	For 5 hours	1	1	2	4¼	6¼	6¼	10½
	For 3 hours	1½	1½	3	6	9	9	15
Outside Dimensions of Glass Jars, Inches	Width . . .	3¼	3¼	6½	6½	8½	7½	9½
	Length . . .	1¾	2½	2½	2½	2½	3	3
	Height . . .	6½	7	8	12	11½	10½	13½
Weight of	Acid only, lbs.	1	1½	2	3¼	5½	5	10½
	Cell com- plete, lbs.	4	4¾	10	15	20	19	31
Price of	Couplet	\$.85	\$.85	\$1.65	\$2.45	\$3.20	\$3.55	\$4.85
	Positive Terminal Plate . . . . .	.50	.55	.95	1.40	1.80	1.75	2.35
	Negative Terminal Plate . . . . .	.45	.50	.80	1.20	1.60	2.25	3.00
	Wood Separator . . .	.03		.03	.03	.04	.04	.05
	Glass Jar . . . . .	.25	.25	.40	.75	.95	.70	.95

Couplet includes one positive and one negative plate and connecting strap only.

UNIVERSITY OF ILLINOIS

ENGINEERING LIBRARY

Battery Zincs

Crowfoot zincs with brass binding post and screw connections.

	List Price
No. 1. Plain, for 6x8-inch jar, weight 3 lbs....	\$.50
No. 2. Plain, for 6x8-inch jar, weight 2¾ lbs....	.46
No. 3. Plain, for 6x8-inch jar, weight 3½ lbs....	.58



Crowfoot zinc with brass binding post and screw connection.

	List Price
No. 4. Plain, for 5x7-inch jar, weight 1¾ lbs....	\$.32

Crowfoot zinc with brass thumb screw connection.
No post.

No. 404. Plain, for 5x7-inch jar, weight 1¾ lbs...	\$.32
--	-------



Crowfoot zinc with brass thumb screw connection.
No post.

	List Price
No. 101. Plain, for 6x8-inch jar, weight 3 lbs....	\$.50
No. 202. Plain, for 6x8-inch jar, weight 2¾ lbs....	.46
No. 203. Plain, for 6x8-inch jar, weight 3½ lbs....	.58

Note.—In case amalgamated zincs are desired add 25 per cent to above prices.

Battery Zincs



Round zinc with copper wire hangers and brass binding posts with screw connection.

List Price

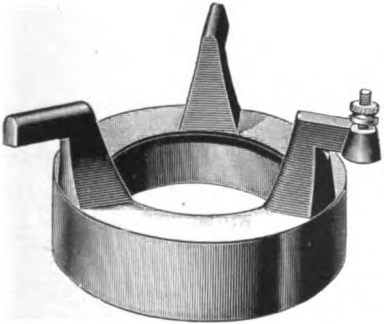
- No. 6. Amalgam for 6x8-inch jar, weight 4 lbs..\$0.80
- No. 7. Amalgam for 6x8-inch jar, weight 3 lbs.. .68
- No. 6. Plain, for 6x8-inch jar, weight 4 lbs..... .68
- No. 7. Plain, for 6x8-inch jar, weight 3 lbs..... .58



Round zinc with copper wire hangers and double brass connector.

List Price

- No. 5. Amalgam, for 6x8-inch jar, weight 4 lbs..\$0.80
- No. 8. Amalgam, for 6x8-inch jar, weight 3 lbs.. .66
- No. 5. Plain, for 6x8-inch jar, weight 4 lbs..... .68
- No. 8. Plain, for 6x8-inch jar, weight 3 lbs..... .58



Round zinc (Gamewell Pattern), with brass dowel and thumb nut connection.

List Price

- No. 66. Amalgam, for 6x8-inch jar, weight 4 lbs..\$0.82
- No. 77. Amalgam, for 6x8-inch jar, weight 3 lbs.. .68
- No. 66. Plain, for 6x8-inch jar, weight 4 lbs..... .68
- No. 77. Plain, for 6x8-inch jar, weight 3 lbs..... .58



List Price

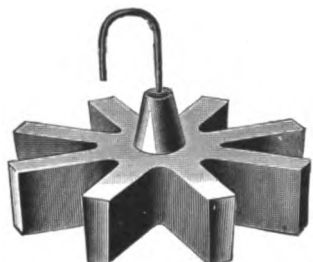
- No. 606. Amalgam, for 6x8-inch jar, weight 4 lbs.. .82
- No. 707. Amalgam, for 6x8-inch jar, weight 3 lbs.. .68
- No. 606. Plain, for 6x8-inch jar, weight 4 lbs.... .68
- No. 607. Plain, for 6x8-inch jar, weight 3 lbs.... .58

Battery Zincs

Wheel zinc with copper wire connection.

List Price

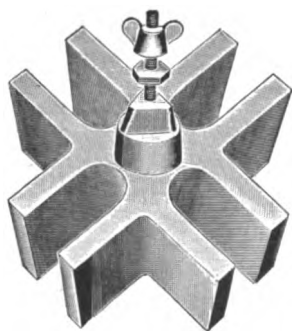
No. 9. Plain, for 5x7-inch jar, weight 1 lb., 13 oz. **\$0.50**



Star zinc with copper wire connection.

List Price

No. 10. Plain, for 6x8-inch jar, weight 3¼ lbs. **.66**

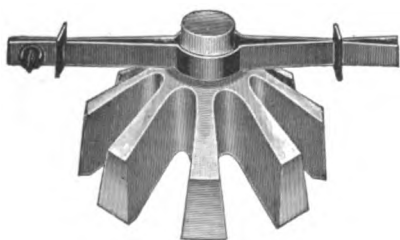


Lockwood zinc with zinc winged nut connection.

List Price

No. 65. Plain, for 6x8-inch jar, weight 2¼ lbs. . . **.60**

No. 67. Plain, for 5x8-inch jar, weight 1 lb., 14 oz. **.56**



D'Infreville gravity zinc, weight 2 lbs., 2 oz.

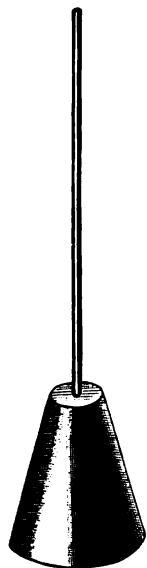
For use in 6x8-inch jar.

List Price

No. 10472. Amalgam zinc only **\$0.50**

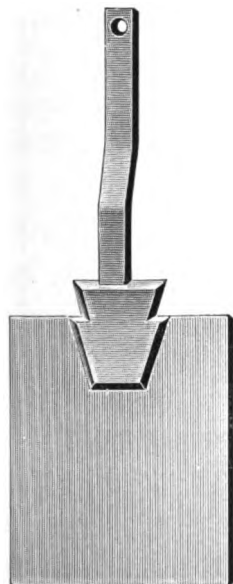
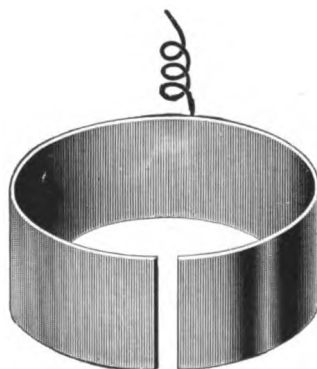
No. 23944. Hanger only **.08**

Battery Zincs



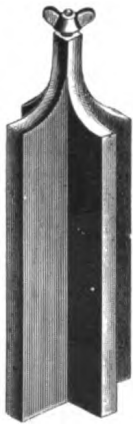
Number	List Price
11 Fuller, plain, zinc weight 1 lb. 3½ oz.....	\$0.40
11 Fuller, amalgam, zinc weight 1 lb. 3½ oz.....	.50

Number	List Price
24 For Nos. 2 and 4 Gordon cells, amalgamated	\$0.34
135 For Nos. 1, 3 and 5 Gordon and No. 68 Columbia cells, amalgamated..	.48



	List Price
Zincs for type BB cell.....	\$0.37
Zincs for type Q cell (two).....	.37
Zincs for type RR cell (two).....	.66
Zincs for type SS cell (two).....	.66
Zincs for type S cell (two).....	.66
Zincs for type W cell (two).....	1.09
Zincs for type Z cell.....	.37
Zincs for type V cell.....	.46
Zincs for type AA cell.....	.73

Battery Zincs



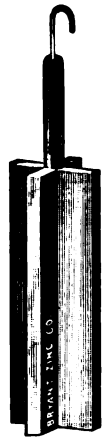
No. 12A.



No. 12B.



No. 12C.



No. 12D.

Number		List Price
12 A	Daniell zinc, plain, weight 2 lbs., winged nut connection . . .	\$0.50
12 B	Daniell zinc, plain, weight 2 lbs., winged nut connection . . .	.50
12 C	Daniell zinc, plain, weight 2 lbs., wire connection . . . . .	.50
12 D	Daniell zinc, plain, weight 2 lbs., wire connection . . . . .	.50

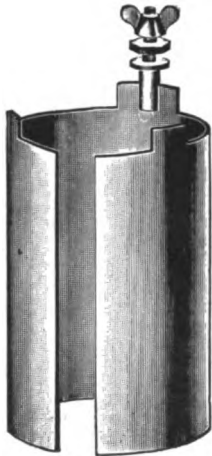
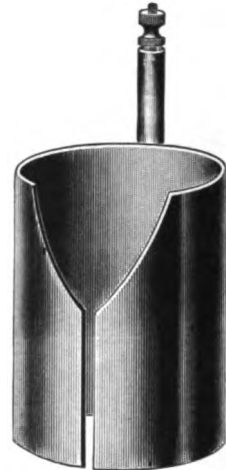
Sheet Zinc

Cut to Order

Table showing zinc gauge as compared with other gauges.

Bryant Zinc Co.			American or Brown & Sharpe	
Number	Square foot in lbs.	Thickness in inches	Number	Thickness in inches
3	.22	.006	34	.0063
4	.30	.008	33	.0070
5	.37	.010	32	.0079
6	.45	.012	31	.0089
7	.52	.014	30	.0100
8	.60	.016	29	.0112
9	.67	.018	28	.0126
10	.75	.020	27	.0141
11	.90	.024	26	.0159
12	1.05	.028	25	.0179
13	1.20	.032	24	.0201
14	1.35	.036	23	.0225
15	1.50	.040	22	.0253
16	1.68	.045	21	.0284
17	1.87	.050	20	.0319
18	2.06	.055	19	.0358
19	2.25	.060	18	.0403
20	2.62	.070	17	.0453
21	3.00	.080	16	.0508
22	3.37	.090	15	.0570
23	3.75	.100	14	.0640
24	4.70	.125	13	.0719
			12	.0808
			11	.0907
			10	.1018
			9	.1144
			8	.1284
			7	.1442
			6	.1620
			5	.1819
			3	.2294
25	9.40	.250	2	.2576
			1	.2893
26	14.00	.375	0	.3249
27	18.75	.500	000	.4096
28	37.50	1.000		

Zinc gauge can be maintained only approximately.

Battery Zincs**No. 2.****No. 21.****No. 22****No. 23.**

Number		List Price
2	Sampson zinc, plain, zinc knurled nut and washer connection.....	\$0.40
21	Cylinder zinc, plain, brass knurled nut connection.....	.25
22	Cylinder zinc, plain, brass knurled nut connection.....	.25
23	Cylinder zinc, plain, copper thumb screw connection.....	.25

Battery Zincs



No. 13A.



No. 13B.



No. 13G.



No. 13L.



No. 14A



No. 14B.



No. 15A.



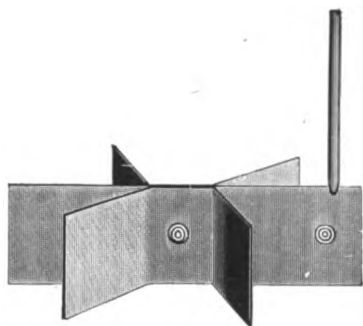
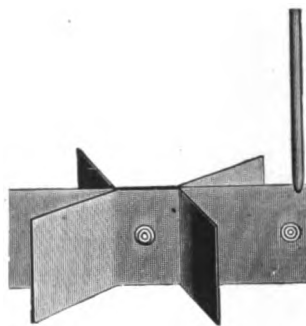
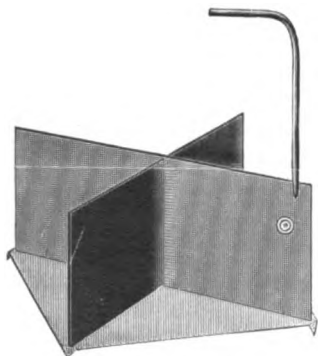
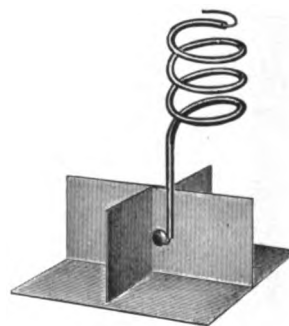
No. 15B.



No. 15C.

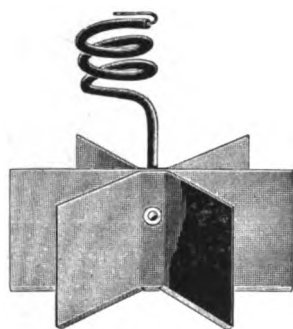
Number		List Price Per 1000
13 A	Round rolled zinc	\$40.00
13 B	Round rolled zinc	40.00
13 G	Round rolled zinc	40.00
13 L	Round rolled zinc	40.00
14 A	Round rolled zinc	42.00
14 B	Round rolled zinc	42.00
15 A	Square rolled zinc, milled 2 inches from top.....	40.00
15 B	Square rolled zinc, milled 2 inches from top.....	40.00
15 C	Square rolled zinc, milled 2½ inches from top.....	40.00

Note.—Amalgamated zincs add \$2.00 net to above prices.

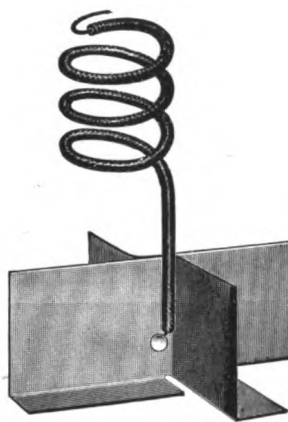
Battery Coppers**No. 16.****No. 16½.****No. 17.****No. 17½.**

Number		List Price
16	Three-leaf copper, size 2x6 inches, for 6x8-inch jar, connection 13 inches of No. 14 rubber covered wire.....	\$0.12
16½	Three-leaf copper, size 2x5 inches, for 5x7-inch jar, connection 13 inches of No. 14 rubber covered wire.....	.10
17	Pan Bottom copper, size 4¼x12½ inches, for 6x8-inch jar, connection 14 inches of No. 14 rubber covered braided wire....	.20
17½	Pan Bottom copper, size 4⅛x2¼ inches, for 6x8-inch jar, connection 14 inches of No. 14 rubber covered wire.....	.18

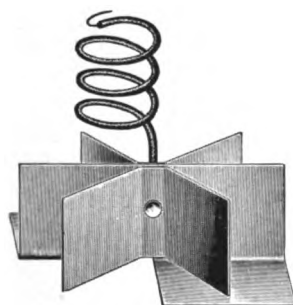
Battery Coppers



No. 18.



No. 19.



No. 20



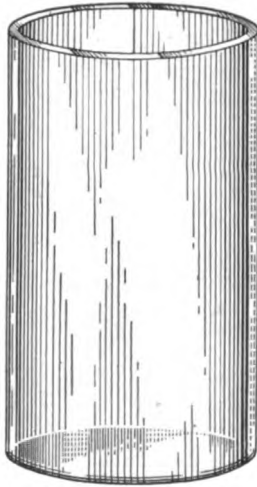
No. 1 Copper Element.

Number	List Price
18	Three-leaf copper, size 2½x6x¼ inches turnover, for 6x8-inch jar, connection 14 inches of No. 14 rubber covered braided wire \$0.20
19	Two-piece copper, size 5½x2¼x½ inches turnover, for 6x8-inch jar, connection 14 inches of No. 14 rubber covered braided wire20
20	Three-leaf copper, size 2x6x2 inches turnover, for 6x8-inch jar, connection 14 inches of No. 14 rubber covered braided wire. .24

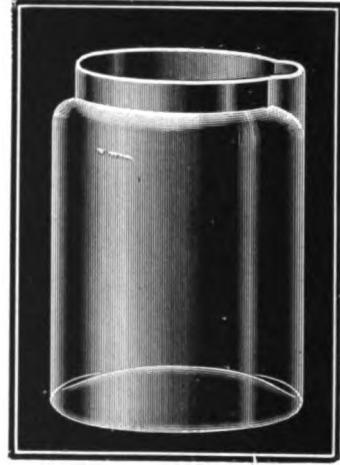
COPPER ELEMENT FOR GRAVITY BATTERIES.

This plate is used in place of the leaf copper in gravity batteries. It is very durable, efficient and practically indestructible. Placed directly on top of the Blue Vitriol it is easily removed and cleaned. Weight 4½ ounces. It is being used by a number of the largest consumers in the country.

Number	List Price
1	Copper element for Gravity Battery, rubber covered braided wire. .24

Glass Battery Jars

Heat Resisting Glass Jar Nos. 3, 4 and 5.



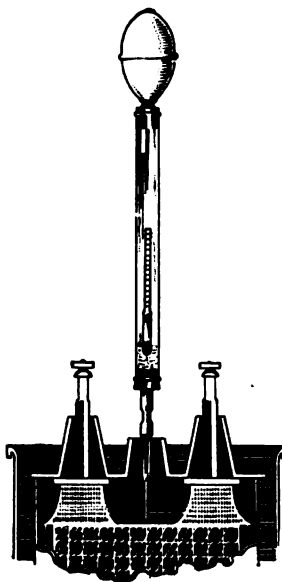
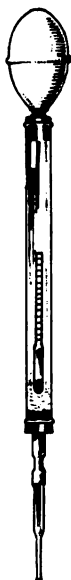
Le Clanche Jar.

FOR GRAVITY, CAUSTIC POTASH AND SAL AMMONIAC BATTERIES.

This jar cannot be cracked by the hot caustic solution because the glass is especially adapted to resist sudden changes of temperature. It is mechanically three times as strong as ordinary glass. Perfectly annealed under precise regulation of temperature to insure the elimination of any possible strain. Its use on Potash Batteries makes it possible to inspect the elements without disturbing them.

Number	List Price Per Dozen
31 Battery Jar, glass, size inside 5x7 inches, packed 24 to a box....	\$2.20
33 Battery Jar, glass, size inside 6x8 inches, packed 24 to a box....	2.90
34 Battery Jar, flint glass, size inside 6x8 inches, packed 24 to a box.	2.90
32 Battery Jar, lead annealed glass, size inside 6x8 inches, packed 24 to a box	7.00
40 Battery Jar, La Clanche, round with pour out, 50 to a box.....	1.40
41 Battery Jar, La Clanche, square with pour out, 50 to a box.....	1.40
3 Battery Jar, heat resisting, round, size inside 6 x 8 inches..	14.50
4 Battery Jar, heat resisting, round, size inside 6¾x 8¾ inches..	17.20
5 Battery Jar, heat resisting, round, size inside 6 x10½ inches..	19.80

Hydrometers



Number		List Price
1988	Syringe Hydrometer 1150 to 1300 spec. grav.....	Each \$8.00
1989	Small size Hydrometer 1150 to 1300 spec. grav.....	Each 5.50
1989½	Large size Hydrometer 1150 to 1300 spec. grav.....	Each 8.00

NO. 132. FOR STORAGE BATTERIES.

Half Size.



Dimensions, 8 inches long by ½-inch wide.

Number		List Price
132	Hydrometer for Storage Batteries 1150 to 1300 spec. grav., 8 inches long	Each \$1.65

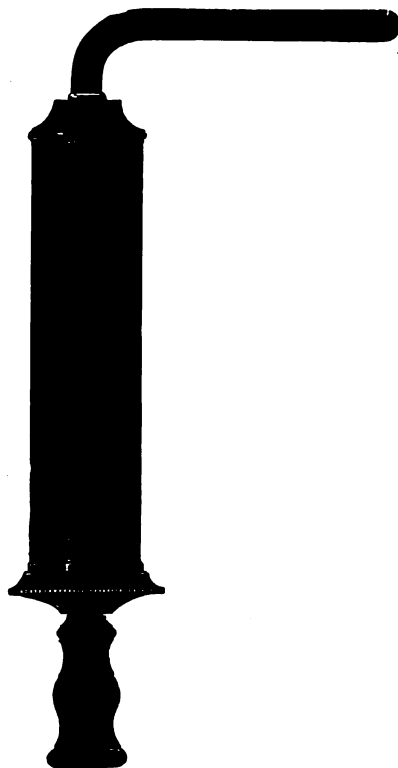
NO. 519½. FOR GRAVITY BATTERIES.

Half Size.



Dimensions, 5 inches long by ⅝-inch wide.

Number		List Price
519½	Hydrometer for Gravity Batteries, 10 to 40 spec. grav., 5 inches long	Each \$0.80

Battery Supplies

Number	List Price
6 Hard Rubber Syringe	\$4.00

**STRAIGHT BATTERY BRISTLE BRUSHES.
FOR CLEANING ZINCS.**



Number	List Price
4 Battery Brushes with 4 rows of bristles.....	.50

**No. 1 BATTERY KNIFE.
FOR CLEANING BATTERIES.**



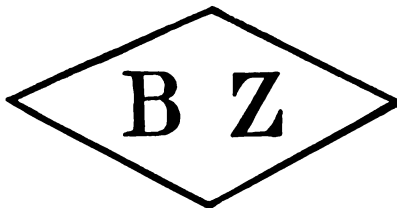
Number	List Price
1 Battery Knife	2.00

Sal Ammoniac



No. 1 White Granulated Imported Battery Brand, testing, over 99 per cent pure. In kegs of 112 lbs. and casks of 400 to 600 lbs.

Blue Vitriol



Our special brand known as Diamond B. Z. Blue Vitriol is made especially for railroad trade and is of the highest quality large mesh, carefully washed and dried and put up in barrels of 450 pounds net.

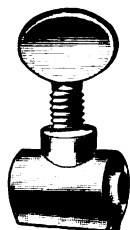
MEMORANDA

Section 5

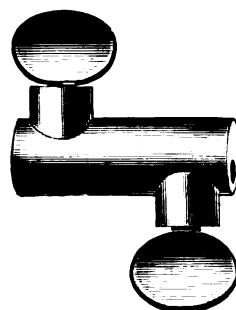
**CONNECTORS
BINDING POSTS
TERMINALS
AND
WIRE SLEEVES**

Connectors and Terminals

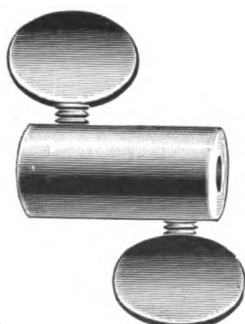
CUTS FULL SIZE.



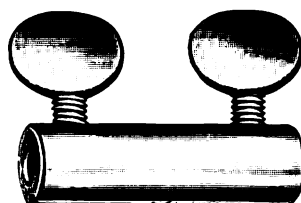
No. 1. Single Connector with heavy brass cast screw, each ^{List Price} .10



No. 4. Double Connector, with two heavy brass cast screws, each ^{List Price} .13½



No. 2. Double Connector, with two heavy brass cast screws, each13½



No. 5. Double Connector, with two heavy brass cast screws, each18

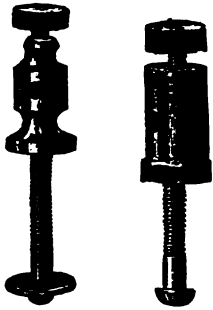


No. 3. Double Connector, with two heavy knurled thumb screws, each... .11½



No. 19800. Insulated Brass Connector, with two screws, made of brass and fibre, each35

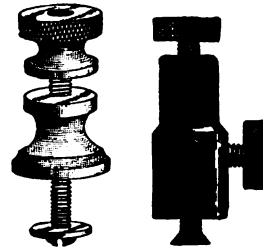
Binding Posts



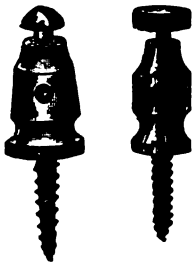
No. 13140—No. 13142.

Number		List Price Each
13140.	Brass	\$0.18
13141.	Brass and Nickel Plated.....	.20
13142.	Brass .....	.16
13143.	Brass and Nickel Plated.....	.30

Number		List Price Each
13144.	Brass .....	.30
13145.	Brass and Nickel Plated.....	.35
13146.	Brass .....	.25
13147.	Brass and Nickel Plated.....	.28



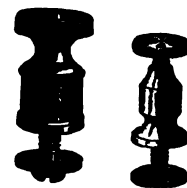
No. 13144—No. 13146.



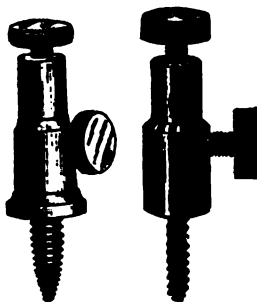
No. 13148—No. 13150.

Number		List Price Each
13148.	Brass .....	.20
13149.	Brass and Nickel Plated.....	.25
13150.	Brass .....	.20
13151.	Brass and Nickel Plated.....	.30

Number		List Price Each
13152.	Brass .....	.20
13153.	Brass and Nickel Plated.....	.25
13154.	Brass .....	.20
13155.	Brass and Nickel Plated.....	.25

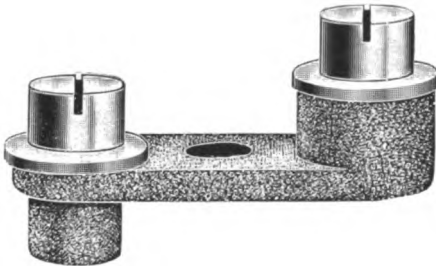


No. 13152—No. 13154



No. 13156—No. 13158.

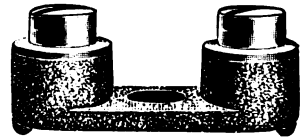
Number		List Price Each
13156.	Brass .....	.40
13157.	Brass and Nickel Plated.....	.45
13158.	Brass .....	.30
13159.	Brass and Nickel Plated.....	.35

Brass Terminals**Cuts Full Size.**

No. 17173

List Price

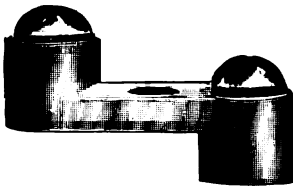
Heavy cast Brass Terminal, with two heavy screws and washers...\$0.36



No. 15860

List Price

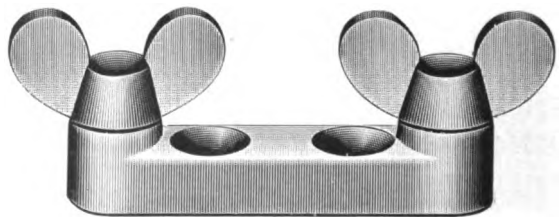
Heavy cast Brass Terminal, with two heavy screws and washers... .20



No. 18643

List Price

Heavy cast Brass Terminal with two screws. .20



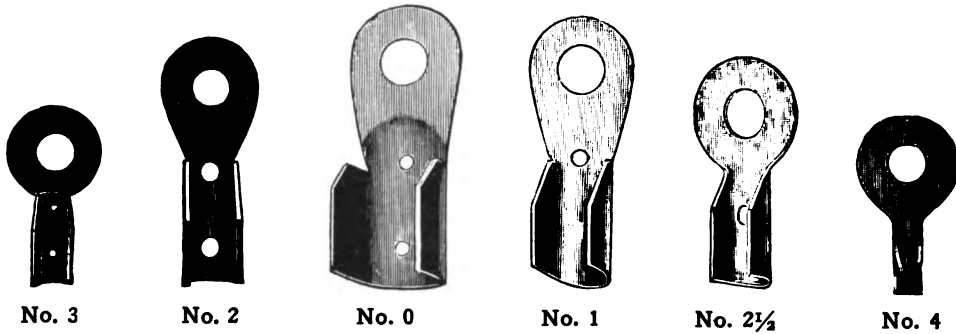
No. 20500

List Price

Heavy cast Brass Terminal, with two heavy cast wing nuts..... .36

Copper Terminals

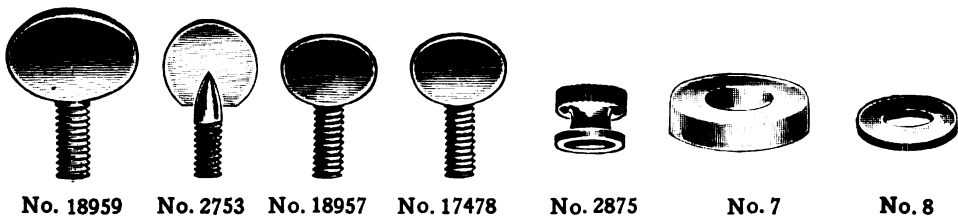
Cuts Full Size.



These terminals are made of heavy, pure Lake copper, 98 per cent conductively.

	Length	Hole	Outside Diam. of Cable	List Price per 1000
No. 0.	1½ inches	¼ inch	½ inches	\$24.00
No. 1.	1⅞ inches	¼ inch	5/16 inches	19.00
No. 2.	1⅝ inches	3/16 inch	¼ inches	15.00
No. 2½.	1⅞ inches	7/32 inch	7/32 inches	12.80
No. 3.	1 inches	3/16 inch	3/16 inches	9.00
No. 4.	1⅝ inches	3/16 inch	⅛ inches	9.00

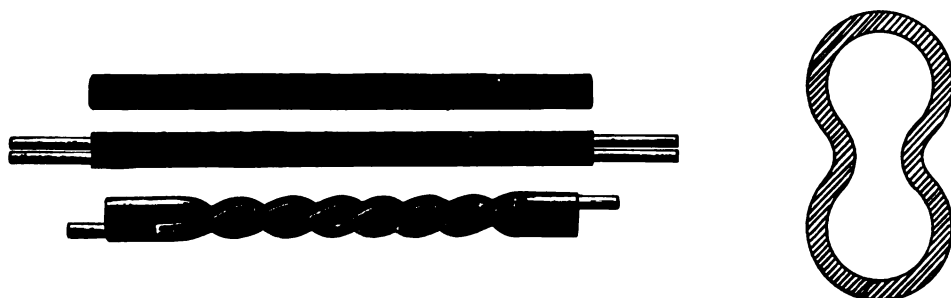
Brass and Copper Thumb Screws and Rubber Gaskets



		List Price per 1000
No. 18959.	Cast Brass Thumb Screw, 10-32 thread	\$12.00
No. 18957.	Cast Brass Thumb Screw, 8-32 thread	9.00
No. 17478.	Cast Brass Thumb Screw, 10-24 thread	9.00
No. 2753.	Pressed Copper Thumb Screw, 8-32 thread	4.00
No. 2875.	Brass Knurled Thumb Nut, 8-32 thread	9.00
No. 7.	Soft rubber gasket diam., 3-4 inch, hole 5-16 inch	8.00
No. 8.	Soft rubber gasket diam., 5-8 inch, hole 1-4 inch	11.00

Premier Seamless Wire Sleeves

(ONE PIECE.)



These copper wire sleeves are made of drawn seamless tubing, having no soldered joints to open up when being twisted. The wires being placed in a single tube, are in direct contact with each other and do not depend on the sleeves for their conductivity, making practically a solid joint.

Furnished in any desired length and for all sizes of wire. $4\frac{3}{4}$ inch lengths will be furnished, also B&S guage unless otherwise specified.

Number	List Price per 1000
1201. No. 6 B&S, $5\frac{1}{2}$ inches long.....	\$84.00
1202. No. 7 B&S, $5\frac{1}{4}$ inches long.....	68.00
1203. No. 8 B&S, 5 inches long.....	56.00
1204. No. 9 B&S, $4\frac{3}{4}$ inches long.....	40.00
1211. No. 10 B&S, $4\frac{3}{4}$ inches long.....	34.00
1212. No. 12 B&S, $4\frac{1}{2}$ inches long.....	30.00
1213. No. 14 B&S, $4\frac{1}{4}$ inches long.....	28.00

Section 6

RAIL BONDING SUPPLIES

WOOD TRUNKING

PACKING BOXES

OIL INLETS

NUT LOCKS

FIBRE INSULATION

Channel Pins



FOR STEAM ROAD BONDING

Coppered, Tinned or Galvanized

Number	List Price
1500 Channel Pins, 9-32 in., for No. 8 BWG wire, per 1000.	\$12.00

FOR ELECTRIC ROAD BONDING

Number	Gauge	Diameter of Pin	Hole in Rail	List Price per 1000
1601 Channel Pins for No. - 6 B & S wire....		5-16 in.	9-32 in.	\$16.00
1602 Channel Pins for No. - 4 B & S wire....		3/8 in.	11-32 in.	16.00
1603 Channel Pins for No. - 2 B & S wire....		15-32 in.	7-16 in.	16.00
1604 Channel Pins for No. 0 B & S wire....		19-32 in.	9-16 in.	20.00
1605 Channel Pins for No. 2-0 B & S wire!....		19-32 in.	9-16 in.	20.00
1606 Channel Pins for No. 2-0 B & S wire....		21-32 in.	5/8 in.	25.00
1607 Channel Pins for No. 2-0 B & S wire....		3/4 in.	23-32 in.	25.00
1608 Channel Pins for No. 4-0 B & S wire....		25-32 in.	3/4 in.	25.00

**STANDARD CHANNEL
PIN GAUGE.**



CHANNEL PIN PUNCHES AND SETS



Number	List Price each
1728 Channel Pin Gauge	\$5.00
1808 Channel Pin Punch	1.10
1809 Channel Pin Set	1.10



Bond Wires

GALVANIZED IRON AND COPPER CLAD

Cut any length from No. 8 BWG EBB galvanized iron wire and copper clad material, put up in bundles of 200 each.



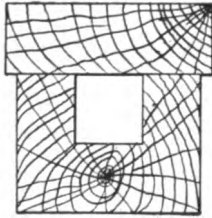
Bonding Drills

TWIST DRILLS

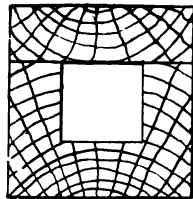
These drills are made especially for track drilling and to fit any machine. Carbon and High Speed drills carried in stock.

Number		List Price Per 1,000
1400	EBB galvanized iron bond wires No. 8 BWG, 40 inches long.....	\$22.32
1401	EBB galvanized iron bond wires No. 8 BWG, 42 inches long.....	23.44
1402	EBB galvanized iron bond wires No. 8 BWG, 44 inches long.....	24.56
1403	EBB galvanized iron bond wires No. 8 BWG, 46 inches long.....	25.66
1404	EBB galvanized iron bond wires No. 8 BWG, 48 inches long.....	26.78
1405	EBB galvanized iron bond wires No. 8 BWG, 50 inches long.....	27.90
1406	EBB galvanized iron bond wires No. 8 BWG, 52 inches long.....	29.00
1407	EBB galvanized iron bond wires No. 8 BWG, 54 inches long.....	30.14
1408	EBB galvanized iron bond wires No. 8 BWG, 56 inches long.....	31.24
1409	EBB galvanized iron bond wires No. 8 BWG, 58 inches long.....	32.36
1410	EBB galvanized iron bond wires No. 8 BWG, 60 inches long.....	33.48
1411	EBB galvanized iron bond wires No. 8 BWG, 62 inches long.....	34.60
1412	EBB galvanized iron bond wires No. 8 BWG, 64 inches long.....	35.72
1413	EBB galvanized iron bond wires No. 8 BWG, 66 inches long.....	36.82
1414	EBB galvanized iron bond wires No. 8 BWG, 68 inches long.....	37.94
1415	EBB galvanized iron bond wires No. 8 BWG, 70 inches long.....	39.06
1416	EBB galvanized iron bond wires No. 8 BWG, 72 inches long.....	40.18
1451	Carbon Bonding Drills $\frac{3}{8}$ -inch, per dozen.....	\$3.50
1452	High Speed Bonding Drills $\frac{3}{8}$ -inch, per dozen.....	9.50

Wood Trunking and Stakes



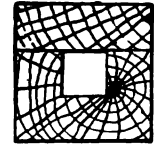
No. 1827.



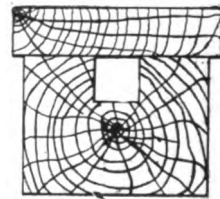
Nos. 1823, 1824, 1825.



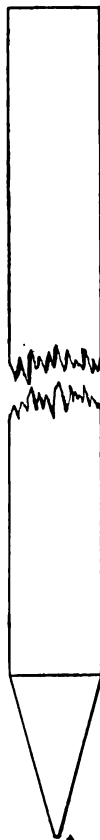
No. 1820.



**No. 1821.
No. 1822.**



No. 1826.



**No. 1831.
No. 1832.
No. 1833.**



**No. 1835.
No. 1834.**

Wood Trunking and Stakes

Long Leaf Yellow Pine Trunking, Sound and Square Edge, Dressed.

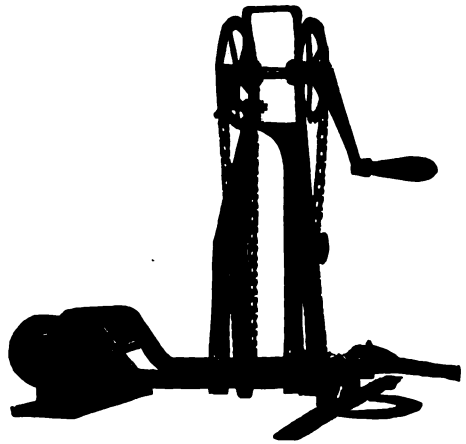
Number	List Price per foot
1809 Trunking for side of wood poles, 1¼x3 in.; groove, ¾x1 in.....	\$.12
1810 Trunking, 2x3 in.; capping, 1 x3 in.; groove, 1 x1 in.....	.12
1811 Trunking, 3x3 in.; capping, 1 x3 in.; groove, 1 x1 in.....	.14
1812 Trunking, 3x4 in.; capping, 1¼x4 in.; groove, 1¾x1¾ in.....	.16
1813 Trunking, 3x5 in.; capping, 1¼x5 in.; groove, 1 x3 in.....	.18
1814 Trunking, 3x6 in.; capping, 1¼x6 in.; groove, 1 x4 in.....	.22
1815 Trunking, 3x4 in.; capping, 1 x4½ in.; groove, 1 x1 in.....	.16
1816 Trunking, 3x4 in.; capping, 1½x4½ in.; groove, 1½x1½ in.....	.16

First Grade White Norway Pine—Dressed.

Number	List Price per foot
1820 Trunking for side of wood poles, 1¼x3 in.; groove, ¾x1 in.....	\$.10
1821 Trunking, 2x3 in.; capping, 1 x3 in.; groove, 1 x1 in.....	.08
1822 Trunking, 3x3 in.; capping, 1 x3 in.; groove, 1 x1 in.....	.10
1823 Trunking, 3x4 in.; capping, 1¼x4 in.; groove, 1 x2 in.....	.12
1824 Trunking, 3x5 in.; capping, 1¼x5 in.; groove, 1 x3 in.....	.15
1825 Trunking, 3x6 in.; capping, 1¼x6 in.; groove, 1 x4 in.....	.18
1826 Trunking, 3x4 in.; capping, 1 x4½ in.; groove, 1 x1 in.....	.12
1827 Trunking, 3x4 in.; capping, 1½x4½ in.; groove, 1½x1½ in.....	.12

Number	List Price each
1831 Trunking Stakes, Oak, 3x4 in. x 4 ft.....	.40
1832 Trunking Stakes, Oak, 4x4 in. x 3 ft. 6 in. ....	.45
1833 Trunking Stakes, Oak, 4x4 in. x 4 ft. 6 in. ....	.64
1834 Trunking Stakes, Oak, 4x4 in. x 3 ft.....	.56
1835 Trunking Stakes, Oak, 4x4 in. x 4 ft.....	.50

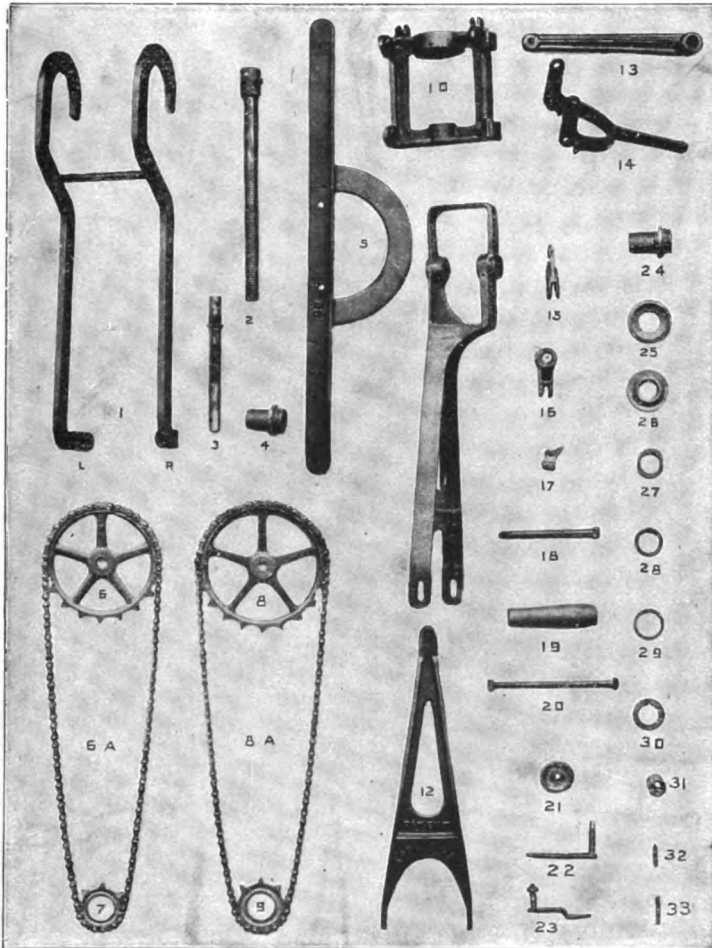
We are prepared to make prompt deliveries and lowest prices on all sizes of trunking and stakes.

No. 2 Drilling Machine**In Position for Work.****Thrown Back to Detach From Rail.**

Quick acting for light work. Specially designed for bond wire holes for track circuit signal work. Weight, 25 lbs.

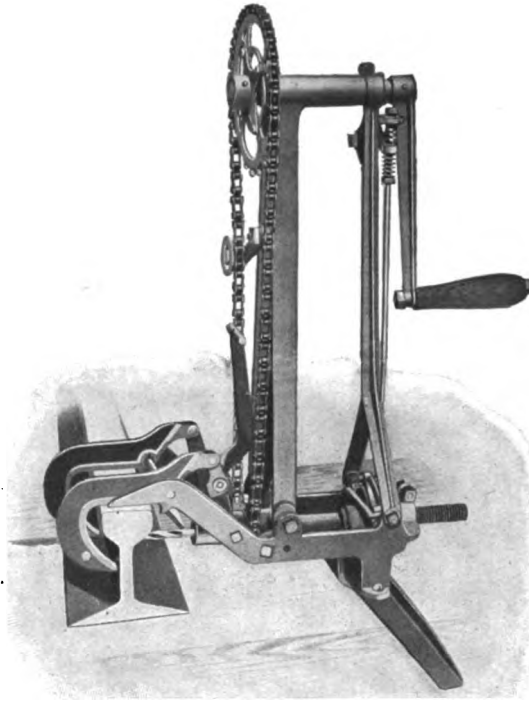
	List Price
No. 2 Drilling Machine, complete for using twist bits.....	\$56.00
No. 2 Drilling Machine, complete with Rich Spindle and one flat bit...	63.00

Repair Parts for No. 2 Drilling Machine



No.	Description.	List Price
1	Rail Hooks	\$3.00
2	Spindle	3.50
3	Crank Shaft	1.90
4	Drive Sleeve	4.75
5	Foot Plate	2.25
6	Feed Sprocket, 19 Teeth.....	3.50
6A.	Feed Chain, 47 Links.....	2.50
7	Feed Nut Sprocket, 7 Teeth..	3.40
8	Drive Sprocket, 21 Teeth.....	4.00
8A.	Drive Chain, 48 Links.....	2.50
9	Drive Sleeve Sprocket, 8 Teeth	3.40
10	Sliding Frame	4.65
11	Upright Frame	4.00
12	Upright Frame Brace.....	2.25
13	Crank	1.80
14	Toggle Lever	1.90
15	Toggle 2	1.00
16	Arm	1.75

No.	Description.	List Price
17	Pawl	\$1.75
18	Bolt for Handle doz.....	1.25
19	Wood Handle .....	.50
20	Toggle Lever Bolt	1.70
21	Idler Wheel .....	.50
22	Idler Adjusting Plate	1.00
23	Idler Bracket	1.00
24	Feed Nut	4.75
25	Cup for Ball Bearing.....	2.25
26	Cone for Ball Bearing.....	2.25
27	Adjusting Nut	1.75
28	Washer for Adjusting Nut....	.50
29	Lock Nut	1.00
30	Collar for Drive Sleeve.....	.90
31	Bushing for Crank Shaft 2....	1.50
32	Pawl Spring and Pin	1.50
33	Crank Shaft Pins .....	.50
—	20 ¼-inch Steel Balls.....	1.50

No. 5 Drilling Machine

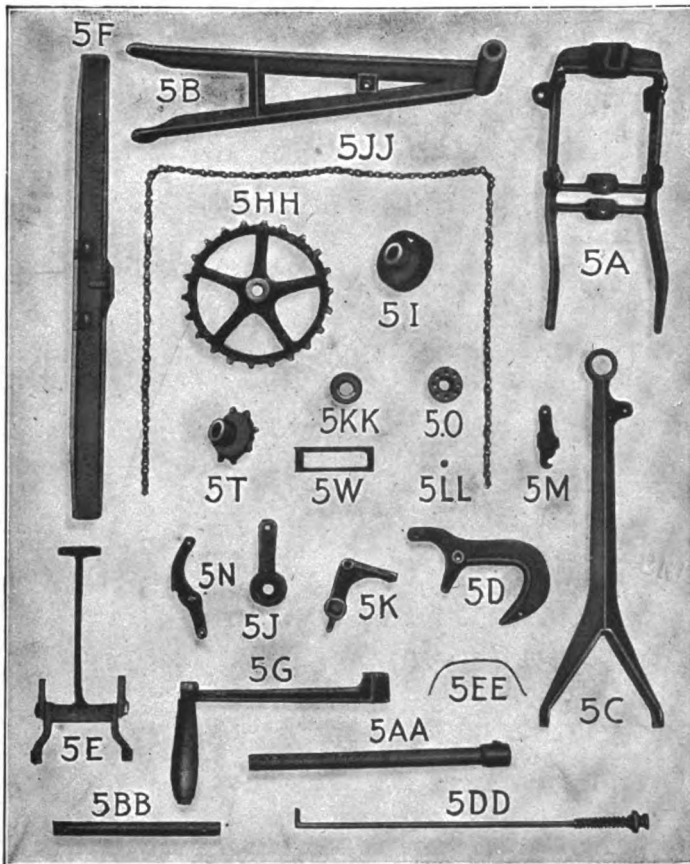
The No. 5 Bonding drill, as illustrated, is especially designed for use on railroads using track circuit and where it is necessary to drill holes for the bond wires 9-32 inch. This drill has many features far superior to anything heretofore designed for the purpose. It is very compact and simple, there being only a few working parts. It is light, yet durable, and is fitted with ball thrust bearing on spindle. All parts are made of material especially selected, and which is best adapted to the purpose, so as to get the best results, and, like the workmanship, is above criticism. We invite trials and tests as to its efficiency and durability.

As already noted, 9-32-inch bond is the size generally used by the railroads using track circuit, but where a smaller or larger bond is used the chuck can be arranged to suit.

This drill weighs 25 pounds, and is designed for drilling holes for 9-32-inch bonds.

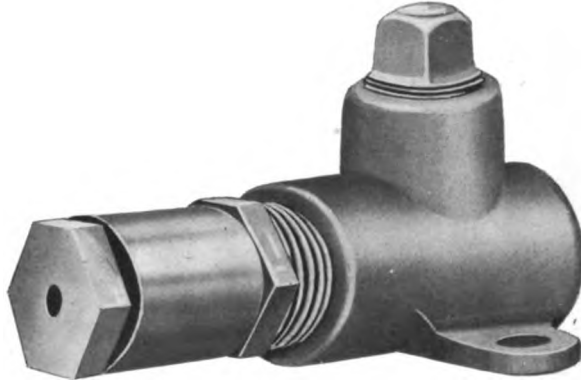
	List Price
No. 5 Drilling Machine, complete	\$56.00

Repair Parts of No. 5 Drilling Machine



Number	List Price	Number	List Price
5A	Base, with center bearing and bolts .....\$6.00	5N	Grip Lever and Feed Jaw..\$1.50
5B	Upright 4.10	5O	Ball Bearing Adjusting Nut. 3.00
5C	Back Brace 3.00	5T	Drive Sleeve with key and sprocket 4.25
5D	Rail Hook 3.40	5W	Link for Feed Jaw..... .90
5E	Rail Hook Lever and Links, R. and L. 3.40	5AA	Spindle with set screw..... 3.40
5F	Foot Plate 2.25	5BB	Crank Shaft 1.90
5G	Crank with wood handle and bolt 1.50	5DD	Feed Rod with thumb nut, feed adjusting nut and springs 2.25
5I	Feed Nut 4.25	5EE	Feed Jaw Spring..... 1.20
5J	Idler Arm with wheel and bolt 1.50	5HH	Drive Sprocket, 21 to 24 teeth 4.00
5K	Bell Crank with feed roll and bolt 3.40	4JJ	Sprocket Chain 2.50
5M	Feed Jaw or Grip 2.25	5KK	Ball Race Thrust Bearing.. 2.25
		5LL	1/8" Steel Ball (11 per set).... 1.20

Packing Boxes and Oil Inlets for Underground Wires Operating Mechanical Signals



No. 91. Cut $\frac{3}{4}$ Size.



No. 92. Cut $\frac{1}{2}$ Size.

The Use. These packing boxes are used in connection with mechanically operated wire connected signals.

Where Used. Where signal wires are placed in iron pipe under ground, under highways, or road crossings, station platforms, or at points adjacent to coaling and water stations.

Purpose. When placed on the ends of iron pipe they prevent the oil from escaping and also prevent water from entering same.

Economy. Two wires can be placed in the same pipe where formerly two pipes were used, wire will not rust or become frozen, and when wires are so protected no attention is necessary, thereby reducing cost of maintenance.

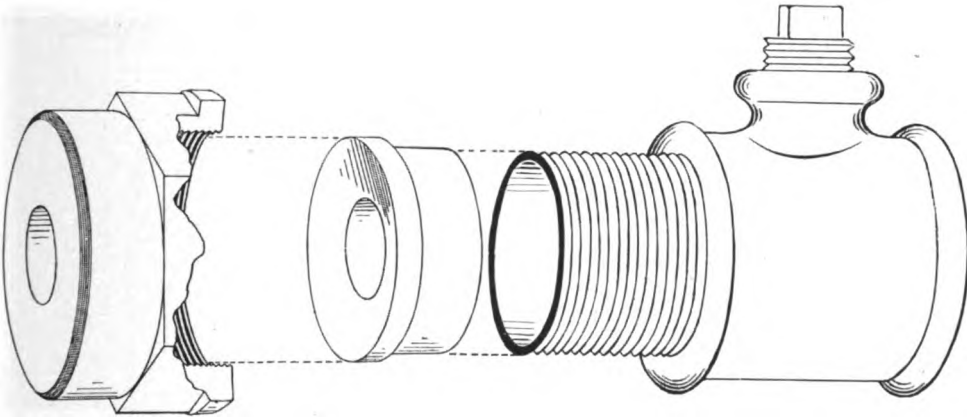
Oil to Be Used. The pipe between packing boxes should be completely filled with black oil thinned with kerosene.

Standard size for $\frac{1}{2}$ -in pipe. Other sizes furnished.

Number	List Price
91 Packing Box and Oil Inlet	\$1.75
92 Packing Box and Oil Inlet	1.25

Packing Box and Oil Inlet

For Underground Pipe Line Operating Mechanical Switches and Signals.



No. 93. Cut Two-thirds Size.

These packing boxes are used with mechanically operated pipe connected details, switches and signals in connection with a pipe line which is run through a larger section of pipe underground, under highways, road crossings, station platforms, side tracks, or points adjacent to coaling and water stations.

These packing boxes are screwed on each end of outside pipe which is filled with a non-freezing oil to keep the oil from escaping and water from entering the pipe.

Furnished for 2-inch pipe or other sizes if desired.

Number	List Price
93 Packing box and Oil Inlet, complete, with tee plug and nipple.....	\$6.00

Positive Lock Washers



The Positive Lock Washer.



Plain Spring Washer.



Tail Nut Locks.

Nut Locks

For Railroad Track Joints, Crossings, Frogs, Switches, Locomotive and Car Frames, Trucks, Draft Rigging, Truss Rods and Brake Beams, Electric Motors, Bridges and Machinery.

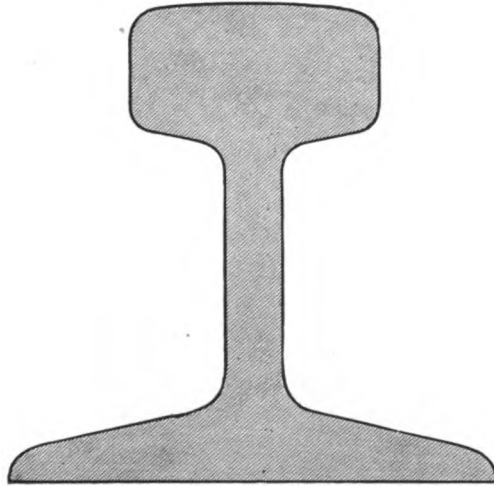
These Nut Locks are so constructed that the "body" of the washer carries the *load of compression* and the *tapered ends* are thus relieved, and the spring is constant. The Barbs being free to move when subjected to "*Vibration*," force themselves deeply into the nut and metal backing.

This washer is REVERSIBLE and can be used many times. Does not injure the nut, its threads, or the threads of the bolt.

Exhaustive tests covering a period of many years on railroad track, drop presses, automobiles and machinery subject to vibration, have proven its superiority over every nut lock manufactured.

Special Sizes Made Upon Application.

Fibre Insulation



End Post.

Made of the Highest Grade Fibre.

In all cases blue prints or exact dimensions should accompany orders for this material.

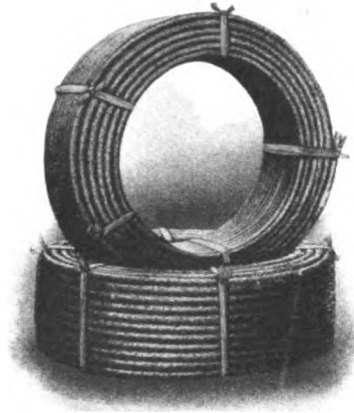
FISH PLATES—List Price per 100 square inches.

Number	Name	Thickness of Fibre				
		1/8-in.	3/8-in.	1/2-in.	3/4-in.	5/8-in.
1101	Fish Plates for Standard Insulated Joint....	.55		.75		
1102	Fish Plates for Keystone Insulated Joints...	.55	.65	.75		
1103	Fish Plates for continuous Insulated Joints..	.55	.65			
1104	Angle Plates for Weber Insulated Joints....			.55		

END POSTS—List Price each.

1105	Standard 4 in. to 4-15/16 in. high.....	.10	.11	.12	.17
1106	Standard 5 in. to 5-15/16 in. high.....	.14	.19	.21	.23
1107	Standard 6 in. high and over.....	.18	.20	.26	.30
1108	Assembled Bushings and Washers for 3/4-inch bolt, each.....				\$0.085
1109	Assembled Bushings and Washers for 7/8-inch bolt, each.....				.10

Braidduct



Braidduct is a thoroughly flexible conduit, of high insulating qualities, with a perfectly smooth interior. Braidduct is composed of a tough elastic spiral fibre tube. Outside the fibre tube is placed a layer of heavy friction tape, over which is woven a continuous heavy covering of cotton braiding. Lastly it is run through powdered mica, thereby increasing the insulating and protecting qualities. The whole top is then saturated with an insulating and moisture repelling compound.

Its use is recommended wherever it is desired to protect wires or cables from the effects of weather, moisture or abrasion. In signal work it is used for protecting wires at exposed places and around switch and signal movements, also for interior tower wiring.

Inside Diameter, Inches	Feet to Coil	Weight per 1,000 Feet	Cubic Feet per Coil	List Price per Foot
¼	250	75	1.18	\$0.06
⅜	250	110	1.38	.07
½	200	125	1.58	.08
⅝	200	155	2.28	.10
¾	150	200	2.38	.12
1	100	275	2.48	.16
1¼	100	360	3.74	.20
1½	100	400	....	.34
1¾	100	440	....	.40
2	Odd lengths	600	....	.50
2¼	Odd lengths	800	....	.65

Porcelain Insulators No. 22



Diameter of Insulator	3¼ inches
Height of Insulator	4¼ inches
Diameter of Side Groove	½ inch
Size of Pin Hole	1 inch
Net Weight	20 oz.
Approximate Weight, packed per barrel	300 lbs.
No. per barrel	215

The above cut represents our No. 22 Western Union Porcelain Insulator. It has been adopted by the different railroads and telegraph companies as a standard insulator. It takes the place of glass insulators on account of being tougher, stronger, not nearly so liable to breakage and not causing one-half as much line trouble as the ordinary glass insulator. If this type of insulator is not what is wanted, on inquiry we shall be pleased to furnish you information regarding many other different patterns.

MEMORANDA

Section 7

TAPE, TAGS

FLUX

SOLDER

P. & B. PAINT

ELECTRIC BELLS

COUNTERS

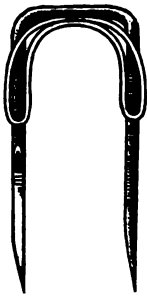
Tape



Friction.



Rubber.

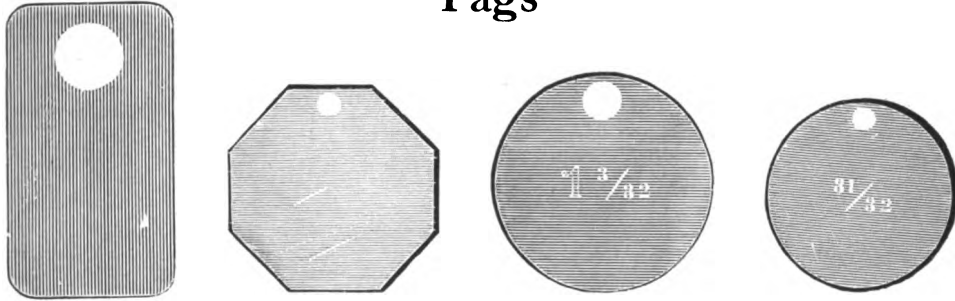


Insulated Staples

These insulated staples are designed for use on all low-voltage circuits of interior wiring. They are standard square shouldered staples having good driving qualities, and the fibre insulation cannot come off in driving.

	List Price
No. 5. Premier Friction Tape, $\frac{3}{4}$ inch, per pound.....	\$1.00
No. 6. Crescent Rubber Tape, $\frac{3}{4}$ inch, per pound.....	1.10
No. 1. Insulated Staples for hard wood, for single and twisted pair wire, per M.	3.20
No. 3. Insulated Staples for general use for single and twisted wire, per M.	3.20
No. 5. Insulated Staples for general use for twisted 3 wire and extra heavy pair wire, per M.....	3.60

Tags



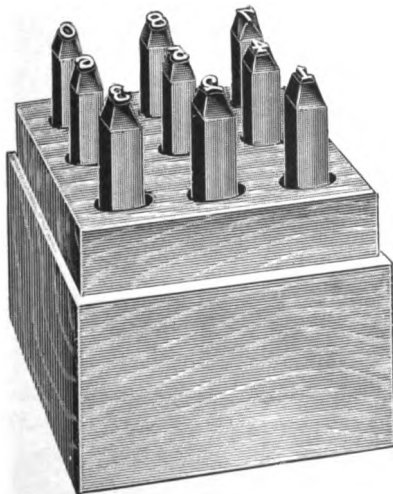
White, black, gray and red fibre and aluminum, zinc and tin tags—all sizes and shapes—plain or numbered.

Specify color when ordering fibre tags.

Number	List Price Per 1000	Number	List Price Per 1000
1 Fibre Tags $\frac{7}{8}$ x $1\frac{1}{2}$ -inch	\$ 9.00	6 Aluminum Tags $1\frac{1}{8}$ -inch octagonal..	13.00
2 Fibre Tags $\frac{7}{8}$ x $\frac{7}{8}$ -inch	8.00	10 Fibre Tags $1\frac{3}{8}$ -inch round.....	13.00
3 Aluminum Tags $\frac{7}{8}$ x $1\frac{1}{2}$ -inch ..	13.00	11 Aluminum Tags $1\frac{3}{8}$ -inch round... ..	14.00
4 Aluminum Tags $\frac{7}{8}$ x $\frac{7}{8}$ -inch ..	12.00	15 Fibre Tags $\frac{3}{4}$ -inch round.....	12.00
5 Fibre Tags $1\frac{1}{8}$ -inch octagonal... ..	9.00	16 Aluminum Tags $\frac{3}{4}$ -inch round.....	13.00

Steel Letters and Figures

Improved machine made cold rolled steel letters and figures for stamping all kinds of metal, wood, leather or fibre.



No.	Size	LIST PRICES	
		Figures, per Set	Letters per Set
101	$\frac{3}{2}$ -inch	\$3.00	\$ 9.00
102	$\frac{1}{2}$ -inch	3.00	9.00
103	$\frac{1}{20}$ -inch	2.50	7.00
104	$\frac{1}{8}$ -inch	2.00	6.00
105	$\frac{1}{2}$ -inch	2.00	6.00
106	$\frac{1}{2}$ -inch	2.00	6.00
107	$\frac{1}{10}$ -inch	2.00	6.00
108	$\frac{1}{8}$ -inch	2.00	6.00
109	$\frac{3}{2}$ -inch	2.50	7.00
110	$\frac{1}{8}$ -inch	2.50	8.00
111	$\frac{3}{2}$ -inch	2.80	8.50
112	$\frac{1}{4}$ -inch	3.00	9.00
113	$\frac{1}{8}$ -inch	3.50	10.50
114	$\frac{3}{4}$ -inch	5.00	15.00
115	$\frac{1}{8}$ -inch	7.00	21.00
116	$\frac{1}{2}$ -inch	9.00	27.00

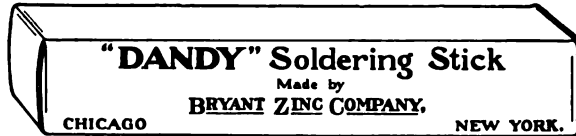


“Dandy” Soldering Paste

Dandy Soldering Paste is a natural, quick non-corrosive acting, Soldering Agent for use where Stick is inconvenient. Absolutely free from acid.

Number	List Price
1287 Paste, 6 boxes to the pound, per box.....	\$0.15

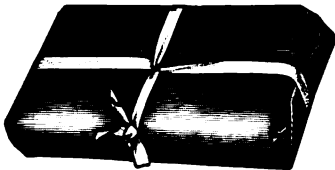
“Dandy” Soldering Stick



Dandy Soldering Stick is made by a new process—contains no acid—is non-corrosive, and of highest efficiency. Strong and rapid in action. Economical. Saves time, as grease, rust, paint oxide are removed in the act of soldering.

Number	List Price
1288 Sticks, 6 to the pound, per stick.....	\$0.20

Chatterton Compound



Best para rubber composition for insulating purposes. Seventy-five per cent rubber. Flexible, elastic, highly insulating, easily melted, wholly soluble in benzine, turpentine or chloroform.

Number	List Price
1289 Imported, in 2½-lb. packages, per lb.	\$4.00
1290 Domestic, in 2½-lb. packages, per lb.	2.00

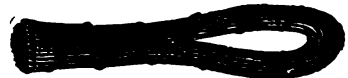
HALF-HALF BAR SOLDER



Number	List Price
56. Half-and-half, in bars	Per lb. \$0.50

WIREFORM SOLDER

Number	List Price
57. In wire form	Per lb. \$0.50



No. 57.

P. & B. Preservative Paint



The Standard Preservative of wood, metal, brick, stone, etc. It is proof against weather, water, heat, cold, acids, alkalis, fumes, gases, etc.; prevents rust, rot, corrosion and oxidation and guards against electrolysis. It is not merely a surface coating, as are many of the so-called preservatives, but "bites" deeply into the pores of the material and excludes all foreign substances. The base of P & B Paint is a mineral that is known to be practically indestructible; highly resistant to acid and alkaline action; unaffected by changes of temperature and possessing unequaled insulating properties.

For coating and preserving all kinds of iron or general metal work, such as pipe coils, brine pipes, tanks, condensers, etc.; iron and steel framing of buildings, bridges, hoisting chains, mine cars, elevators, railway trucks and general under-framing, underground cables, conduits, and general electrical work, etc.; in fact, wherever absolute protection is desired against rust, oxidation or decay.

No. 1—Light Body.

An almost immediate dryer.

	Per gallon
In bbls. of about 50 gallons.....	\$2.70
In ½ bbls. of about 30 gallons.....	2.80
In 5 gallon cans	2.90
In 1 gallon cans (6 in a case).....	3.20
In ½ gallon cans (10 in a case).....	3.40
In 1 quart cans (10 in a case).....	3.60

No. 2—Standard and Medium Grade.

For all general work. Dries very quickly.

	Per gallon
In bbls. of about 50 gallons.....	\$2.50
In ½ bbls. of about 30 gallons.....	2.60
In 5 gallon cans	2.70
In 1 gallon cans (6 in a case).....	2.90
In ½ gallon cans (10 in a case).....	3.20
In 1 quart cans (10 in a case).....	3.40

No. 3—The Heaviest Grade.

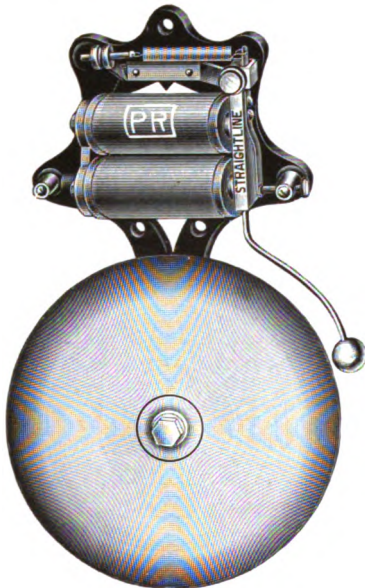
For walls and submerged work.

	Per gallon
In bbls. of about 50 gallons.....	\$2.24
In ½ bbls. of about 30 gallons.....	2.34
In 5 gallon cans.....	2.50
In 1 gallon cans (6 in a case).....	2.70
In ½ gallon cans (10 in a case).....	2.90
In quart cans (10 in a case).....	3.20

Electric Bells

STRAIGHT LINE

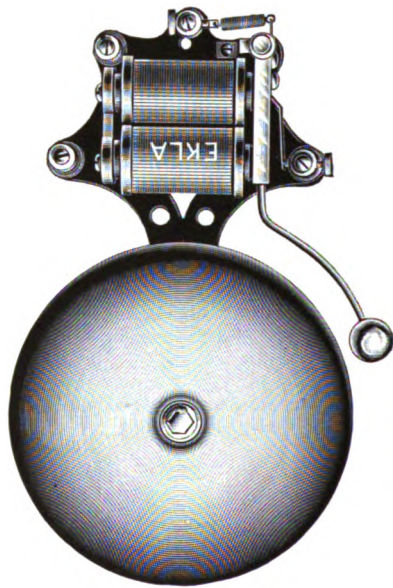
Skeleton Bell



Class A

EKLA

Skeleton Bell



Class B

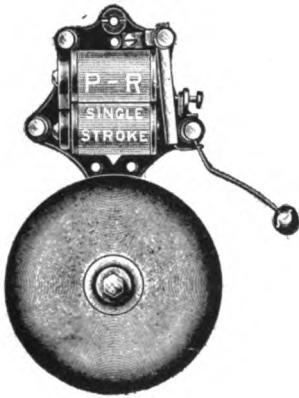
Gong	No.	Ohms.	List Price
2½	S 32½	5	\$ 2.56
3	S 33	5	2.64
4	S 44	5	3.00
5	S 55	5	4.32
6	S 56	5	4.88
7	S 57	7	6.94
8	S 68	7	7.62
10	S610	7	12.18
12	S612	7	15.24
14	S714	10	30.46
15	S715	10	39.60

Gong	No.	Ohms.	List Price
2½	E 32½	3	\$ 2.24
3	E 33	3	2.26
4	E 44	4	2.40
5	E 55	5	3.50
6	E 56	5	3.72
7	E 57	5	6.10
8	E 68	6	6.76
10	E610	6	10.48
12	E612	6	11.66

Regularly furnished with PR Contracts.
For pure Platinum add 20c to Net prices.

EKLA Bells have the same parts and general construction as the Straightline, but are wound to lower resistance. Have Steel Gongs and Pure Silver Contacts.

Electric Bells



SINGLE STROKE BELL



WEATHER PROOF BELL

Gong	Ohms	No.	List Price Single Stroke	No.	List Price Weather- proof Sin. str.
2½	5..SS	32½	\$ 3.86	WS 32½	\$ 5.25
3...	5..SS	33....	4.00	WS 33....	5.35
4...	6..SS	44....	4.40	WS 44....	6.00
5...	6..SS	55....	5.00	WS 55....	8.00
6...	6..SS	56....	6.00	WS 56....	8.50
7...	6..SS	57....	7.50	WS 57....	10.00
8 ..	8..SS	68....	8.00	WS 68....	13.10
10...	8..SS	610....	11.50	WS610....	15.50
12...	8..SS	612....	14.00	WS612....	18.90

Gong	No.	Ohms	List Price.
2½	WP 32½	5.....	\$ 4.00
3	WP 33	5.....	4.10
4	WP 44	6.....	4.50
5	WP 55	6.....	6.10
6	WP 56	6.....	6.70
7	WP 57	6.....	8.00
8	WP 68	8.....	10.50
10	WP610	8.....	13.50
12	WP612	8.....	17.50
14	WP714	12.....	27.50
15	WP715	12.....	31.50

This Bell also has our STRAIGHTLINE type of construction with our Patented Flexible Pivoted Hammer Attachment which keeps the Armature constantly within the magnetic field, at the same time imparting a long sweeping stroke to the hammer, enabling it to strike a stronger blow than any other bell on the market. By means of this Flexible Hammer Attachment the tension and length of stroke are easily adjusted.

The hammer instantly leaves the gong after striking it, making the signals clear and distinct.

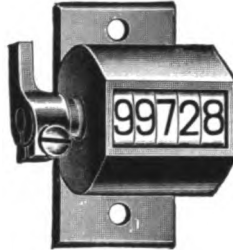
NOTE.—Both the Weatherproof and Single Stroke Bells can be furnished with special winding and high voltage construction.

The working parts of these Bells are mounted on a specially constructed base, all being enclosed with a very heavy japanned weatherproof cover so designed as to form a perfect housing for all parts, including the binding posts and connections, in such a manner as to make the bell absolutely rainproof.

The magnets and all connections are made moisture proof.

No connections on the back, or exposed to the weather.

The PR is the most perfect all-round-weatherproof bell on the market. We recommend it for all exposed positions, mines, cold storage houses and damp or dusty places.

Counters**No. 4. Revolution Counter. (Cut Full Size.)**

No. 4 Revolution Counter has a flange base. A complete revolution of the shaft is required for each registration. Its action is most smooth and uniform and it will stand a very high rate of speed. If run backwards it counts backwards. It can be furnished with lever on right hand side if preferred.

The movement of the lever, when on left side, is counter-clockwise with "regular" printing, and clockwise, if instrument is ordered with "reverse" printing. Price, \$1.00 each, net.

We can furnish the same mechanism equipped with a five-point star wheel in place of the lever. Thus equipped, we call it our "5-to-1 counter," inasmuch as all five prongs must be moved forward to complete a revolution of the shaft and cause a registration. Price, \$1.50 each, net.

**No. 6. Revolution Counter. (Cut Full Size.)**

No. 6. This is a ratchet counter, but there are no internal stops to regulate the throw of the lever. The mechanism cannot be jammed by pushing the lever too far, since the latter can be rotated indefinitely in either direction, but it will register only in the forward direction and the number of figures registered depends on the distance the lever is moved. A complete revolution of the lever registers ten. When the lever is given a reciprocating movement, it must be moved through an angle of a little more than 36 degrees to cause the counter to register. The throw of the lever must be regulated by outside means. Price, \$1.00 each, net.

When intended for hard or continuous use, we supply the No. 6 equipped with brass index and solid pawl. Price, \$1.25 each, net.

Counters



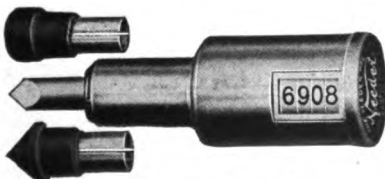
No. 14. Ratchet Counter.
(Cut Full Size.)

The No. 14 Ratchet counter is supplied with outside stops which regulate the throw of the lever. The counter has an improved driving mechanism and the driving pawls are made of hardened steel, and are forced against the ratchet on the first ring by coiled springs. An adjustable lever is supplied which allows the counter to be used at any angle. Price, \$1.25 each, net.



No. 16. Rotary Ratchet Counter.
(Cut Full Size.)

The No. 16 Rotary Ratchet counter requires backward and forward reciprocating motion to register one unit. The three ring or trip counter can be set at zero from any point. The five ring counter is a totalizer and cannot be set back. A complete revolution of the lever registers ten. If the lever is given a reciprocating movement it must be moved 36 degrees to register one unit. There are no stops to regulate the throw of the lever and this must be accomplished by giving the lever only the proper throw. This counter is equipped with solid pawls and coiled springs. Price, \$3.00 each, net.



No. 21. Clutch Speed Counter.
(Cut Full Size.)

This instrument is used for finding the revolutions per minute made by a shaft or any other revolving part. A ball thrust bearing is provided for the spindle which insures against the counter sticking at high speeds. Two rubber tips, one pointed and the other flat, are furnished with each instrument, to serve as insulators when taking the speed of electric machinery.

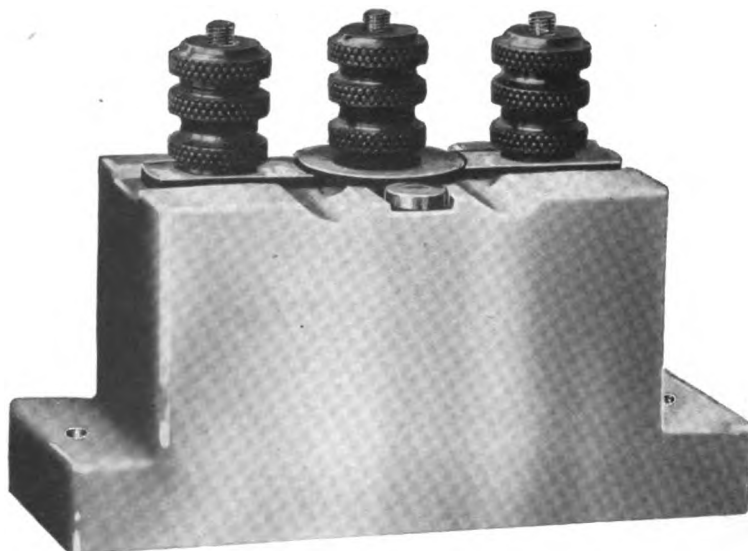
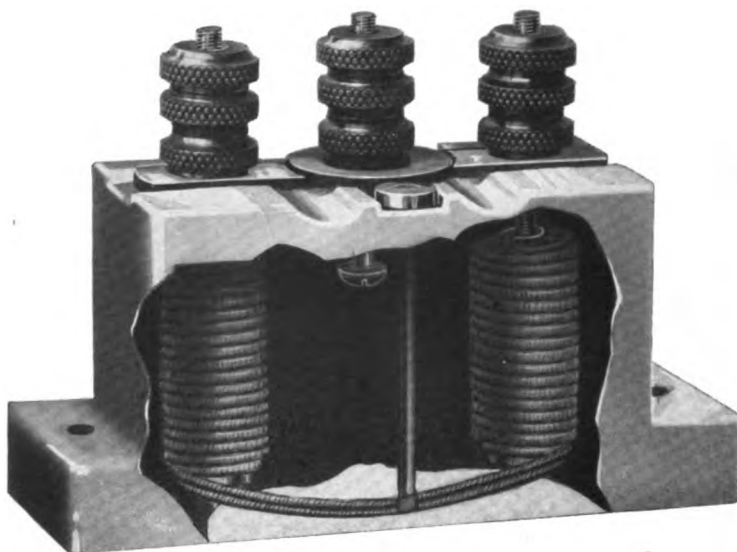
Price, \$3.00 each, net.

MEMORANDA

Section 8

LIGHTNING ARRESTERS
AND
GROUND PLATES
CONES AND RODS
CABLE CLIPS
WIRES AND CABLES

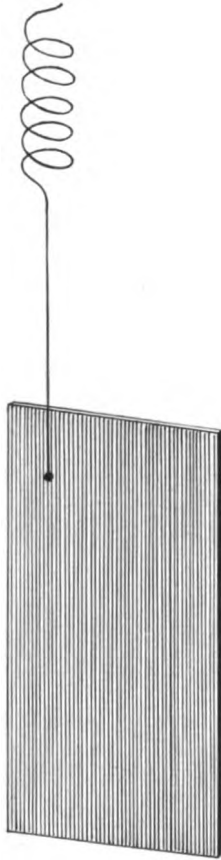
Premier Lightning Arrester



Premier Lightning Arrester

This Lightning Arrester was designed especially for the protection of Railroad Signal Instruments and is highly endorsed by several of the leading signal engineers. The dimensions over all are 4 inches long, 1½ inches wide and 3 inches high, has two choke coils. The large circular disc, which is the ground plate, is made of carbon; on two sides of which are two saw tooth terminal plates; the small disc of brass is also a terminal plate connected with the winding between the choke coils. All mounted on glazed porcelain. Under the edges of the terminal plates and carbon disc and in plain view are deep grooves in the porcelain to take care of any foreign substance and prevent the forming of a circuit between these two points. The binding posts are of the latest improved pattern with jam nuts and washers. These arresters are also furnished without side ground plate.

Number	List Price
1 Premier Lightning Arrester	\$2.00
2 Premier Lightning Arrester, without side ground plate.....	2.00

Ground Plates and Rods**Plate.****Rod.**

Copper and galvanized Iron Ground Plates and Rods made to order—any dimensions. Furnished complete with copper wire terminals for connection.

Number	List Price each
788 Galvanized Iron Ground Plate, with copper wire connection.....	
799 Copper Ground Plate, with copper wire connection.....	
831 Galvanized Iron Ground Rod, $\frac{3}{4}$ in. x 9 ft.....	.35
942 Galvanized Iron Ground Rod, $\frac{1}{2}$ in. x 6 ft.....	.30

Special sizes furnished when required.

Paragon Ground Cone



The Paragon Ground Cone is made of a perforated sheet of pure copper. The cone is filled with pea-size coke or charcoal. The charcoal absorbs moisture by capillary attraction, keeping the earth around the cone always moist, insuring a perfect and permanent ground. It can be set singly or in batteries of any number and requires no attention after installation.

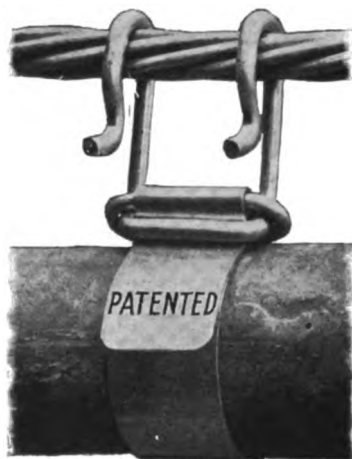
This ground is extensively used in electric light and power installations and for grounding lightning arresters, etc., in connection with automatic signals.

The cone is furnished complete with coke or charcoal and with braided, hollow copper cable of 61968 C. M., cross section, into which the ground wire may be soldered. The cable is securely soldered to the bottom of the cone.

Number	Length	Gauge	List Price
1	.....1 ft.	No. 25	\$5.00
2	.....2 ft.	No. 25	7.00
3	.....1 ft.	No. 21	6.00
4	.....2 ft.	No. 21	8.00

No. 3 and 4 are recommended for Automatic Signal installations. Special sizes furnished on order.

Cable Clips



This cable clip is adjustable to different sizes of cable, the straps being furnished in different lengths. It is made of two pieces of steel wire and a strap of sheet metal. It can be attached by hand and can be taken off and used again on different classes of work.

Number	List Price
1 Length of strap, 6 in.; Hook No. 1, per thousand.....	\$40.00
2 Length of strap, 7 in.; Hook No. 1, per thousand.....	40.00
3 Length of strap, 8 in.; Hook No. 1, per thousand.....	40.00
4 Length of strap, 6½ in.; Hook No. 4, per thousand.....	40.00
5 Length of strap, 6½ in.; Hook No. 1, per thousand.....	40.00
7 Length of strap, 7 in.; Hook No. 4, per thousand.....	40.00
8 Length of strap, 8 in.; Hook No. 4, per thousand.....	40.00

Special length strap, exceeding 8 inches, \$2.50 per thousand extra.

No. 1 Hook is for use on ¼-inch messenger wire.

No. 4 Hook is for use on ½-inch messenger wire.

APPROXIMATE RESISTANCE OF COPPER WIRE.

The accompanying wire table gives the approximate ohms per thousand feet of copper wire. It will be noted as the wire becomes smaller every third size has double resistance; also that every tenth size (horizontal lines) has ten times the resistance.

Size.	Ohms.	Size.	Ohms.	Size.	Ohms.	Size.	Ohms.
		No. 0	.1	No. 10	1.	No. 20	10.
		No. 1	.125	No. 11	1.25	No. 21	12.5
		No. 2	.16	No. 12	1.6	No. 22	16.
		No. 3	.2	No. 13	2.	No. 23	20.
		No. 4	.25	No. 14	2.5	No. 24	25.
		No. 5	.32	No. 15	3.2	No. 25	32.
		No. 6	.4	No. 16	4.	No. 26	40.
No. 0000	.05	No. 7	.5	No. 17	5.	No. 27	50.
No. 000	.063	No. 8	.63	No. 18	6.3	No. 28	63.
No. 00	.08	No. 9	.8	No. 19	8.	No. 29	80.

HOW TO REMEMBER THE WIRE TABLE.

The Wire Table for the B. & S. gauge copper wire has a few simple relations, such that if a few constants are carried in the memory the whole table can be constructed mentally with approximate accuracy.

A little practice in mental arithmetic will enable anyone to determine the approximate weight and resistance of wire of any size.

SUMMARY.—The things to be remembered regarding B. & S. gauge copper wire are the following:

A wire, which is three sizes larger than another wire has half the resistance, twice the weight and twice the area. A wire which is ten sizes larger than another wire has one-tenth the resistance, ten times the weight and ten times the area.

No. 10 Wire is 0.10 inch in diameter (more precisely 0.102); it has an area of 10,000 circular mils (more precisely 10,380); it has a resistance of 1 ohm per thousand feet at 20 degrees Centigrade (68 degrees Fahrenheit), and weighs 32 pounds (more precisely 31.4 pounds) per thousand feet.

The weight of one thousand feet of No. 5 wire is 100 pounds.

The relative values of resistance (for decreasing sizes) and of weight and area (for increasing sizes) for *consecutive* sizes are: .50, .63, .80, 1.00, 1.25, 1.60, 2.00.

The relative values of the diameters of *alternate* sizes of wire are: .50, .63, .80, 1.00, 1.25, 1.60, 2.00.

CIRCULAR MILS.—The conductors of large size are usually specified in circular mils. For example, 500,000 circular mils, 750,000 circular mils.

To find resistance, drop one cypher from the number of circular mils and result is the number of feet per ohm.

To find weight, drop four cyphers from the number of circular mils and multiply by the weight of No. 10 Wire.

Hard Drawn Copper Signal Wires**Weatherproof Insulation**

Size B. & S. Gauge Copper.	Resistance in Ohms per Mile	Breaking Strength Copper.	Weight per 1000 feet D. B.	Weight per 1000 feet T. B.	Weight Per T. B. Pounds Mile	D. B. Pounds	Approximate Size of E. B. B. Iron Wire Equal to Copper
9	4.30	617	54	62	325	280	2 B. G. W.
10	5.40	489	46	53	280	240	3 "
12	8.70	307	30	35	185	158	6 "
14	13.70	193	20	25	130	106	8 "
16	22.10	133	15	20	105	80	11 "

SPECIFICATIONS.

Copper to be hard-drawn without splice, insulated with Double Braid or Triple Braid Waterproof Insulation, thoroughly saturated and wiped hard. Furnished in ½-mile coils.

SPECIFICATIONS.**Standard Steel Signal Wires.**

"B. B."

No. 8 or 9 B. W. G,

Finish—The Wires shall be cylindrical, free from scales, inequalities, flaws, splits and other imperfections and defects. Each Coil shall not contain any welded joints or splices. The bundles shall be made in Coils at least 5 feet in diameter.

Mechanical Test—Breaking Strain of wire 1,600 to 1,800 pounds. Twist in 6 inches 5, elongation in 12 inches 4 per cent. Wires shall be well and evenly galvanized and close-wiped so that in bending the galvanizing will not crack off.

Prices on Application.

Weatherproof Insulated Iron Wire

Double or Triple Braid.

B. W. G.	APPROXIMATE WEIGHTS PER MILE	
	Double Braid	Triple Braid
No. 4.....	860	940
No. 6.....	665	740
No. 8.....	470	525
No. 9.....	400	450
No. 10.....	350	400
No. 12.....	225	260
No. 14.....	145	175

4 to 6 shipped in 1/8-mile coils.

8 to 9 shipped in 1/4-mile coils.

10, 12, 14 shipped in 1/2-mile coils.

Galvanized Telephone and Telegraph Wire—Bare

Extra B B, B B and Steel

Numbers B. W. G.	Diameters in Mils.	Weights Pounds		Breaking Weights Pounds		Resistance per Mile in Ohms		
		1000 Feet	One Mile	Iron	Steel	E. B. B.	B. B.	Steel
		4.....	238	149	787	2361	4449	5.97
6.....	203	109	573	1719	3237	8.21	9.6	11.35
8.....	165	72.	378	1134	2138	12.42	14.53	17.18
9.....	148	58.	305	915	1720	15.44	18.06	21.35
10.....	134	47.	250	750	1410	18.83	22.04	26.04
12.....	109	31.	165	495	933	28.46	33.30	39.36
13.....	95	24.	125	375	709	37.47	43.85	51.82
14.....	83	18.	96	288	541	49.08	57.44	67.88

Wire drawn to the most rigid specifications covering Conductivity, Tensile Strength and Galvanizing.

UNIVERSITY OF ILLINOIS

Rubber Insulated Telegraph and Signal Wires and Cables

BRAIDED, AND TAPED AND BRAIDED
SOLID COPPER

Manufactured Under Specifications of Engineers, or to meet Special Requirements.

Copper B. & S. G.	Rubber Insulation.	Diameter Inside.	Outside Coverings.		Diameter Outside.	Copper B. & S. G.	Rubber Insulation.	Diameter Inside.	Outside Coverings.		Diameter Outside.
			Tapes	Braids.					Tapes	Braids.	
18	$\frac{1}{2}$ " diam.	.125		1	.175	10	$\frac{3}{32}$ " diam.	.281		1	.331
	"	"	1	1	.200		"	"	1	1	.356
18	$\frac{3}{8}$ " diam.	.156	1	1	.206	9	$\frac{3}{8}$ " diam.	.250	1	1	.300
	"	"	1	1	.230		"	"	1	1	.325
18	$\frac{1}{8}$ " wall	.165	1	1	.215	9	$\frac{1}{4}$ " diam.	.266	1	1	.316
	"	"	1	1	.240		"	"	1	1	.341
16	$\frac{3}{8}$ " diam.	.156	1	1	.206	9	$\frac{5}{64}$ " wall	.271	1	1	.321
	"	"	1	1	.230		"	"	1	1	.346
16	$\frac{1}{8}$ " wall	.176	1	1	.225	9	$\frac{1}{2}$ " diam.	.281	1	1	.331
	"	"	1	1	.250		"	"	1	1	.356
14	$\frac{5}{8}$ " diam.	.156	1	1	.206	8	$\frac{3}{8}$ " diam.	.250	1	1	.300
	"	"	1	1	.230		"	"	1	1	.325
14	$\frac{5}{16}$ " diam.	.188	1	1	.238	8	$\frac{3}{16}$ " diam.	.281	1	1	.331
	"	"	1	1	.263		"	"	1	1	.356
14	$\frac{7}{32}$ " diam.	.219	1	1	.269	8	$\frac{1}{2}$ " diam.	.3125	1	1	.363
	"	"	1	1	.294		"	"	1	1	.388
14	$\frac{5}{16}$ " wall	.220	1	1	.270	8	$\frac{1}{2}$ " wall	.316	1	1	.356
	"	"	1	1	.295		"	"	1	1	.381
12	$\frac{7}{32}$ " diam.	.219	1	1	.269	6	$\frac{3}{32}$ " diam.	.281	1	1	.331
	"	"	1	1	.294		"	"	1	1	.356
12	$\frac{5}{16}$ " wall	.237	1	1	.287	6	$\frac{1}{4}$ " diam.	.3125	1	1	.363
	"	"	1	1	.312		"	"	1	1	.388
12	$\frac{3}{8}$ " diam.	.250	1	1	.300	6	$\frac{1}{2}$ " wall	.350	1	1	.400
	"	"	1	1	.325		"	"	1	1	.425
10	$\frac{7}{32}$ " diam.	.219	1	1	.269	4	$\frac{1}{2}$ " diam.	.3125	1	1	.363
	"	"	1	1	.294		"	"	1	1	.388
10	$\frac{1}{2}$ " diam.	.250	1	1	.300	4	$\frac{1}{4}$ " wall	.329	1	1	.379
	"	"	1	1	.325		"	"	1	1	.404
10	$\frac{5}{16}$ " wall	.258	1	1	.308	4	$\frac{1}{2}$ " wall	.392	1	1	.442
	"	"	1	1	.333		"	"	1	1	.467

Rubber Insulated Telegraph and Signal Wires

BRAIDED, AND TAPED AND BRAIDED

EXTRA FLEXIBLE STRANDS.

B. & S.	Copper Strand.	Rubber Insulation.	Diam. Ins.	Outside Coverings.		Diam. Outside.
				Tapes.	Braids.	
16	19x.0126	$\frac{1}{2}$ " diam.	.156		1	.206
		"	"	1	1	.231
16	"	$\frac{1}{16}$ " wall	.181		1	.231
		"	"	1	1	.256
14	27x.0126	$\frac{3}{4}$ " diam.	.188		1	.238
		"	"	1	1	.263
14	"	$\frac{5}{8}$ " wall	.229		1	.279
		"	"	1	1	.304
12	27x.0159	$\frac{7}{8}$ " diam.	.219		1	.269
		"	"	1	1	.294
12	"	$\frac{3}{4}$ " wall	.247		1	.297
		"	"	1	1	.322
10	27x.0201	$\frac{3}{4}$ " diam.	.250		1	.300
		"	"	1	1	.325
10	"	$\frac{5}{8}$ " wall	.283		1	.333
		"	"	1	1	.358
9	33x.0201	$\frac{7}{8}$ " diam.	.266		1	.316
		"	"	1	1	.341
9	"	$\frac{5}{8}$ " wall	.299		1	.349
		"	"	1	1	.374
8	37x.021	$\frac{10}{16}$ " diam.	.3125		1	.363
		"	"	1	1	.388
8	"	$\frac{3}{8}$ " wall	.349		1	.399
		"	"	1	1	.424
6	37x.0267	$\frac{11}{16}$ " diam.	.344		1	.394
		"	"	1	1	.429
6	"	$\frac{3}{8}$ " wall	.367		1	.417
		"	"	1	1	.442
4	49x.029	$\frac{13}{16}$ " diam.	.406		1	.456
		"	"	1	1	.481
4	"	$\frac{3}{8}$ " wall	.449		1	.499
		"	"	1	1	.524

Aerial and underground cables with any desired number of conductors, and to requirements of specifications.

BRYANT ZINC COMPANY

MEMORANDA

Section 9

ORANGEBURG

FIBRE

CONDUIT

Orangeburg Fibre Conduit

In the process of manufacturing Orangeburg Fibre Conduit, wet wood pulp or fibre is wrapped in a minutely thin film upon a forming mandrel, under pressure, until the desired thickness of wall is obtained. The individual fibres become felted and form a solid, homogeneous wall. Taken off the mandrel, the wet pulp structure is subjected to a drying process, after which it is placed in a vat of liquid compound. This compound is a preservative and is also insulating and waterproofing. It thoroughly permeates the entire structure, so that after treatment the wall of the conduit, when cut, presents a strong resemblance to hard rubber. The ends are cut in a lathe to make a Socket Joint, Sleeve Joint or Screw Joint Thread, as may be desired.

The same materials and general process are employed in producing Bends of various degrees and radii, "S" Bends, Tees, Elbows, Crosses, Couplings and Junction Boxes, with the varying number of outlets.

Stock on hand is stored winter and summer in the open yards of the manufacturing plant.

Orangeburg Fibre Conduit is waterproof and is not affected by acids, alkalies or gases. It contains nothing that will injure the insulation of wires and absolutely prevents electrolysis. Its insulating qualities enable it to withstand a puncture test of 25,000 volts A. C. It is not inflammable. If a steady flame is applied to it, it will burn, but the flame will not spread and when the heat is taken away it immediately stops burning.

Orangeburg Fibre Conduit installed without concrete fifteen years ago is now in as good condition as on the day it was laid.

Orangeburg Fibre Conduit

INSTALLING

The best method of installing Orangeburg Fibre Conduit depends on local conditions. Our Engineering Department is at the service of our customers and we are at all times glad to give them the benefit of our experience.

In general, however, we believe it advisable to place Orangeburg Conduit at least 18 inches under ground. In running under tracks it should be placed not less than 18 inches below the roadbed.

In order to insure perfect drainage and alignment it is well to cover the bottom of the trench with stones and over them tamp a layer of earth before laying the conduit.

In all cases the trench should be filled and tamped before wires are pulled.

Where several bends occur in one run the conduit should be strapped or well protected at the bends.

For sealing the Socket Joint type use No. 2 P. & B. compound, which sets quickly and will make the joints absolutely tight.

Orangeburg Fibre Conduit is very hard and has great mechanical strength. It is, however, brittle, and when used in places where it is subject to sudden blows should be well protected.

MANHOLES AND LENGTH OF RUNS

On short runs of one duct no manholes are needed. Branches can be taken care of by the use of Junction Boxes, which are furnished in two, three or four-way types, as desired.

It is not advisable to have long runs with many bends, owing to the trouble that would occur in pulling wires around them. Junction Boxes should be installed to cut down the number of bends and to make the system more flexible.

For longer runs of two or more ducts, handholes can be made of concrete, and covered either with a cast-iron head or a creosote plank, but if trunk lines of many ducts are installed, then manholes of sufficient size to allow men to work in conveniently should be installed.

Distances between handholes or manholes should not be so great as to cause trouble in pulling wires in or out, but should be laid out according to existing conditions, keeping in mind that the general idea is to have a "pulling in" system, which allows access to the wires without the necessity of digging up the conduit when trouble occurs, and also that this system can be made flexible enough to take care of future conditions.

In laying out the system, arrangements can be made to use the larger size conduits on the first part of the run, and reduce the size as the number of wires drop off.

Orangeburg Fibre Conduit**SOCKET JOINT TYPE**

In considering the various methods of making joints in conduit installation, the connection as made with the Socket Joint type of Orangeburg Fibre Conduit is ideal. The male and female joints that are automatically turned on this type of conduit are so accurately cut that it is only necessary to push one within the other to secure absolute and permanent alignment and without the use of a coupling compound, form practically a water-tight and gas-proof connection. Unlike the method pursued in laying clay conduit, it is not necessary to use a mandrel to secure alignment, neither is it necessary to wrap each joint with burlap to keep the concrete from seeping through the joints to the interior of the duct.

While laying a system of Orangeburg Fibre Conduit, employing the Socket Joint type, construction forces have found that the installation of the material proceeds usually at twice the speed required to lay other types of conduit and oftentimes Fibre Conduit is laid even faster.



The socket or mortice and tenon connections that are cut on the ends of each length of Socket Joint Fibre Conduit are automatically turned, being $\frac{3}{8}$ inch long ($\frac{3}{4}$ inch when specified), slightly tapering and uniform in size. The inside of the joint is reamed during the process of cutting so that there can be no off-set at the joints when laid.

SOCKET JOINT

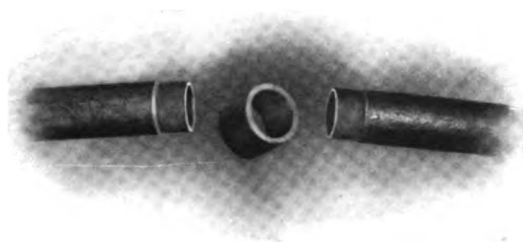
Inside Diameter Inches	Thickness of Walls Inches	Approx. Average Weight per Foot Pounds	Price per Foot Including Coupling
*1	$\frac{1}{4}$	0.38	\$0.12
1½	$\frac{1}{4}$	0.70	.10
2	$\frac{1}{4}$	0.85	.10
2½	$\frac{1}{4}$	1.02	.11
3	$\frac{1}{4}$	1.20	.12
3½	$\frac{1}{4}$	1.45	.14
4	$\frac{1}{4}$	1.62	.16

* Made only to Order.

Orangeburg Fibre Conduit

SLEEVE JOINT TYPE

In this type of Fibre Conduit, the ends of each length are turned down to fit snugly in a sleeve by means of which a water-tight connection is made. The ends of the pipe are squared and faced, which assures a tight fit. This sleeve is about four inches long and has a wall, approximately, $\frac{3}{8}$ inch in thickness.



Sleeve Joint Fibre Conduit.

SLEEVE JOINT.

Inside Diameter in Inches	Thickness of Walls in Inches	Nominal Wt. Per Foot in Pounds	Price Per Ft. Including Coupling
*1	$\frac{1}{4}$	0.40	.18
1½	$\frac{1}{4}$	0.74	.14
2	$\frac{1}{4}$	0.90	.14
2½	$\frac{1}{4}$	1.10	.16
3	$\frac{1}{4}$	1.30	.18
3½	$\frac{7}{8}$	2.50	.28
4	$\frac{1}{2}$	3.20	.35

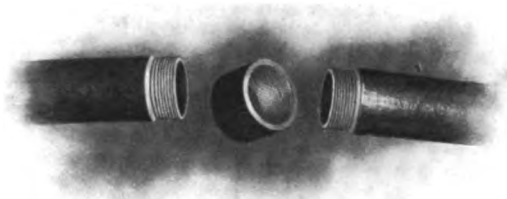
SCREW JOINT TYPE

This type of Fibre Conduit is manufactured with a slightly thicker wall than the Socket Joint type, owing to the necessity of securing a sufficiently heavy structure for carrying the thread which is cut on the ends of the pipe. The thread is "United States Standard"—four to the inch—and a coupling is provided for completing the joint. The ends of the pipe are squared and faced, thus assuring a perfect fit, one pipe against the other, when connected. The joints are screwed up by hand, no tongs being used. A liquid compound is furnished by the manufacturer to be wiped on the thread of the pipe when making the connection. This compound hardens and renders the joint absolutely water-tight.

SCREW JOINT.

Inside Diameter in Inches	Thickness of Walls in Inches	Nominal Wt. Per Foot in Pounds	Price Per Ft. Including Coupling
*1½	$\frac{5}{8}$	0.85	.20
*2	$\frac{3}{8}$	1.32	.22
2½	$\frac{3}{4}$	1.65	.22
3	$\frac{7}{8}$	2.20	.28
3½	$\frac{7}{8}$	2.50	.32
4	$\frac{1}{2}$	3.20	.40

*Made only to order.



Screw Joint Fibre Conduit.

Orangeburg Fibre Conduit Fittings



Reducer



Cross



Coupling

I. D. Inches	1	1½	2	2½	3	3½	4
REDUCERS							
Largest End							
Socket		\$0.40	\$0.42	\$0.46	\$0.50	\$0.56	\$0.62
Sleeve .....		.42	.44	.48	.52	.58	.64
Screw .....		.44	.46	.50	.54	.60	.66
CROSSES							
†All Types	2.85	2.95	3.05	3.15	3.25	3.45	3.90
COUPLINGS							
Sleeve .....	.09	.09	.10	.12	.14	.22	.28
Screw .....		.12	.14	.16	.18	.24	.30
Couplings to make rough fit over regular conduit—		.06	.07	.08	.09	.10	.12

Orangeburg Fibre Conduit Fittings



Elbow



Tee

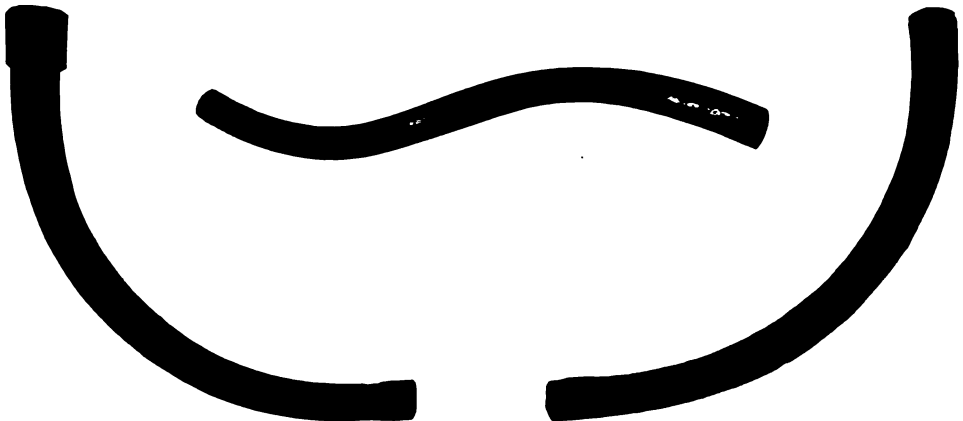


I. D. Inches	Cap						
	1	1½	2	2½	3	3½	4
ELBOWS							
Socket	\$1.20	\$1.10	\$1.10	\$1.15	\$1.20	\$1.30	\$1.50
†Sleeve	1.40	1.30	1.30	1.35	1.40	1.60	1.80
†Screw		1.40	1.45	1.50	1.55	1.65	1.85
TEES							
Socket	1.80	1.65	1.65	1.75	1.80	1.95	2.25
†Sleeve	2.15	2.00	2.00	2.10	2.20	2.55	2.90
†Screw		2.20	2.30	2.35	2.45	2.60	2.95
CAPS or Plugs							
Socket .....	.26	.26	.28	.30	.34	.40	.50
Sleeve .....	.26	.26	.28	.30	.34	.40	.50
Screw .....		.30	.32	.34	.38	.42	.52

†Price includes couplings.

Orangeburg Fibre Conduit**JUNCTION BOXES**

These Junction Boxes are water-tight and can be used with either Socket, Sleeve or Screw Joint Conduit. Made in 2, 3 and 4-way. Inside dimensions approximately 8x8 inches. All sizes. Each, \$6.60.

STANDARD BENDS

I. D.	1	1½	2	2½	3	3½	4
Socket	\$1.50	\$1.70	\$1.70	\$1.75	\$1.80	\$2.00	\$2.25
†Sleeve	1.65	1.90	1.90	2.00	2.10	3.85	4.65
†Screw		3.10	3.20	3.20	3.50	3.90	4.70
§Linaduct			1.75	1.80	1.90	2.10	

Special Bends

Add 20 per cent to price of Standard Bends.

†Price includes couplings.

§¼-inch Wall.

Orangeburg Fibre Conduit

"LINADUCT" TYPE.

Linaduct is used as a form and insulating lining for concrete subways, for which purpose it is especially adapted.

It is a thin wall ($\frac{1}{8}$ inch) butt joint type of Orangeburg Fibre Conduit, joined together by means of a close fitting sleeve and having the extremely high insulating qualities of our other types. It has passed the experimental stage—hundreds of thousands of feet having already been installed, with entire satisfaction.

The loss by breakage is reduced to a minimum. Fractured parts can be sawed off and the unbroken portion used.

The close fitting sleeve, quickly and easily adjusted, permits of accurate alignment. No burlap or cement mortar is required for the joints, as the close fitting sleeve makes a joint sufficiently tight for ordinary purposes.

It is extremely light, facilitating and materially lessening the cost of transportation, handling and laying.

It is unexcelled for rapid and inexpensive construction of concrete subways or laterals.

Inside Diameter Inches	Thickness of Walls Inches	Approx. Average Weight per Foot Pounds	Price per Foot Including Coupling
2	$\frac{1}{8}$	0.55	.09
* 2½	$\frac{1}{8}$	0.65	.10
3	$\frac{1}{8}$	0.75	.10
3½	$\frac{1}{8}$	0.85	.11

In ordering Orangeburg Fibre Conduit we advise customers to include sufficient coupling mixture for sealing the joints.

- Coupling Mixture\$2.50 per gal.
- Cutting to special length, per piece, Socket \$0.10; Sleeve \$0.20; Screw \$0.40
- Furnishing Material to sketch, per piece, Socket \$0.25; Sleeve \$0.35; Screw \$0.55
- Material cut to waste will be charged for at regular prices.

BENDS MANUFACTURED

Standard

Inside Diameter, inches	1	1½	2	2½	3	3½	4
45° and 90°.							
Length, feet	2½	5	5	5	5	5	5
Radius, inches	18	18-24-36	18-24-36	24-36	36	36	36

"S" Bends.

Offset, inches	10	20	20	20	20	20	20
Radius, inches	8	36	36	36	36	36	36

Special

Shortest Radius, inches	8	12	18	24	30	36	36
"S" Bends.							
Maximum Offset, inches	16	36	36	28	24	20	20

Discounts quoted upon application. Prices F. O. B. Orangeburg, N. Y., and subject to change without notice.

MEMORANDA

Section 10

CONCRETE VAULTS
BOXES
FOUNDATIONS
AND
TRUNKING STAKES

Concrete Battery Vaults

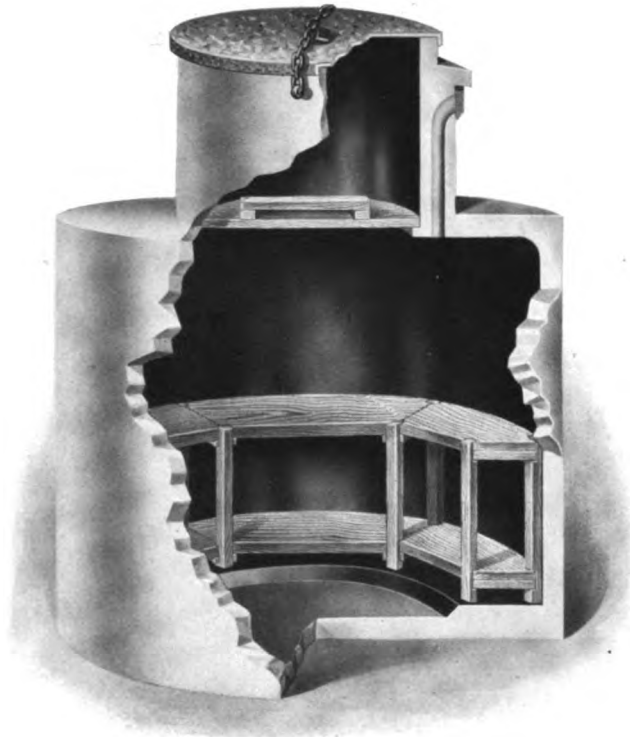
These vaults are equipped with shelving, as shown, to accommodate from 36 to 72 standard cells of primary battery, a ladder, frost cover and substantial galvanized iron cover lined with wood and protected at the points of contact with a felt gasket. Pressed steel or cast iron covers furnished if desired.

The vaults are closed by means of steel chains secured in the side walls and brought up to receive the lock. Single chain to lock at side of vaults if desired. The trunking outlet, as shown, forms a cap for trunking which affords perfectly water-tight joint.

We show only the standard sizes which are carried in stock. We are prepared to manufacture, on order, vaults of any shape or style to suit your requirements.

Concrete Battery Vaults

TYPE 36 STANDARD.



This vault is used when shelter is required for a single signal battery.

Dimensions:

Outside diameter.....	5 ft. 2 in.
Inside diameter	4 ft. 10 in.
Height, floor to frost cover	3 ft. 6 in.
Height of neck	2 ft. 0 in.
Height over all	5 ft. 10 in.
Inside diameter of manhole	2 ft. 4 in.
Height between shelves	1 ft. 3 in.

Capacity, 36 cells. Weight, 3,000 pounds.

List Price\$92.50

Concrete Battery Vaults**TYPE 54 STANDARD.**

This vault is used when shelter is required for two signals. For extremely cold locations our type 72 Special is recommended.

Dimensions:

Outside diameter	5 ft. 2 in.
Inside diameter	4 ft. 10 in.
Height, floor to frost cover	5 ft. 0 in.
Height of neck	2 ft. 0 in.
Height over all	7 ft. 4 in.
Inside diameter of manhole	2 ft. 4 in.
Height between shelves	1 ft. 3 in.

Capacity, 54 cells. Weight, 3,500 pounds.

List Price\$110.00

Concrete Battery Vaults

TYPE 72 STANDARD.



Designed for use where more than two signals are or may be located.

Dimensions :

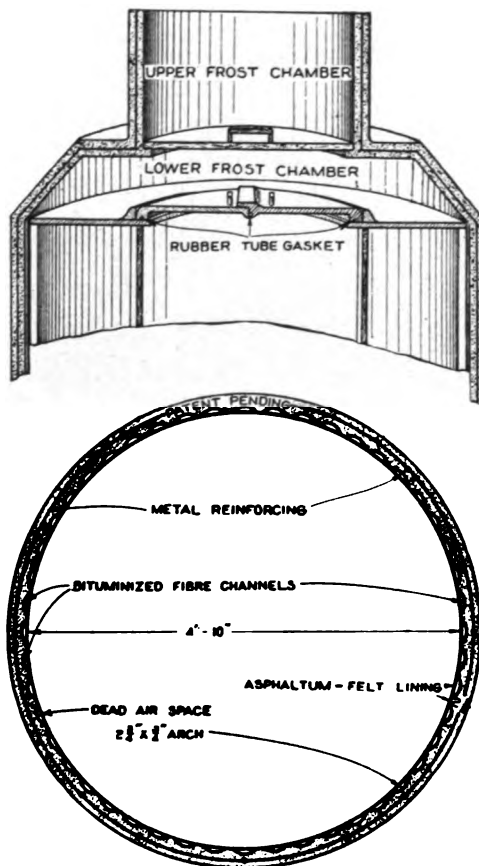
Outside diameter	5 ft. 2 in.
Inside diameter	4 ft. 10 in.
Height, floor to frost cover	6 ft. 0 in.
Height of neck	2 ft. 0 in.
Height over all	8 ft. 4 in.
Inside diameter of manhole	2 ft. 4 in.
Height between shelves	1 ft. 3 in.

Capacity, 72 cells. Weight, 4,000 pounds.

List Price\$125.00

Concrete Battery Vaults

TYPE 72 SPECIAL.



"The Vault with the Air Chamber in the Wall."

This vault is supplied with frost board, as shown, and cast iron lower frost cover. This cover fits into an iron ring and is supplied with rubber gasket at all points of contact.

Dimensions:

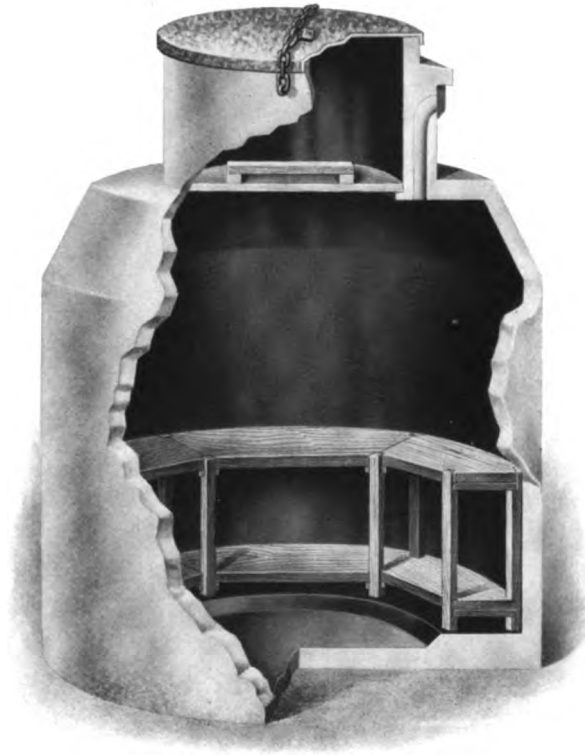
Outside diameter	5 ft. 2 in.
Inside diameter	4 ft. 10 in.
Height, floor to lower frost cover.....	6 ft. 0 in.
Height between frost covers	10 in.
Height of neck	1 ft. 8 in.
Height over all	8 ft. 10 in.
Inside diameter of manhole	2 ft. 4 in.
Height between shelves	1 ft. 3 in.

Capacity, 72 cells. Weight, 4,400 pounds.

List Price\$150.00

Concrete Battery Vaults

TYPE 36 C.



Dimensions:

Outside diameter	5 ft. 2 in.
Inside diameter	4 ft. 10 in.
Diameter manhole	2 ft. 4 in.
Height, floor to frost cover.....	4 ft. 8 in.
Height of neck	1 ft. 8 in.
Height over all	6 ft. 6 in.

Capacity, 36 cells. Weight, 3,200 pounds.

List Price\$100.00

Concrete Battery Vaults**TYPE 54 B.****Dimensions:**

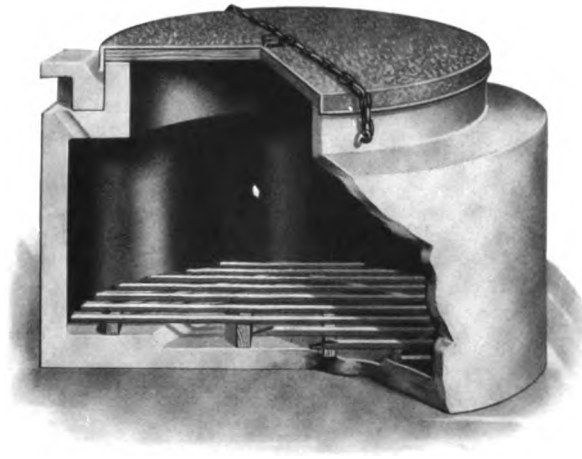
Outside diameter	5 ft. 2 in.
Inside diameter	4 ft. 10 in.
Diameter, manhole	2 ft. 4 in.
Height, floor to frost cover	6 ft. 0 in.
Height of neck	1 ft. 8 in.
Height over all	7 ft. 8 in.

Capacity, 54 cells. Weight, 3,600 pounds.

List Price\$117.50

Concrete Battery Vaults

TYPE 32 D.



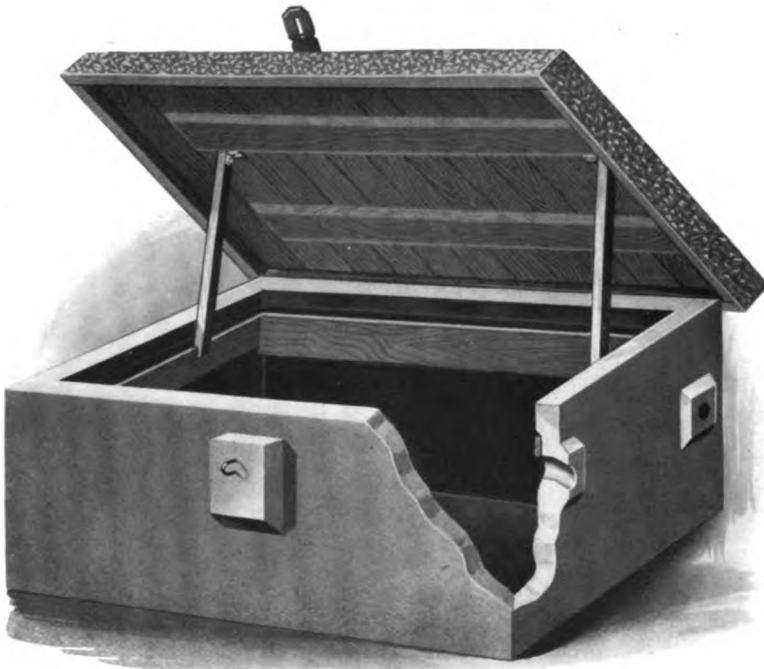
Dimensions:

Outside diameter	5 ft. 2 in.
Inside diameter	4 ft. 10 in.
Diameter manhole	3 ft. 4 in.
Height inside	1 ft. 8 in.
Height of neck	6 in.
Height over all	2 ft. 6 in.

Capacity, 32 cells. Weight, 1,500 pounds.

List Price\$70.00

Concrete Battery Boxes

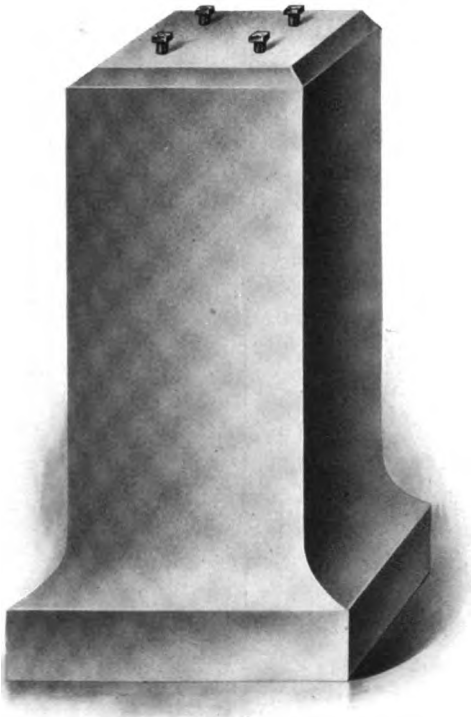


The above illustration shows a re-enforced concrete battery box designed by us in which storage or primary batteries can be housed above ground.

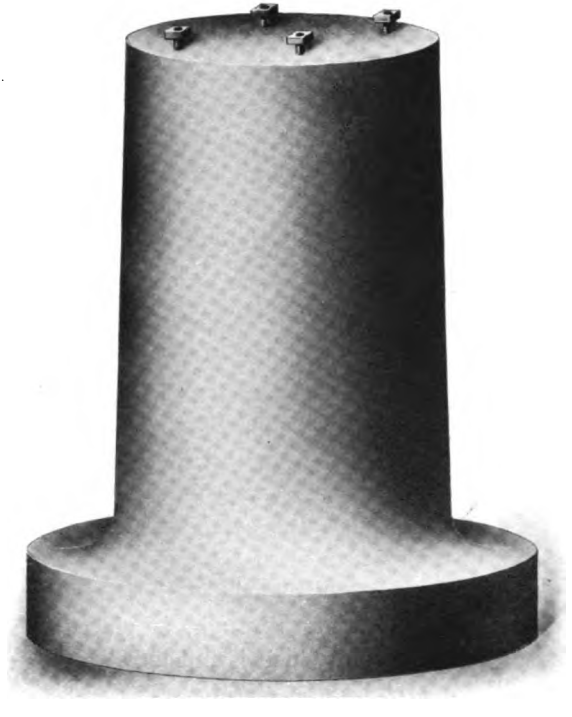
Special designs and sizes furnished to meet your requirements. In ordering give dimensions and number of batteries to be housed.

Prices upon application.

Concrete Signal Foundations



No. 200.



No. 222.

Single, bracket post, wheel, crank, compensator and dwarf signal foundations furnished in accordance with Railway Signal Association specifications or your requirements.

Prices upon application.

Sectional Signal Foundations

Frequent delays and trouble is experienced in building concrete signal foundations in the field. Improper materials or working conditions will impair the value of the foundation and sometimes delays the entire installation.

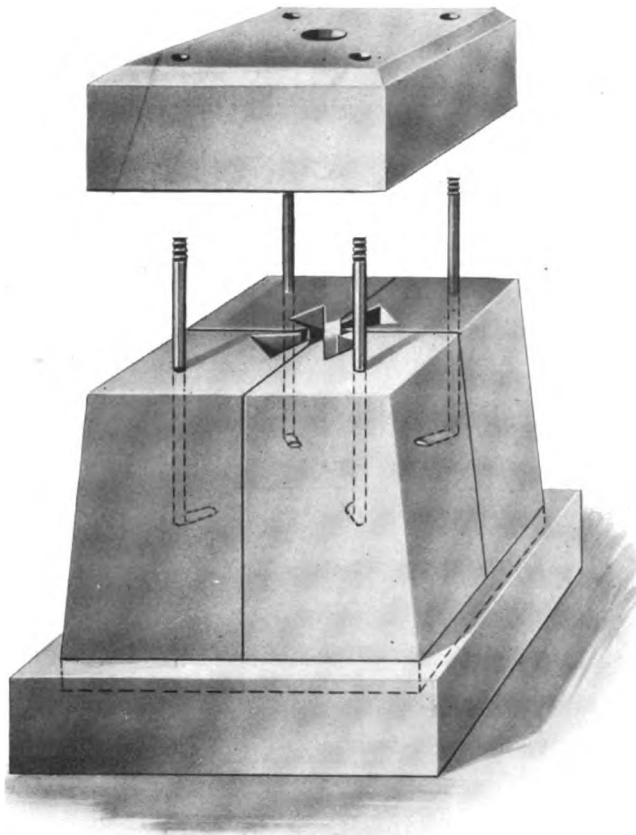
To transport such foundations of sufficient size is often impractical, and, obviating this, we have designed and offer sectional foundations as shown in the accompanying illustration.

A base section is provided (9 inches high) which is set at the desired grade. This is easily handled by means of tackle adjusted through a conical opening in the center of the stone. Through this opening also may be placed a suitable ground wire, which may be run through the center of the entire foundation. Within the depressed upper face of this block are fitted four interlocking blocks, each provided with anchor bolt firmly imbedded. Above the blocks, with bolts extending through, is placed the finishing or cap stone (12 inches thick), which is imbedded in cement mortar and can be leveled up as required.

The center (or key) is grouted with poured concrete, which extends the middle blocks, fills the crevices and forms a monolithic foundation upon which the signal may be immediately installed and which is practically indestructible.

The height of foundation can be increased by enlarging the middle blocks.

Sectional Signal Foundations



Patented.

Standard Dimensions.

No. 300. Straight Signal Pole Foundation.

Cap stone 2 ft. 6 in. x 2 ft. 6 in. x 12 in.
Middle blocks, each 1 ft. 6 in. x 1 ft. 6 in. x 2 ft. 6 in.
Base stone / 3 ft. 6 in. x 3 ft. 6 in. x 9 in.

No. 400 Bracket Signal Pole Foundation.

Cap stone 3 ft. 6 in. x 3 ft. 6 in. x 12 in.
Middle blocks, each 2 ft. 0 in. x 2 ft. 0 in. x 3 ft. 6 in.
Base stone 4 ft. 6 in. x 4 ft. 6 in. x 9 in.

Number	List Price
300 Concrete Sectional Signal Foundation for straight pole.....	\$30.00
400 Concrete Sectional Signal Foundation for bracket pole.....	\$37.50

Concrete Pipe Carrier Foundations



No. 501

8 in. x 12 in. x 24 in.

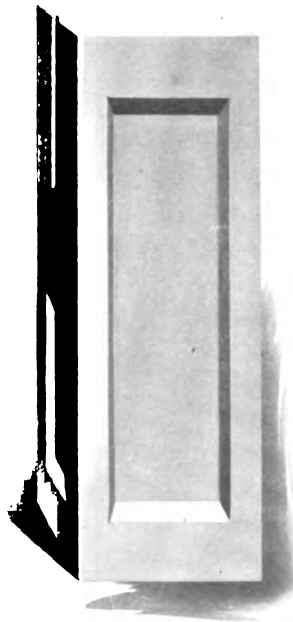
List Price\$0.90



No. 506

8 in. x 10 in. x 24 in.

List Price\$0.95

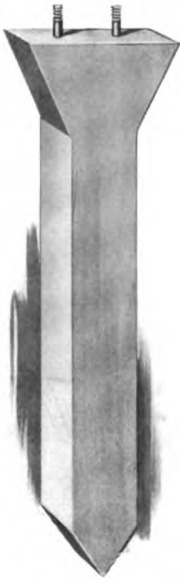


No. 512

8 in. x 12 in. x 36 in.

List Price\$1.25

Concrete Trunking Stakes



No. 650

4 in. x 4 in. x 3 ft.
(top 4 in. x 10 in.)

List Price\$0.60



No. 640

4 in. x 4 in. x 3 ft.

List Price\$0.50

These stakes are indestructible. Wood blocks are permanently secured to bolt imbedded in concrete. Bolt and nut countersunk in block, giving clear top on which trunking is fastened.

We carry a complete line of fence posts, whistle posts, mile posts, clearance and yard limit posts, water tank signs, etc.

MEMORANDA

Section 11

TESTING INSTRUMENTS

Universal Duplex Testing Instrument No. 30



This instrument is intended for the use of Signal Engineers, Supervisors, Inspectors, etc., and designed to meet all ordinary conditions in direct current signal work.

The case is made of quarter sawed oak, fitted with a lock and strap handle.

There are two separate deadbeat D'Arsonval movements which are fitted with jewel bearings. The volt meter has six scale values and the ammeter has five scale values. There are but two binding posts used for each meter. The unique feature of the instrument is the arrangement of plugs by means of which any scale on either meter can be instantly connected.

With the plug arrangement any scale can be used without moving any wires, it being only necessary to insert the plug in the block which is marked with the desired scale.

The length of each scale is three inches. They are divided into thirty divisions, which are one-tenth of an inch apart. Quicker readings can be taken and better results obtained than if there were a large number of divisions close together. This is especially the case in automatic signal work where the current and voltage is continually changing when testing the operating current of a signal. With the one-tenth inch divisions it is very easy to follow the different values of current and voltage while the signal is making a clearing movement.

Size of case: Outside dimensions, $5\frac{3}{4}$ in. high by 7 in. wide by $9\frac{3}{4}$ in. long; weight, 10 pounds.

Universal Duplex Testing Instrument No. 30

Both the clearing and holding of a current of a signal can be instantly determined with this instrument, the operation being as follows:

Insert one plug in the 30 milli ampere block and one plug in the three-ampere block. When the circuit is closed the meter will indicate amperes on the three ampere scale. When the signal is in the clear position, the needle drops back to very nearly zero. If now the plug in the three ampere block is removed the instrument will indicate in milli amperes the amount flowing through the slot coils. This test is made without disturbing any slot wires on signal or moving any wires on the instrument.

The two ammeter posts are connected directly to the galvanometer movement. This makes it possible to use additional shunts reading 0 to 30, 90, 120 amperes, etc., if desired. In using external shunts it is only necessary to remove ammeter plugs and connect shunt to the two posts.

The Standard scale values are as follows:

Voltmeter.

0 to 1.5 volts	.....each division	20	mil volts
0 to .6 volts	.....each division	50	mil volts
0 to 3 volts	.....each division	.1	volt
0 to 15 volts	.....each division	.5	volt
0 to 30 volts	.....each division	1.	volt
0 to 150 volts	.....each division	5.	volt

Ammeter.

0 to 30 mil amperes	.....each division	1	mil ampere
0 to 150 mil amperes	.....each division	5	mil amperes
0 to 300 mil amperes	.....each division	10	mil amperes
0 to 3 amperes	.....each division	.1	ampere
0 to 15 amperes	.....each division	.5	ampere

Other scales can be furnished if desired.

Universal Duplex instrument, with above scales.....	List Price
	\$167.00

Premier Type P Pocket Instruments

(Cut 2/3 actual size).

Voltmeters.

Ammeters.

Mil-ammeters.

Volt-ammeters.

Direct Current.

Dead Beat.

D'Arsonval Principle.

Length 4 7/8 inches.

Width 3 inches.

Depth 2 inches.

Finish—case and front satin finished aluminum.

ACCURATE.

All instruments have jewel bearings, are calibrated with a standard test meter and may be left in circuit continuously without injury.

SCALE DIVISIONS.

These instruments have but one set of divisions, and all divisions are equally spaced over the entire scale, notwithstanding the fact that the instrument may have one, two, three, or four scale values. This feature enables the users to instantly read any value, as indicated by the position of the needle.

TO CHANGE.

From voltage to current readings or vice versa, it is only necessary to make a slight movement with a small button on the end of the case. This enables the user to take current and voltage readings almost simultaneously with one instrument. This is a valuable feature as the voltage of a circuit or battery can be read the instant after a current reading has been taken and while the current is still flowing. The current carrying circuit is not opened by the movement of the button, therefore, in a meter carrying 30 amperes the button can be moved without effecting the circuit; thus there is no danger of injuring the instrument regardless of the current being carried.

POSITION.

Can be used in the horizontal position or may be fastened to a wall, switchboard, etc., in the vertical position. The back of the case is drilled for two small screws, for mounting on walls, switchboards, etc.

GUARANTEE.

These instruments are guaranteed against any electrical or mechanical defect due to faulty construction, and when returned to us with seals unbroken will be repaired free of charge.

Premier Pocket Instruments

USES.

Some of the uses to which these instruments can be put are as follows: Should it be desired to determine the current taken by a signal, motor or other apparatus, and also to what point the voltage of the battery drops at the time the current is flowing, it can readily be done by connecting the ampere post in series with the load in the usual way and connecting the voltage post to the negative side of the battery. With the button pulled out the meter will indicate the current flowing. A slight movement of the button inward will instantly indicate the voltage of the line or battery while the current is still flowing. This feature will be appreciated by all who use electrical testing instruments. The resistance of line, coils, relays and other apparatus can be easily determined by the above method. Many other uses will suggest themselves to those who use the meters.

FIGURE A.

Shows how connections are made to read both voltage and current at the battery end of a circuit. A meter inserted at this point will indicate the current taken by the signal and also the voltage across the terminals of the battery while the current is flowing.

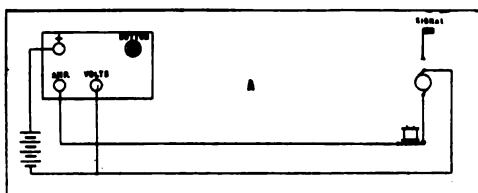


FIGURE B.

Shows how to connect the instrument into a circuit when it is desired to find the current taken by a signal movement and also the voltage applied to the signal while clearing movement is being made.

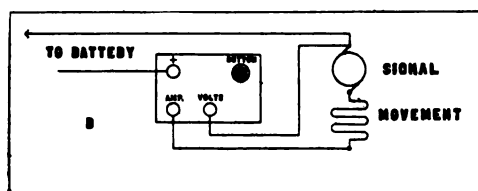
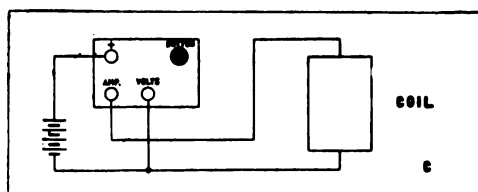


FIGURE C.

Shows how to connect the instrument when it is desired to find the resistance to coils, relays, lines, etc. In making a test of this kind it is only necessary to divide the voltage indicated by the meter by the current indicated by the meter. This voltage reading must be taken when current is flowing through the circuit.



In testing for short circuits on motors, generators, slot coils, relays, etc., if the resistance of the coil or magnet is known, verify the resistance with the instrument in the way indicated for determining resistance. If the resistance is unknown and the device has two or more parts of the same size and number of turns or wire, take a drop reading across the terminals of each part separately.

If there are no short circuits the drop will be the same across all parts and terminals.

Should there be a short circuit, however, the voltage across the short circuited portion will be less than the others.

UNIVERSITY OF ILLINOIS

Premier Pocket Instruments

ORDERING

For convenience in ordering, a list of the standard scale values and readings are shown. As an illustration, suppose it is desired to order a three scale meter with the following scales:

0 to 3 volts—0 to 15 volts—0 to 3 amperes.

Specifications for this meter would read as follows:

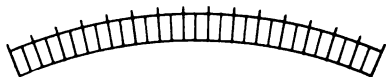
1—Premier type P—3 scale meter with the following scales:

Number 308. Number 306. Number 317.

Always order by Catalogue Number the Scale Values Wanted.

Special scale values can be furnished and we shall be glad to quote prices on them when required. We can also furnish these meters with zero in center of scale if desired.

Full Size Cut of Thirty Division Scale.



Voltage Scales

Number			
300	0 to 300	in 10	volt divisions.
301	0 to 240	in 8	volt divisions.
302	0 to 150	in 5	volt divisions.
303	0 to 75	in 2.5	volt divisions.
304	0 to 60	in 2	volt divisions.
305	0 to 30	in 1	volt divisions.
306	0 to 15	in .5	volt divisions.
307	0 to 6	in .2	volt divisions.
308	0 to 3	in .1	volt divisions.
309	0 to 1.5	in 50 mil.	volt divisions.
310	0 to .6	in 20 mil.	volt divisions.
311	0 to .3	in 10 mil.	volt divisions.
312	0 to .15	in 5 mil.	volt divisions.

Amperage Scales

313	0 to .3	in 10 mil.	ampere div.
314	0 to .6	in 20 mil.	ampere div.
315	0 to .9	in 30 mil.	ampere div.
316	0 to 1.5	in 50 mil.	ampere div.
317	0 to 3	in .1	ampere div.
318	0 to 6	in .2	ampere div.
319	0 to 15	in .5	ampere div.
320	0 to 30	in 1.	ampere div.

Full Size Cut of Twenty-Five Division Scale.



Voltage Scales

Number			
500	0 to 250	in 5	volt divisions.
501	0 to 200	in 4	volt divisions.
502	0 to 125	in 2.5	volt divisions.
503	0 to 100	in 2	volt divisions.
504	0 to 50	in 1	volt divisions.
505	0 to 25	in .5	volt divisions.
506	0 to 12.5	in .25	volt divisions.
507	0 to 5	in .1	volt divisions.
508	0 to 2.5	in 50 mil.	volt divisions.
509	0 to 1	in 20 mil.	volt divisions.
510	0 to .5	in 10 mil.	volt divisions.

Amperage Scales.

511	0 to .5	in 10 mil.	ampere div.
512	0 to 1.	in 20 mil.	ampere div.
513	0 to 2.5	in 50 mil.	ampere div.
514	0 to 5	in .1	ampere div.
515	0 to 12.5	in .25	ampere div.
516	0 to 25	in .5	ampere div.

Thirty division scales cannot be combined with 25 division scales.

Premier Pocket Instruments

VOLTMETERS WITH 1, 2, 3 OR 4 SCALES.

Single Reading.		Two Readings.	
	List Price		List Price
Any voltage to 15 volts.....	\$22.00	Any voltage to 30 volts.....	\$27.50
Any voltage to 30 volts.....	22.50	Any voltage to 75 volts.....	29.00
Any voltage to 75 volts.....	23.50	Any voltage to 150 volts.....	32.00
Any voltage to 150 volts.....	27.50	Any voltage to 300 volts.....	35.00
Any voltage to 300 volts.....	28.50		
Three Readings.		Four Readings.	
Any voltage to 30 volts.....	28.50	Any voltage to 30 volts.....	32.00
Any voltage to 75 volts.....	32.00	Any voltage to 75 volts.....	35.00
Any voltage to 150 volts.....	35.00	Any voltage to 150 volts.....	38.00
Any voltage to 300 volts.....	43.50	Any voltage to 300 volts.....	45.00

AMMETERS WITH 1 OR 2 READINGS.

Single Reading.	Two Readings.
Any amperage to 30 amperes.....	\$22.00
	Any amperage to 30 amperes.....
	\$27.50

TWO SCALE VOLT-AMMETERS.

	List Price
Any voltage up to 5 volts and any amperage up to 30 amperes.....	\$28.50
Any voltage up to 10 volts and any amperage up to 30 amperes.....	29.50
Any voltage up to 30 volts and any amperage up to 30 amperes.....	30.50
Any voltage up to 75 volts and any amperage up to 30 amperes.....	31.50
Any voltage up to 150 volts and any amperage up to 30 amperes.....	32.00
Any voltage up to 300 volts and any amperage up to 30 amperes.....	35.00

THREE READING VOLT-AMMETERS.

2 Voltage and 1 Amperage Scale.

Any 2 voltage scales up to 30 V. and 1 amperage scale up to 30 A.....	32.00
Any 2 voltage scales up to 75 V. and 1 amperage scale up to 30 A.....	35.00
Any 2 voltage scales up to 150 V. and 1 amperage scale up to 30 A.....	37.00
Any 2 voltage scales up to 300 V. and 1 amperage scale up to 30 A.....	40.00

2 Amperage and 1 Voltage Scale.

Any 2 amperage scales up to 30 A. and 1 voltage scale up to 15 V.....	32.00
Any 2 amperage scales up to 30 A. and 1 voltage scale up to 75 V.....	35.00
Any 2 amperage scales up to 30 A. and 1 voltage scale up to 150 V.....	38.00
Any 2 amperage scales up to 30 A. and 1 voltage scale up to 300 V.....	45.00

FOUR READING VOLT-AMMETERS.

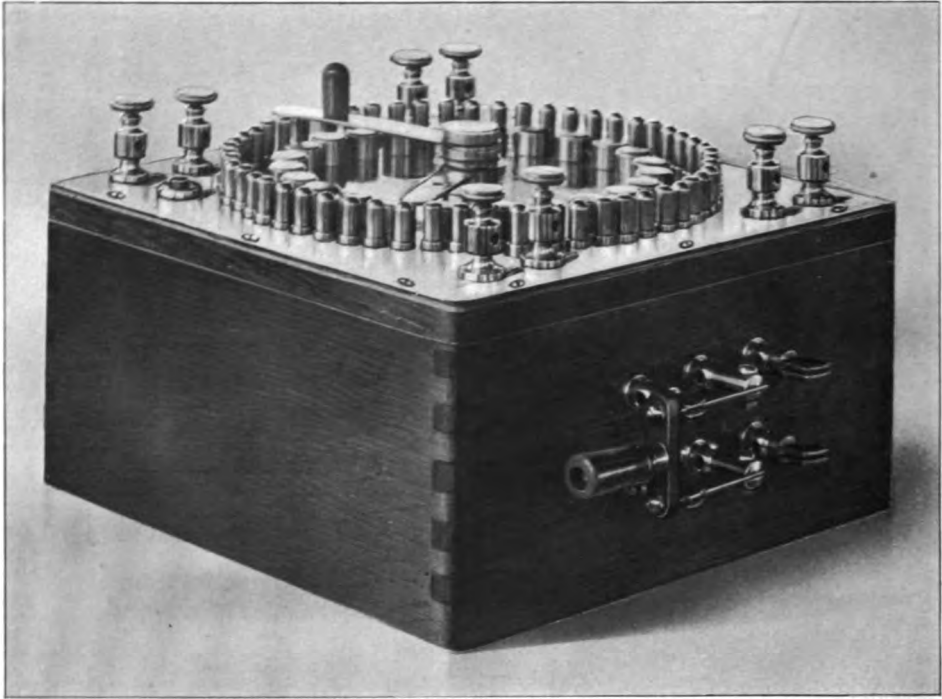
2 Voltage and 2 Amperage Scales.

Any 2 amperage scales up to 30 A. and 2 voltage scales up to 15 V.....	35.00
Any 2 amperage scales up to 30 A. and 2 voltage scales up to 30 V.....	37.00
Any 2 amperage scales up to 30 A. and 2 voltage scales up to 75 V.....	40.00
Any 2 amperage scales up to 30 A. and 2 voltage scales up to 150 V.....	45.00
Any 2 amperage scales up to 30 A. and 2 voltage scales up to 300 V.....	53.00

3 Voltage and 1 Amperage Scales.

Any 3 voltage scales up to 30 V. and 1 amperage scale up to 30 A.....	35.00
Any 3 voltage scales up to 75 V. and 1 amperage scale up to 30 A.....	38.00
Any 3 voltage scales up to 150 V. and 1 amperage scale up to 30 A.....	42.00

Cases.....	2.50
Cases with shoulder strap.....	3.25

Potentiometer Rheostat No. 4281

For testing the operating and releasing current of relays, locks, slots, indicators, etc., this instrument cannot be surpassed. These devices in many cases operate on very small amounts of current and to insure their proper operating characteristics the Potentiometer Rheostat is provided for making the necessary tests. In a range of resistance from 2 to 2,000 ohms this instrument will allow regulations in fractions of a milli-ampere.

The D. P. D. T. switch will allow tests to be made in connection with polarized circuits and to determine the value or amounts of residual magnetism.

It is now in use by railroads and signal companies.

	List Price
No. 4281. Potentiometer Rheostat	\$35.00

Potentiometer Rheostat

INSTRUCTIONS.

To use as a potentiometer rheostat make the following connections:

- Ammeter on binding posts“A”
- Voltmeter on binding posts.....“V”
- Battery on binding posts“B”
- Device under test binding posts“X”
- Connect fuse wire (1 amp) across posts“J”

If no ammeter is used connect the two binding posts “A” with a jumper.
If no voltmeter is used no other connections should be put on “V” binding post.

Maximum voltage when used as above must not exceed 30 volts.

To use as an ordinary rheostat connect as follows:

- Ammeter on binding posts.....“A”
- Voltmeter on binding posts“V”
- Battery or line binding posts“B”
- Device under test binding posts“X”
- Disconnect jumper from post“J”

Whenever it is desired to obtain very close regulation it can be obtained by connecting jumper across posts J.

The winding will carry one ampere continuously or three (3) amperes for 30 seconds.

The switch located on the side of instrument will reverse the polarity of device under test. Having this switch open still leaves current in the wire, therefore, if it is desired to discontinue test, take off wire from either of the posts marked “B.”

CAUTION: Always have levers on contacts marked “0” before starting test.

- Resistance per step of outside row of contacts.... .25 ohm
- Resistance per step of inside row of contacts....1.00 ohm

Standard Direct Current Instruments**Type S.**

Round pattern for switchboard mounting.

**Type M.**

When necessary type M portable instruments can be furnished with soft iron cases to protect the system from the influence of stray magnetic fields.

Voltmeters

Scale		Type S	Type M
0 to 1.5 in	.01 volt. div.	\$26.00	\$35.00
0 to 3. in	.02 volt. div.	26.00	35.00
0 to 5. in	.05 volt. div.	26.00	35.00
0 to 10. in	.1 volt. div.	26.50	35.00
0 to 15. in	.1 volt. div.	27.00	35.00
0 to 25. in	.2 volt. div.	27.00	36.00
0 to 50. in	.5 volt. div.	27.50	37.00
0 to 75. in	.5 volt. div.	28.00	38.00
0 to 130. in	1.0 volt. div.	29.00	39.00
0 to 150. in	1.0 volt. div.	30.00	40.00
0 to 250. in	2.0 volt. div.	32.00	43.00
0 to 300. in	2.0 volt. div.	35.00	45.00
0 to 600. in	5.0 volt. div.	40.00	50.00
0 to 750. in	5.0 volt. div.	43.00	55.00
Milli-Voltmeters, any range		25.00	35.00

For double range Voltmeters add \$5.00 to the list price of highest range.

Ammeters

Scale		Type S	Type M
0 to 1 in	.01 amp. div.	\$25.00	\$35.00
0 to 3 in	.02 amp. div.	25.00	35.00
0 to 5 in	.05 amp. div.	25.00	35.00
0 to 10 in	.1 amp. div.	25.00	35.00
0 to 15 in	.1 amp. div.	25.00	35.00
0 to 25 in	.2 amp. div.	25.00	35.00
0 to 50 in	.5 amp. div.	25.00	35.00
0 to 75 in	.5 amp. div.	26.00	35.00
0 to 100 in	1.0 amp. div.	26.50	36.00
0 to 150 in	1.0 amp. div.	27.50	36.50
0 to 200 in	2.0 amp. div.	28.50	37.00
0 to 250 in	2.0 amp. div.	29.00	37.50
0 to 300 in	2.0 amp. div.	29.50	38.00
0 to 400 in	5.0 amp. div.	30.00	38.50
0 to 500 in	5.0 amp. div.	31.00	39.50
0 to 600 in	5.0 amp. div.	32.50	
0 to 700 in	5.0 amp. div.	33.00	
0 to 1000 in	10.0 amp. div.	35.00	
0 to 1250 in	10.0 amp. div.	37.00	
0 to 1500 in	10.0 amp. div.	44.00	
0 to 2000 in	20.0 amp. div.	52.50	
0 to 2500 in	25.0 amp. div.	55.50	
0 to 3000 in	25.0 amp. div.	58.50	
Milli-Ammeters, any range		25.00	35.00

For double range ammeters add list price of extra shunt.

When specially ordered, type S instruments can be furnished with back connections without extra cost. Scales reading right and left of zero can also be furnished, if necessary. Price of ammeters include cost of shunt. Ranges up to 25 amperes are self-contained; above this shunt is external to the instrument case.

Small Size Direct Current Instruments**Type C.**

These instruments measure only $7\frac{5}{16}$ inches across the base and are recommended for use on small switchboards, they are identical in general appearance to the type S, only much smaller.

**Type L.**

These instruments are very small and are exceedingly light in weight, for this reason they will be found particularly useful for track work. Leather carrying cases can be provided at an additional cost of \$8.00 list.

Voltmeters

Scale	Type C	Type L
0 to 1.5 in .025 volt. div.	\$21.50	\$26.00
0 to 3. in .05 volt. div.	21.50	26.00
0 to 5. in .1 volt. div.	21.50	26.00
0 to 10. in .2 volt. div.	21.50	26.50
0 to 15. in .2 volt. div.	21.50	27.00
0 to 25. in .5 volt. div.	21.50	27.00
0 to 50. in 1.0 volt. div.	21.50	27.50
0 to 75. in 1.0 volt. div.	21.50	28.00
0 to 130. in 2.0 volt. div.	22.00	29.00
0 to 150. in 2.0 volt. div.	22.50	30.00
0 to 300. in 5.0 volt. div.	27.50	35.00
Milli-Voltmeter, any range	22.00	25.00

For double range type C Voltmeter add \$2.50 to list price of highest range.

For double range type L Voltmeter add \$5.00 to list price of highest range.

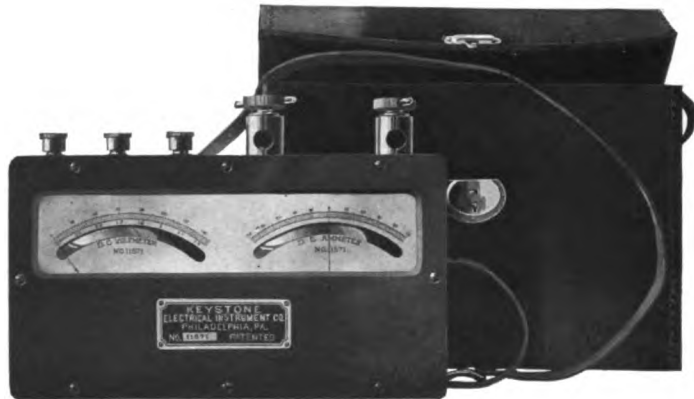
Ammeters

Scale	Type C	Type L
0 to 1.5 in .025 amp. div.	\$20.00	\$25.00
0 to 3. in .05 amp. div.	20.00	25.00
0 to 5. in .1 amp. div.	20.00	25.00
0 to 10. in .2 amp. div.	20.00	25.00
0 to 15. in .2 amp. div.	20.00	25.00
0 to 25. in .5 amp. div.	20.00	25.00
0 to 50. in 1.0 amp. div.	20.00	25.00
0 to 75. in 1.0 amp. div.	21.00	
0 to 100. in 1.0 amp. div.	21.50	
0 to 125. in 2.0 amp. div.	22.00	
0 to 150. in 2.0 amp. div.	22.50	
0 to 175. in 2.0 amp. div.	23.00	
0 to 200. in 2.0 amp. div.	23.50	
0 to 250. in 5.0 amp. div.	24.00	
0 to 300. in 5.0 amp. div.	24.50	
Milli-Ammeter, any range	22.00	

For other ranges take list price of Milli-Voltmeter, \$25.00 and add price of shunt.

When specially ordered type C instruments can be furnished with back connections without extra cost. Scales reading right and left of zero can also be furnished, if necessary. Price of ammeters include cost of shunt. Ranges up to 25 amperes are self-contained, above this shunt is external to the instrument case.

Type L ammeters are made self-contained up to 25 amperes, but shunts can be provided separately when required on low ranges as well as high.

Small Type L Duplex Portable

In certain classes of testing it is essential to take simultaneous readings of voltage and current. When this is the case, the above duplex meter will be found very satisfactory. The two scales are close together so that the motion of each pointer can be carefully followed. The list prices given below include a fine leather carrying case with strap. The whole outfit is very compact and light in weight, making an ideal combination for inspectors.

RANGE OF AMPERE SCALE	RANGE OF VOLT SCALE.						
	3	15	25	150	300	600	750
10	\$57.00	\$57.00	\$57.00	\$60.00	\$65.00	\$70.00	\$75.00
25	57.00	57.00	57.00	60.00	65.00	70.00	75.00
50	57.00	57.00	57.00	60.00	65.00	70.00	75.00
75	57.00	57.00	57.00	60.00	65.00	70.00	75.00
100	57.00	57.00	57.00	60.00	65.00	70.00	75.00
150	57.00	57.00	57.00	60.00	65.00	70.00	75.00
200	58.00	58.00	58.00	61.00	66.00	71.00	76.00
250	59.00	59.00	59.00	62.00	67.00	72.00	77.00
300	60.00	60.00	60.00	63.00	68.00	73.00	78.00
400	61.00	61.00	61.00	64.00	69.00	74.00	79.00
500	62.00	62.00	62.00	65.00	70.00	75.00	80.00

For double scale voltmeter add \$5.00 to list of highest range required.
For double scale ammeter add list price of extra shunt.

Type L Combination Volt-Ammeter



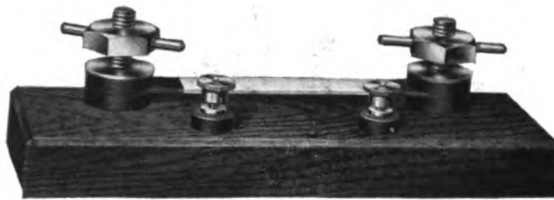
The instrument shown above is designed primarily for the use of signal supervisors and with it both current and voltage measurements can be made, all shunts being self-contained. There are no projecting binding posts and connections are made by inserting plug leads into plug receptacles on one side of the case. This is the most compact measuring instrument of its kind ever made. It can be furnished in any combination of ranges providing the maximum voltage does not exceed 150 volts and the maximum current 50 amperes.

Any two ranges	\$40.00
Any three ranges	45.00
Any four ranges	50.00
Any five ranges	55.00

Shunts for Direct Current Ammeters



Switchboard Type Shunt.



Semi Portable Type.

Any range switchboard type shunt up to 250 amperes.....\$4.50
 Any range semi-portable type shunt up to 250 amperes..... 9.00

Capacity	Switchboard	Portable
300 Amperes	\$ 5.10	\$10.20
400 Amperes	5.50	11.00
500 Amperes	6.50	13.00
600 Amperes	8.00	16.00
800 Amperes	9.50	19.00
1000 Amperes	11.00	22.00
1500 Amperes	20.00	40.00
2000 Amperes	28.00	56.00
3000 Amperes	34.00	68.00

Above shunts are suitable for use with ammeters, types S, M and L. They are all interchangeable and calibrated to a drop of 100 Milli-Volts on full load.

Alternating Current Portable Voltmeters

Scale 1 to 12 Volts in $\frac{1}{10}$ Volt divisions	\$58.00
Scale 2 to 20 Volts in $\frac{1}{5}$ Volt divisions	59.00
Scale 5 to 40 Volts in $\frac{1}{4}$ Volt divisions	60.00
Scale 10 to 80 Volts in $\frac{1}{2}$ Volt divisions	61.00
Scale 20 to 120 Volts in 1 Volt divisions	63.00
Scale 20 to 150 Volts in 1 Volt divisions	65.00
Scale 40 to 300 Volts in 2 Volt divisions	70.00
Scale 100 to 600 Volts in 5 Volt divisions	75.00
Scale 100 to 750 Volts in 5 Volt divisions	80.00

For multiple range instruments add \$10.00 list for each range to the list price of the highest range required.

Alternating Current Portable Ammeters

Scale $\frac{1}{5}$ to 2 Amperes in $\frac{1}{50}$ Amp. divisions	\$40.00
Scale $\frac{1}{2}$ to 5 Amperes in $\frac{1}{20}$ Amp. divisions	40.00
Scale 1 to 10 Amperes in $\frac{1}{10}$ Amp. divisions	40.00
Scale 1 to 15 Amperes in $\frac{1}{10}$ Amp. divisions	40.00
Scale 3 to 25 Amperes in $\frac{1}{5}$ Amp. divisions	40.00
Scale 5 to 50 Amperes in $\frac{1}{2}$ Amp. divisions	40.00
Scale 10 to 100 Amperes in 1 Amp. divisions	45.00
Scale 20 to 150 Amperes in 1 Amp. divisions	50.00
Scale 20 to 200 Amperes in 2 Amp. divisions	55.00
Scale 30 to 250 Amperes in 2 Amp. divisions	57.50
Scale 30 to 300 Amperes in 2 Amp. divisions	60.00
Scale 50 to 400 Amperes in 5 Amp. divisions	65.00
Scale 50 to 500 Amperes in 5 Amp. divisions	70.00

Leather carrying cases for the above ammeters and voltmeters can be furnished at \$10.00 net.

NOTICE. If none of the instruments listed on these pages meet your particular requirements write us and we will give your wants special attention.

Track Circuit Tester No. 9051



This instrument was especially designed for the use of signalmen in testing for track circuit troubles. An iron-clad electro magnet wound to 4-ohms resistance, with an easy working armature, all of which are covered by a brass shield, with substantial binding posts, flexible wires, and metal terminals. Can be carried in the vest pocket and is always ready. Other resistance winding furnished if desired.

Resistance Unit No. 7300



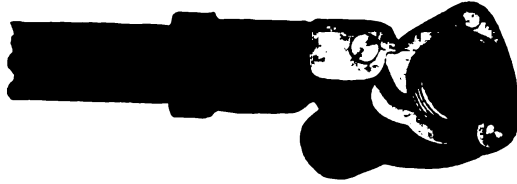
Waterproof and indestructible. In ordering specify resistance and carrying capacity.

Number	List Price
9051 Track Circuit Tester, complete	\$5.50
7300 Resistance Unit	3.00

Section 12

TOOLS

Parmelee Pipe Wrench



Designed especially to handle pipes spaced closely as in signal work. Requires but three-quarters inch of space between pipes.

Positive Grip instantly taken. Operates without lost motion in stroke of handle. Can be locked or released easily in any position on the pipe.

Ratchet-like Action. Successive grips can be taken without having to hold the wrench on the pipe. By a slight twist of the handle, which is round and knurled, the wrench is locked in any position.

Can't Chew. The Parmelee will make or break the tightest joints without injuring pipe or threads as it has no teeth. The only wrench suitable for galvanized pipe.

Can't Crush. The Parmelee will grip without crushing pipe that has become weakened by long use or exposure, and separate hopelessly rusted joints, saving its cost many times over.

Number	List Price
1 Wrench, complete, 10-in. handle, for $\frac{3}{8}$ to 1-in. pipe, each.....	\$5.75
$2\frac{1}{2}$ Wrench, complete, 20-in. handle, for $\frac{3}{4}$ to 2-in. pipe, each.....	8.40
$3\frac{1}{2}$ Wrench, complete, 25-in. handle, for $1\frac{1}{2}$ to 3-in. pipe, each.....	8.40
$\frac{3}{8}$ in., $\frac{1}{2}$ in., $\frac{3}{4}$ in., 1 in. Girths for No. 1 Wrench .....	.84
$\frac{3}{4}$ in., 1 in., $1\frac{1}{4}$ in. Girths for No. $2\frac{1}{2}$ Wrench	1.10
$1\frac{1}{2}$ in., 2 in. Girths for No. $2\frac{1}{2}$ Wrench	1.40
$1\frac{1}{2}$ in., 2 in., $2\frac{1}{2}$ in., 3 in. Girths for No. $3\frac{1}{2}$ Wrench	1.40
Handle for No. 1 Wrench.....	2.52
Handle for No. $2\frac{1}{2}$ Wrench.....	2.80
Handle for No. $3\frac{1}{2}$ Wrench.....	3.34
$\frac{3}{4}$ in., 1 in., $1\frac{1}{4}$ in., B. C. L.....	.40
$1\frac{1}{2}$ in., 2 in., $2\frac{1}{2}$ in., 3 in., B. C. L.....	.50
Fulcrum (or head) for No. $2\frac{1}{2}$ Wrench	1.70
Fulcrum (or head) for No. $3\frac{1}{2}$ Wrench	1.70
Lock boit .....	.28
Brace .....	.56
Plugs .....	.28
No. 1 Slip Pins .....	.22
No. $2\frac{1}{2}$ Slip Pins .....	.28

Wrenches

STEEL LAG SCREW WRENCH



No. 325.

Number	List Price
325 Full polished. Length 11 1/2 inches, each	\$1.60

These wrenches are forged from select bar steel. The jaw is made tapering, allowing it to take any ordinary size machine bolts, nuts, or lag screws, from 3/8 inch to 1/2 inch. The hook is a means of attaching the wrench to the tool belt, and it serves to keep the heads of bolts within the jaws of the wrench when in use.

SOLID KNIFE HANDLE WRENCH



No. 595.

Number	List Price
595 6-inch, opens 7/8-inch, each....	\$0.90
596 8-inch, opens 1 1/4-inch, each....	1.00
597 10-inch, opens 1 3/4-inch, each....	1.20
598 12-inch, opens 2 1/8-inch, each....	1.40
599 15-inch, opens 2 3/4-inch, each....	2.40
600 18-inch, opens 3 1/8-inch, each....	3.00
601 21-inch, opens 4 1/4-inch, each....	3.60

By Actual Test the Strongest Wrench Made

The entire bar of this wrench is a solid steel forging of one piece, thereby having the greatest tensile strength. They are undoubtedly the superior of any screw wrench on the market.

This No. 63W Wrench is especially adapted for use on terminal nuts, receiver, transmitter, and binding posts, etc. There are three different side openings, with dimensions as follows: 3/8 inch, 9/8 inch, and 7/16 inch, which will engage either square or hexagonal nuts. One end is bent at an angle of 45 degrees, to allow its use in confined places. Total length 21 1/2 inches.

Cut shows actual size of Wrench.

The cost is so small, and the convenience so great, that one of the wrenches should be in every Electrician's Tool Kit.	
No. 63w. Each	\$0.30

COMBINATION LAG SCREW AND NUT WRENCH



No. 326.

Number	List Price
326 Full polished. Length 13 1/2 inches, each	\$2.50

Forged from select bar steel. The slot in this wrench is formed in a cross shape, and will fit machine bolts, nuts, or lag screws, from 3/8 inch to 1/2 inch. The small end of the wrench is arranged for 5-16 inch machine bolts or lag screws. The round hole allowing the end of a bolt to come through as the nut is run on.

ADJUSTABLE PIPE WRENCH



No. 590 to 591 A.

Wood Handle Wrenches
Made in 6, 8, 10, and 14 inch sizes.



No. 590 to 593 A.

Steel Handle Wrenches

Made in 10, 14, 18, 24, 36 and 48 inch sizes.

Number	List Price
590 6 inch, each	\$2.00
590A 8 inch, each	2.00
591 10 inch, each	2.25
591A 14 inch, each	3.00
592 18 inch, each	4.00
592A 24 inch, each	6.00
593 36 inch, each	12.00
593A 48 inch, each.....	18.00

All parts interchangeable.

Made from high-grade steel and material throughout.

TERMINAL WRENCH



No. 63 W.

Wrenches

COMBINATION TIE WIRE, SLEEVE AND SPLICING WRENCH



W. U. Style.

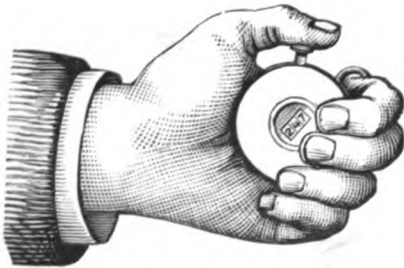
- | Number | List Price |
|--|------------|
| 320A. Full polished, each | \$2.50 |
| For tying in with Nos. 7 to 11 copper wire; for splicing Nos. 8 and 9 iron wire, and for twisting Nos. 9 and 10 B. & S. gauge sleeve, length 7 inches. | |
| These wrenches are intended for use along with the Splicing Clamp. | |
| The ends of the wires to be connected are held with the Splicing Clamp, and the projecting end is caught with the shoulder of the wrench, and by turning the wrench around continuously it will coil the wire tightly and evenly on the line wire, making a clean, tight splice. | |

STEEL SPLICING WRENCH



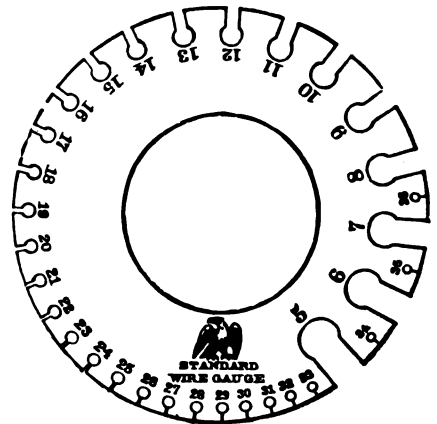
- | Number | List Price |
|---|------------|
| 321. Full polished, each | \$1.70 |
| For Nos. 4 and 6 iron wire or 2 and 4 copper wire. | |
| 322. Full polished, each | 1.70 |
| For Nos. 8 and 9 iron wire or 6 and 8 copper wire. | |
| 323. Full polished, each | 1.70 |
| For Nos. 10 and 12 iron wire or 8 and 10 copper wire. | |
| All above wrenches 7 inches. | |

POLE COUNTER OR REGISTER AMERICAN STANDARD WIRE GAUGE



618. Each\$5.00

In using the Register place the middle finger of the left hand through the ring holding the Register in position so as to bring the pusher directly under the thumb. In order to insure registration the pusher must be pushed down as far as it will go, then allowed to spring back to its place. In commencing to count, only the O's should appear, thus, O O O. The Register will count to 999; the next registration or count causes the O O O's to appear, making 1,000. After taking off any particular count or registration (for example 125), and it is desired to set the Register to O, press the pusher down the required number of times until the O appears at the right and then change the other figures at the left by turning the thumb buttons on back of Register till the O's appear, always turning the thumb of middle dial first.



These gauges are tempered, adjusted and warranted accurate.

- 619. Measuring from 0 to 36..\$5.00
- 620. Measuring from 5 to 36.. 4.00

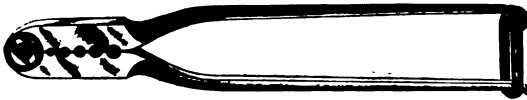
Splicing Clamps

The Splicing Clamp is one of the most important tools in the lineman's kit, and as electrically and mechanically good joints are of the utmost importance in a line, it is evident that the tools selected to do this work should have careful consideration. The following illustrations show the different styles and the sizes of wire for which they are fitted. The handles have a spring temper and will not bend out of shape after being closed on the wire, each groove holds two wires side by side.



No. 301.

List Price
 No. 301 Each\$3.20
 for Nos. 4, 6, 12 and 14 iron wire,
 or Nos. 2, 4, 10 and 12 copper wire.
 Length 10 inches.



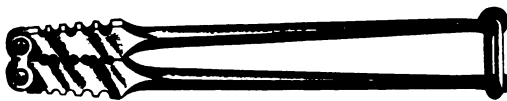
No. 302 A.

No. 302A Each\$3.40
 for Nos. 6, 8, 10, 12 and 14 iron wire,
 or Nos. 4, 6, 8, 10 and 12 copper wire.
 Length 10½ inches.



No. 307.

No. 307 Each\$3.20
 for Nos. 8, 10, 12 and 14 copper
 sleeves, or Nos. 10, 12, 14 and 16 iron
 sleeves.
 Length 10½ inches.



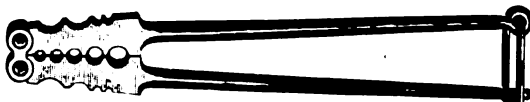
No. 309.

No. 309 Each\$3.60
 5 holes for Nos. 6, 8, 10, 12 and 14
 iron wire, or Nos. 4, 6, 8, 10 and 12
 copper wire, and 8, 10, 12 and 14
 copper sleeves, or Nos. 10, 12, 14
 and 16 iron sleeves.
 Length 10¾ inches.



No. 309 C.

No. 309C Each\$3.60
 5 round holes and 2 oval holes for
 Nos. 4, 6, 8, 10, 12 and 14 iron wire,
 or Nos. 2, 4, 6, 8, 10 and 12 copper
 wire. 2 double holes for 12 and 10
 copper sleeves, or 12 and 14 iron
 sleeves.
 Length 10¾ inches.



No. 311 A.

No. 311A Each\$3.60
 has 7 round holes and 2 oval holes
 for Nos. 4 to 14 iron wire, or Nos. 2
 to 12 copper wire.
 Length 10¾ inches.

BRYANT ZINC COMPANY

Pliers

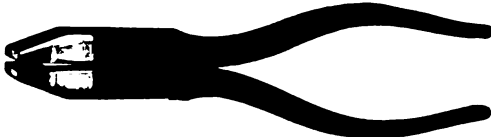
UTICA SIDE CUTTING PLIERS



No. 313C.

Number	List Price
313C. 4-inch.....	Per dozen \$11.00
313D. 5 "	" " 11.50
313. 6 "	" " 12.50
313A. 7 "	" " 15.50
313B. 8 "	" " 18.00

P. S. & W. SIDE CUTTING PLIERS



No. 314.

Number	List Price
314. 5-inch.....	Per dozen \$12.50
314F. 6 "	" " 13.50
314G. 7 "	" " 17.00
314H. 8 "	" " 20.00

MICA INSULATED SIDE CUTTING PLIERS

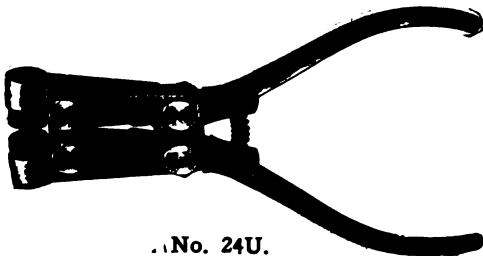


No. 314B.

Number	List Price
314B. 6-inch.....	Per dozen \$24.50
314C. 7 "	" " 29.25
314D. 8 "	" " 34.00

These pliers are the same as No. 314F. G. & H., but have the handles covered with a patent insulation, especially adapting them for use by linemen, motormen, electricians, etc. The insulation is not brittle and will not flake off. They are life-saving, of invaluable service and reliable.

COMPOUND LEVER SEAL PRESS



No. 24U.

Number	List Price
24U. 6 inches.....	Per dozen \$32.00

The most powerful one-handed seal press on the market.

For use on railroads, and by express and electric companies.

For sealing meters, cars, wire, etc.

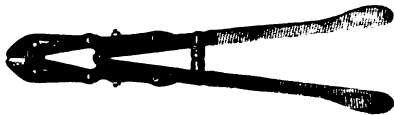
PORTER'S "NEW EASY" BOLT AND WIRE CUTTER



No. 637 to No. 639.

Number	List Price Each
637. 3/8-inch bolts, wt. 4 1/4 lbs., 24-inch..	\$5.00
638. 1/2-inch bolts, wt. 7 1/2 lbs., 30-inch..	7.00
639. 5/8-inch bolts, wt. 12 1/2 lbs., 36-inch..	9.00

BOSTON ELECTRIC WIRE CUTTERS



No. 639A and No. 639 B.

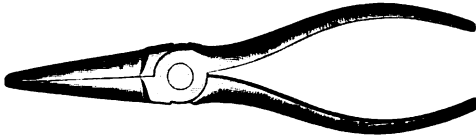
With Rubber Insulated Handles.

Number	List Price Each
639A. Cuts 3/8 but opens 3/4-inch.....	\$9.00
639B. Cuts 1/2 but opens 1 1/8-inch.....	12.00

Pliers

EXTRA LONG FLAT NOSE PLIERS

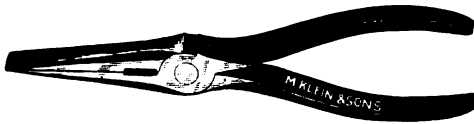
Polished Heads—Black Handles.



No. 318O.

Number	List Price
318O 5 inch, each.....	\$1.50
318P 6 inch, each.....	1.60
1318P 7 inch, each.....	1.80

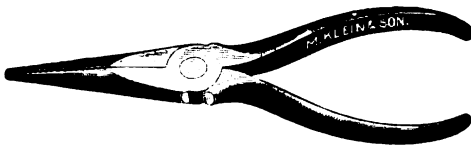
EXTRA LONG DUCK BILL SIDE CUTTING PLIERS



No. 319G.

Number	List Price
318G 5 inch, each.....	\$1.70
318F 6 inch, each.....	1.80
1318F 7 inch, each.....	2.00

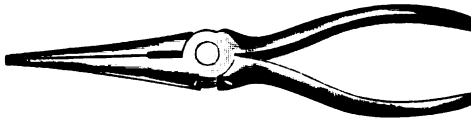
EXTRA LONG OVAL NOSE PLIERS



No. 319N.

Number	List Price
319N 5 inch, each.....	\$1.50
319H 6 inch, each.....	1.60
1319H 7 inch, each.....	1.80

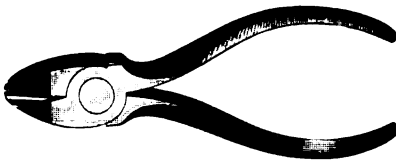
EXTRA LONG OVAL NOSE SIDE CUTTING PLIERS



No. 319O.

Number	List Price
319O 5 inch, each.....	\$1.70
319I 6 inch, each.....	1.80
1319I 7 inch, each.....	2.00

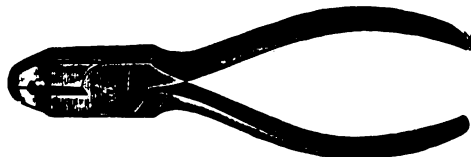
OBLIQUE DIAGONAL CUTTING PLIERS



No. 3164.

Number	List Price
3164 5 inch, each.....	\$1.80
3164A 6 inch, each.....	2.00

BINDING POST PLIER



No. 325U.

Number	List Price
325U 5½ inch, each.....	\$1.20

These Pliers are forged from crucible steel, have a lap joint, polished jaws, and are a superior tool.

They are a handy and useful tool for Binding Posts, Indicators, Annunciators, Relays, Lightning Arresters, etc., and are especially adapted for plumbers, and workmen who put up gas and electric fixtures.

Pliers

Pliers are hand forged from extra bar steel, and carefully tempered. They are easy cutters, and are giving universal satisfaction.

“DIAMOND SPECIAL” LINEMEN’S SIDE CUTTING PLIERS

Polished Heads—Black Handles.



No. 312.

Number		List Price
312.	5-inch	Each \$2.00
312A.	6 “	“ 2.50
312B.	7 “	“ 3.00
312C.	8 “	“ 3.60
312D.	9 “	“ 3.60
312E.	10 “	“ 5.00

“WORLD SPECIAL” LINEMEN’S SIDE CUTTING PLIERS



No. 1312.

Number		List Price
1312	5-inch	Each \$2.00
1312A.	6 “	“ 2.50
1312B.	7 “	“ 3.00
1312C.	8 “	“ 3.60
1312D.	9 “	“ 3.60
1312E.	10 “	“ 5.00

“DIAMOND SPECIAL” LINEMEN’S SIDE CUTTING PLIERS WITH SLEEVE TWISTER



No. 312F.

Number		List Price
312F.	7-inch	Each \$3.30
312G.	8 “	“ 4.00
312H.	9 “	“ 4.00

“WORLD SPECIAL” LINEMEN’S SIDE CUTTING PLIERS WITH SLEEVE TWISTER



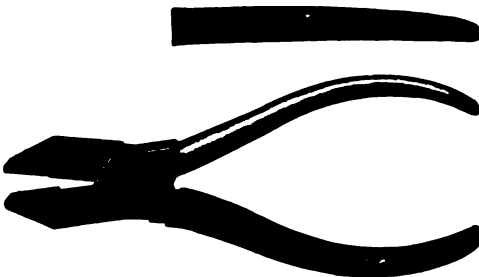
No. 1312F.

Number		List Price
1312F.	7-inch	Each \$3.30
1312G.	8 “	“ 4.00
1312H.	9 “	“ 4.00

The above 7-inch sleeve twisting pliers are fitted for No. 12 B. & S. gauge copper sleeve joints. The 8-inch and the 9-inch pliers are fitted for No. 10 B. & S. gauge copper sleeve joints. These pliers are intended for use with the splicing clamp.

We will make pliers for different size sleeves than our regular stock patterns to order at special prices.

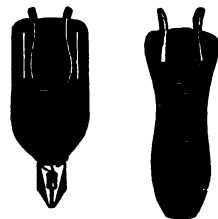
SOFT RUBBER HANDLES FOR INSULATING PLIERS



No. 86.

Number		List Price
86.	For 6-inch pliers	Per pair \$0.30
87.	For 7-inch pliers	“ “ .40
88.	For 8-inch pliers	“ “ .50

These handles are made of pure gum rubber, moulded so that they can be readily slipped over the pliers’ handles. This not only gives them a durable insulation; it also gives the hand a better grip.

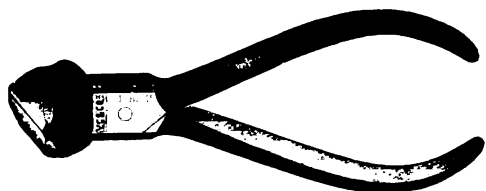


No. 382D—No. 1382D.

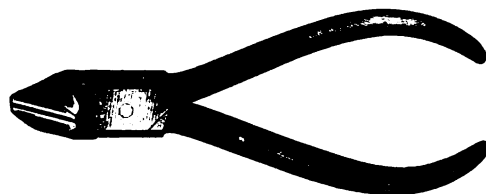
PLIER POCKET

Number		List Price
382D.	Leather plier pocket to slip on tool belt	Each \$0.80
1382D.	Leather plier pocket to slip on tool belt	Each .80

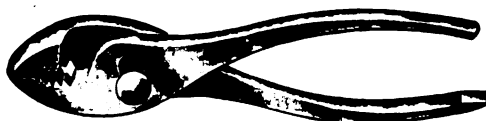
Pliers



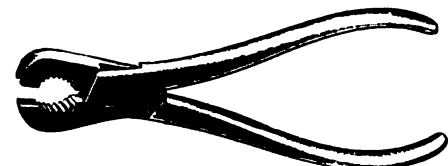
No. 1850 1/2 A.



No. 317.



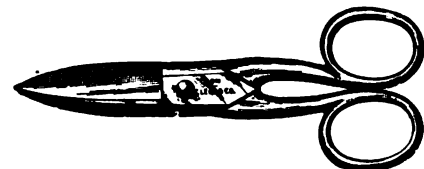
No. 631.



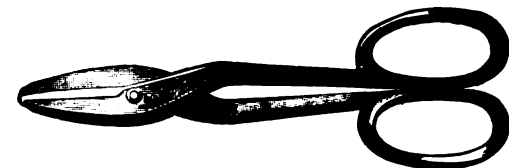
No. 630B.



No. 024P.



No. 400.



No. 48S.

END CUTTING DIAGONAL PLIERS

Number	Size	Unit	List Price
1850 1/2 A.	4-inch	Per dozen	\$8.35
1850 1/2 B.	4 1/2-inch	Per dozen	8.50
1850 1/2 C.	5-inch	Per dozen	8.60
1850 1/2 D.	6-inch	Per dozen	11.00

DIAGONAL PLIERS

Number	Size	Unit	List Price
317.	4 1/2-inch	Per dozen	\$ 8.45
317A.	5-inch	Per dozen	8.80
317B.	6-inch	Per dozen	11.00
317E.	7-inch	Per dozen	15.75
317F.	8-inch	Per dozen	21.00

COMBINATION GAS PLIERS, WITH SIDE CUTTERS

Number	Size	Finish	Unit	List Price
631.	6-inch	black finish	Per doz.	\$13.50
632.	6-inch	nickel plated	Per doz.	15.00
633A.	8-inch	black finish	Per doz.	16.00
633.	8-inch	nickel plated	Per doz.	18.00
643A.	10-inch	black finish	Per doz.	18.00
643.	10-inch	nickel plated	Per doz.	21.00

BURNER OR FIXTURE PLIERS

Number	Size	Finish	Unit	List Price
630B.	5-inch	polished	Per doz.	\$3.75
630.	6-inch	polished	Per doz.	4.35

GAS PLIERS

Number	Size	Finish	Unit	List Price
024P.	7-inch	polished	Per doz.	\$4.45
025P.	8-inch	polished	Per doz.	4.90
026P.	10-inch	polished	Per doz.	6.40
027P.	12-inch	polished	Per doz.	7.80
028P.	14-inch	polished	Per doz.	10.00

ELECTRICIAN'S SCISSORS

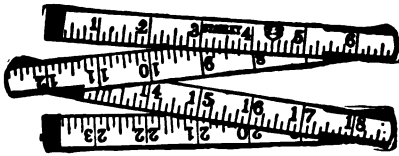
Number	Size	Finish	Unit	List Price
400.	5-inch	nickel plated	Each	\$1.00

For cutting small telephone wires, etc.

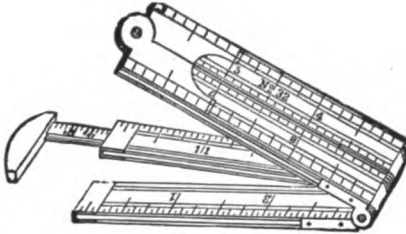
TINNER'S SNIPS

Number	Size	Unit	List Price
48S.	3 1/2-inch cut, entire length 13 1/2 inches	Each	\$2.00
49S.	3-inch cut, entire length 11 inches	Each	1.50

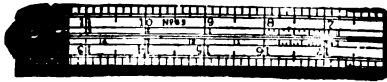
Have black handles and polished blades.



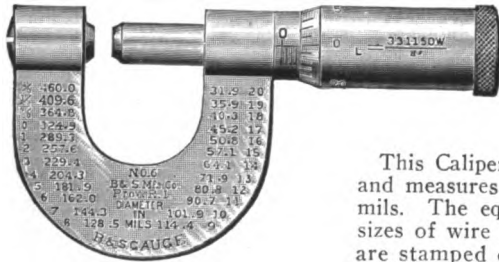
No. 02 R.



No. 32 R.



No. 63 R.



No. 6.

weight and diameter being known; and one for resistance in ohms per hundred feet at 75 degrees F., length and diameter being known.



No. 400 T.



No. 104 S.

ZIG-ZAG RULES.

Number	Length Feet	List Price Concealed	Per Dozen Rivet Joint
02R.....	2	\$2.20	\$2.00
03R.....	3	3.30	3.00
04R.....	4	4.40	4.00
05R.....	5	5.50	5.00
06R.....	6	6.50	6.00

Above rules are six-inch fold, yellow enamel. Rivet joint is shipped unless otherwise specified.

BOXWOOD CALIPER RULES.

Number
32R. 12-inch, arch joint edge plates, four fold, 8ths, 10ths, 12ths and 16ths of inches, 1 inch wide. Per dozen.....\$7.00

BOXWOOD RULE.

Number
63R. Two feet four-fold square-joint edge plates, 8ths, 10ths, 12ths and 16ths of inches, drafting scales 1 inch wide. Per dozen.....\$4.00

REGULAR MICROMETER CALIPERS.

Number	List Price
No. 6, Regular	Each \$11.00
No. 6, with ratchet stop.....	" 12.00
Morocco Case only	" 1.00

This Caliper is particularly arranged for electrical work and measures all sizes to No. 0000, B. & S. by tenths of mils. The equivalents expressed in mils of the different sizes of wire from the No. 0000 to No. 20 B. & S. gauge, are stamped on one side of the frame, and the circular mils of the same sizes on the other. Three formulas are stamped on the thimble; one for the length in feet,

TAPE LINES.

Number	Linen	List Price
400T. 25 feet	Per dozen	\$15.00
403T. 50 "	"	20.00
405T. 75 "	"	25.00
406T. 100 "	"	30.00
Number	Steel	List Price
260T. 25 "	"	39.00
263T. 50 "	"	48.00
265T. 75 "	"	63.00
266T. 100 "	"	81.00

SPEED INDICATORS.

Number	List Price
104S. In Pasteboard Box	Each \$2.00
In Leatherette Case	" 3.00

ELECTRICIAN'S POCKET TOOL KIT



No. 403K.

Number	List Price
403K. With tools	Each \$11.00
1403K. Without tools	Each 2.10

Genuine leather case; contains a selection of Klein tools such as have been found particularly desirable by electricians and wire men on switchboard and telephone work. It is of convenient pocket-book style, with firm metallic clasp and measures 4x9 inches. It contains the following tools: 1 single blade electrician's knife, 1 5-inch Klein side cutting pliers, 1 5-inch Klein oblique pliers, 1 6-inch Klein long nose side cutting pliers, 3½-inch blade screw-driver, and 1 pair 5-inch N. P. electrician's snips.

Note.—The pliers are plain black finish. If nickel plated pliers are wanted add 25 cents net, each, for plating.

Case furnished either russet or black color.



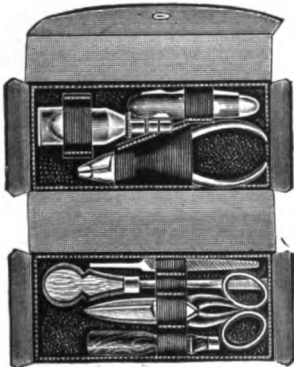
No. 403A.

ELECTRICIAN'S POCKET TOOL KIT

Number	List Price
403A. With tools	Each \$6.70
403C. Without tools	Each 2.00

Kit consists of genuine leather case, similar to above, of convenient pocket-book style, with firm metallic clasp, and measures 4½x9 inches. It contains the following tools, viz: 1 electrician's knife, 1 oil can, 1 pair nickel plated 5-inch pliers, 1 file, 1 pair electrician's shears, and 1 screw-driver.

Case furnished either russet or black color.



No. 403D.

ELECTRICIAN'S POCKET TOOL KIT

Number	List Price
403D. With tools	Each \$6.50
403E. Without tools	Each 1.80

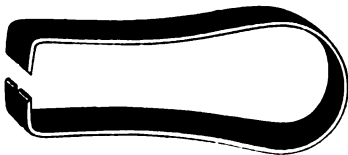
This outfit consists of genuine leather case, but of a somewhat different pattern than above style—it will be observed that the tools are arranged in two sections, so that when the case is closed one section is over the other. This arrangement makes a somewhat more compact kit, measuring 1½x3x6½ inches; when closed it is held by a metal clasp. It contains the following tools, viz: 1 electrician's knife, 1 oil can, 1 pair nickel plated 5-inch pliers, 1 file, 1 pair electrician's shears and 1 screw-driver.

Case furnished either russet or black color.

PERRY WIRE PEELER

Number	List Price
378. Polished	Each \$1.00

This handy little tool is adapted to the use of incandescent wire men and bell hangers who have many wire ends to peel. A man can cut the wire readily up to No. 12 size with a very slight effort, and the peeler should become an invaluable aid where there is work enough to justify its use.



No. 378.

CABLE STRIPPER KNIFE



No. 379A.

Number	List Price
379A. Polished blade	Each \$2.00
For stripping heavy insulated wire.	

CABLE SPLITTING KNIFE



No. 379E.

Number	List Price
379E. Solid steel, polished...	Each \$1.20
For splitting lead sleeves, lead cable, lead pipe, etc.	

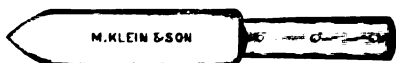
CABLE SPLITTING KNIFE



No. 379B.

Number	List Price
379B. With leather handle...	Each \$1.70
For splitting lead cable, sleeves, etc.	

BATTERY ZINC SCRAPER



No. 379.

Number	List Price
379. Each	\$2.00
An efficient tool for cleaning battery zincs.	

ELECTRICIAN'S KNIFE AND SCREWDRIVER



No. 401.

Number	List Price
401. Single blade	Each \$1.00
402. Double blade	Each 1.50



No. 402.

A combination of knife and screw driver. The screw driver blade has an edge on one side for scraping wires, so that the knife blade need not be used for that purpose, but kept sharp for other uses. Screw driver blade when opened is locked and cannot close on hand.

INSPECTOR'S POCKET KNIFE KIT



No. 702U.

Number	List Price
702U. Each	\$4.50

Cut shows leather pocket-book $4\frac{1}{4}$ inches long, $3\frac{1}{4}$ inches wide, and $\frac{3}{4}$ of an inch thick, containing all of the tools illustrated, making a convenient case easily carried in the pocket. Contains 1 pocket knife, $3\frac{7}{8}$ inches long; 1 reamer, $3\frac{1}{2}$ inches long; 1 file, 4 inches long; 1 saw, 4 inches long; 1 chisel, $3\frac{5}{8}$ inches long, and 1 screw driver, $3\frac{3}{4}$ inches long.

Any tool firmly attached to the pocket-knife, as indicated by the arrow, in one second, by a simple backward wrist movement, and as quickly removed by a forward wrist movement.

More useful than any other pocket-knife combination ever made. With more or less frequency, almost every one has use for a knife, reamer, file, saw, chisel or screw driver, and this outfit is so practical, yet so small, that the owner, by carrying it in his pocket, always has it at hand for immediate use.

GENUINE CHAMPION SCREW DRIVERS

Machinists'.



The Machinists' Screw Driver is intended for heavy work.

Number	List Price
640. 2½-inch blade	Per dozen \$ 3.00
641A. 3-inch blade	Per dozen 3.50
641. 4-inch blade	Per dozen 4.25
642A. 5-inch blade	Per dozen 5.00
642. 6-inch blade	Per dozen 6.00
643A. 7-inch blade	Per dozen 7.00
643. 8-inch blade	Per dozen 8.00
644A. 9-inch blade	Per dozen 9.00
644. 10-inch blade	Per dozen 10.00
645. 12-inch blade	Per dozen 12.00

GENUINE CHAMPION SCREW DRIVERS

Cabinet.



The Cabinet Screw Driver has a light handle and slender blade adapted for light work.

Number	List Price
646. 2½-inch blade	Per dozen \$ 3.00
646A. 3½-inch blade	Per dozen 3.50
647. 4½-inch blade	Per dozen 4.50
647A. 5½-inch blade	Per dozen 5.50
648. 6½-inch blade	Per dozen 6.50
649. 8½-inch blade	Per dozen 8.00
650. 10½-inch blade	Per dozen 9.50
651. 12½-inch blade	Per dozen 11.00

ASSEMBLER'S SCREW DRIVER



Number	List Price
671B. Fits screws Nos. 1 to 4, nickel plated.....	Each \$0.40
672. Fits screws Nos. 3 to 5, polish finish.....	Each .60
673. Fits screws Nos. 5 to 7, polish finish.....	Each .60

A wonderfully convenient tool for all assemblers and adjusters using light screws.

The swivel button rests in the palm of the hand, and the knurled body is turned with the fingers while the screw runs easily, then firmly grasped to tighten.

BRYANT ZINC COMPANY

YANKEE SPIRAL RATCHET SCREW DRIVERS

Right and Left Hand and Rigid.



Right or left hand ratchet, or rigid at variable lengths.

- | Number | | List Price |
|--------|--|-------------|
| 670A. | Nickel plated, stained cherry handle, 3 forged steel bits..... | Each \$2.80 |
| | Length with bit 11 inches, extended 19¼ inches. | |
| 670B. | Heavy pattern | Each 3.50 |
| | 17½ inches when closed and 26¼ inches when extended. | |

YANKEE SPIRAL RATCHET SCREW DRIVERS

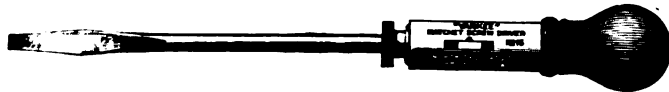
Right and Left Hand and Rigid.



- | Number | | List Price |
|--------|--|-------------|
| 671E. | Nickel plated, stained cherry handle, 3 forged steel bits..... | Each \$2.10 |
| | In construction it is the same as the Nos. 670A and 670B, but smaller and for driving small screws only. | |

YANKEE RATCHET SCREW DRIVERS

Right and Left Hand and Rigid.



- | Number | | List Price |
|--------|--------------------|-------------|
| 652. | 2-inch blade | Each \$0.70 |
| 653. | 3-inch blade | Each .80 |
| 653A. | 4-inch blade | Each .90 |
| 653B. | 5-inch blade | Each 1.00 |

YANKEE RATCHET SCREW DRIVERS

Right and Left Hand and Rigid.



- | Number | | List Price |
|--------|---------------------|-------------|
| 654A. | 2-inch blade | Each \$0.60 |
| 654. | 3-inch blade | Each .70 |
| 655. | 4-inch blade | Each .80 |
| 656. | 5-inch blade | Each .85 |
| 657. | 6-inch blade | Each 1.00 |
| 658. | 8-inch blade | Each 1.20 |
| 659. | 10-inch blade | Each 1.50 |
| 659A. | 12-inch blade | Each 1.70 |

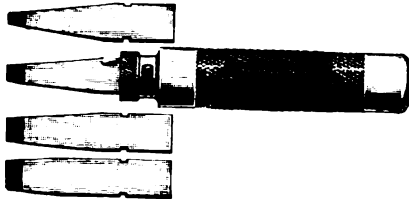
YANKEE RATCHET SCREW DRIVERS

Right and Left Hand and Rigid.



- | Number | | List Price |
|--------|---|-------------|
| 660. | 1½-inch blade, entire length 5¾ inches..... | Each \$0.90 |

YANKEE POCKET MAGAZINE SCREW DRIVER



No. 670.

Number	List Price
670. Nickel plated	Each \$1.00

The need and usefulness of this tool will be instantly recognized. There is nothing just like it or that can be compared with it in the market to-day. It is made with four detachable blades of varying widths and thicknesses to suit different size screws.

The blades are kept in magazine formed by handle.
The tool is small and convenient to carry in the pocket, measuring when closed only three inches long and five-eighths inch in diameter, and weighing only two ounces.

ELECTRICIAN'S SCREW DRIVER



No. 808B.

Number	List Price
808B. 3½-inch blade....	Per dozen \$4.50
808C. 5-inch blade.....	Per dozen 4.75
808D. 7-inch blade.....	Per dozen 5.00

This is a very handy screw driver for electricians working on switchboards, telephones, etc. Has long and light handle with straight slender blade.



No. 651S.

GENUINE CHAMPION SCREW DRIVER SET

With Improved Chuck and Fluted Handle.

Number	List Price
651S. Set	Each \$2.50

Three blades, assorted sizes; forged and tested; fitted and ready for use. Each set in a well finished and durable box.

Note.—The sizes given on all screw drivers indicates the length of the blade from the ferrule to point, and not the size of the handle.

“YANKEE” TOOL SET



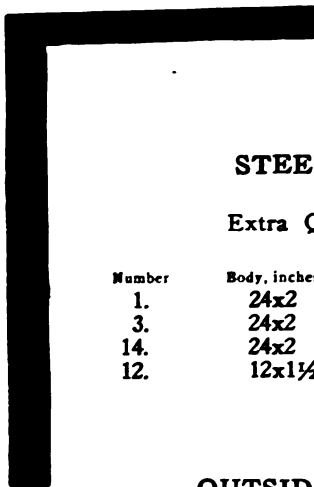
No. 100Y.

Number	List Price
100Y. Screw Driver Set.....	Each \$8.00

Made of oak, handsomely finished; contains one each of the following “Yankee” tools:

- 670A. Spiral Ratchet Screw Driver.
Chuck, with drill points, eight sizes, 1-16, 5-64, 3-32, 7-64, 1-8, 9-64, 5-32, 11-64 inches, to use for drilling holes with the No. 670A Spiral Ratchet Screw Driver.
- Countersink to use in the same tool.
- 657. Ratchet Screw Driver, with blade 6 inches long.
- 653. Ratchet Screw Driver, with finger turn on blade, with blade 3 inches long.

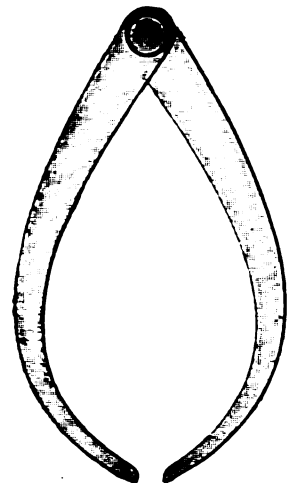
These are the styles and sizes of “Yankee” tools most in demand, and the combination in a set covers all the usual requirements in tools for driving and drawing out screws. The tools are easily removed from box, and when it is closed are held firmly in place. The box measures 12½x4¾x2¾ inches.



STEEL SQUARES

Extra Quality and Finish.

Number	Body, inches	Tongue, inches	List Price Per dozen
1.	24x2	16x1½	\$18.00
3.	24x2	16x1½	15.00
14.	24x2	16x1½	12.75
12.	12x1½	8x1	11.25



No. 110C.

OUTSIDE CALIPERS. No. 110-C.

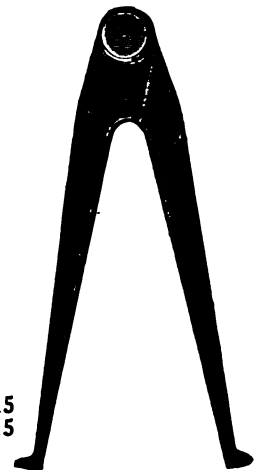
Inches	2	3	4	5
Per dozen	\$4.00	\$4.00	\$4.50	\$5.50
Inches	6	8	10	12
Per dozen	\$6.00	\$7.00	\$8.50	\$10.00



No. 1S.

INSIDE CALIPERS. No. 105-C.

Inches	2	3	4	5
Per dozen	\$3.00	\$3.00	\$3.25	\$3.75
Inches	6	8	10	12
Per dozen	\$4.25	\$6.50	\$8.00	\$10.00



No. 105C.

PLUMB BOBS

Iron Japanned.

Number	Weight	Per dozen
1-I.	9 ounces each.	\$1.15
1¼ I.	18 ounces each.	2.15



No. 1 I.

BRASS PLUMB BOBS

Screw Top, Steel Pointed.

3B.	Weight 12 ounces each	Per dozen	\$7.50
16B.	Weight 16 ounces each	Per dozen	8.50

ADJUSTABLE PLUMB BOB

Reel with Spring Check and Line.

1S.	Brass, weight ¾ pound	Per dozen	\$21.60
5S.	Iron, N. P., weight ¾ pound	Per dozen	12.00

IRON LEVEL



WOOD LEVEL



Number	Description	Per dozen
130S.	Iron, 3½-inch	\$ 3.60
35.	Wood, 8-inch	8.75
35.	Wood, 12-inch	9.25
35.	Wood, 18-inch	12.25
5.	Wood, 26-inch, 28-inch, 30-inch	15.00

DOUBLE SPUR AUGER BIT



Nos. 260B to No. 266.

Double Cutter. Extension Lip.

Number	Sizes in 16ths.	List Price Per doz.
260B	3	\$ 4.50
260	4	4.00
260A	5	4.00
261	6	4.00
261A	7	4.50
262	8	5.00
262A	9	5.50
263	10	6.00
263A	11	7.00
264	12	7.00
264A	13	8.00
265	14	8.00
265A	15	9.00
266	16	9.00

A high grade, perfect finish bit for general work with improved convex twist. Large clearance, strongly backed lips and spurs. True sizes, thorough finish and perfect temper. Unequaled by any ordinary Auger Bit made.

DOUBLE SPUR CAR BIT



Nos. 270 to No. 286.

Double Cutter. Extension Lip.

12-inch Twist, 6-inch Shank
Total length, 18 inches. List Price

Number	Sizes in 16ths.	List Price Per doz.
270	4	\$ 9.00
271	5	9.00
272	6	9.00
273	7	10.00
274	8	11.25
275	9	12.50
276	10	13.75
277	11	15.00
278	12	16.25
279	13	17.50
280	14	19.00
281	15	20.50
282	16	22.00
283	17	24.00
284	18	26.00
285	19	28.00
286	20	30.00

SOLID CENTER AUGER BIT



Nos. 880 to No. 893.

Double Cutter. Extension Lip.

Number	Sizes in 16ths.	List Price Per doz.
880	3	\$ 4.50
881	4	4.00
882	5	4.00
883	6	4.00
884	7	4.50
885	8	5.00
886	9	5.50
887	10	6.00
888	11	7.00
889	12	7.00
890	13	8.00
891	14	8.00
892	15	9.00
893	16	9.00

These bits are made of extra high grade special crucible auger bit steel. They are finished in first class style and each bit is fully warranted.

Owing to the fact that, these bits have but one crimp, it is impossible for them to choke, as the clearance is double. No pressure is required in boring and they will bore either in end or side of wood. They are the only bits made having a solid center and are therefore much stronger and will bore much more rapidly than any other style.

SOLID CENTER CAR BIT



Nos. 820 to No. 836.

Double Cutter. Extension Lip.

12-inch Twist, 6-inch Shank
Total length, 18 inches. List Price

Number	Sizes in 16ths.	List Price Per doz.
820	4	\$ 9.00
821	5	9.00
822	6	9.00
823	7	10.00
824	8	11.25
825	9	12.50
826	10	13.75
827	11	15.00
828	12	16.25
829	13	17.50
830	14	19.00
831	15	20.50
832	16	22.00
833	17	24.00
834	18	26.00
835	19	28.00
836	20	30.00

BRYANT ZINC COMPANY

SHIP AUGER BITS WITH SCREW



No. 840 to No. 856.

Number	Sizes in 16ths.	List Price Per doz.
840	4	\$ 6.00
841	5	6.00
842	6	6.00
843	7	6.00
844	8	6.00
845	9	7.50
846	10	7.50
847	11	9.00
848	12	9.00
849	13	10.50
850	14	10.50
851	15	12.00
852	16	12.00
853	17	13.50
854	18	13.50
855	19	15.00
856	20	15.00

Adapted for special or difficult work of any sort. Guaranteed to bore straight and to be exact in size. Recommended for hard, knotty or end grain wood. A durable, serviceable and easy working Auger Bit.

SHIP AUGER CAR BITS WITH SCREW



No. 860 to No. 878.

Number	Sizes in 16ths.	List Price Per doz.
860	6	\$ 9.00
861	7	9.50
862	8	10.00
863	9	10.50
864	10	11.00
865	11	11.50
866	12	12.00
867	13	12.50
868	14	13.00
869	15	14.00
870	16	14.50
871	17	15.50
872	18	16.00
873	19	17.00
874	20	17.50
875	21	18.50
876	22	19.00
877	23	21.50
878	24	22.00

The most popular type of bit for car builders' use. Works easily and bores true in any kind of wood. Adapted for cross grain, angular or end boring. Of superior stock, exact size and high finish.

EXPANSIVE BITS



Number	Description	List Price Per doz.
267	Small Size, with two cutters, one from $\frac{1}{2}$ to $\frac{7}{8}$, one from $\frac{7}{8}$ to $1\frac{1}{2}$ inch.	\$18.00
268	Large Size, with two cutters, one from $\frac{7}{8}$ to $1\frac{1}{4}$, one from $1\frac{1}{4}$ to 3 inch.	26.00

EXTENSION BIT HOLDERS

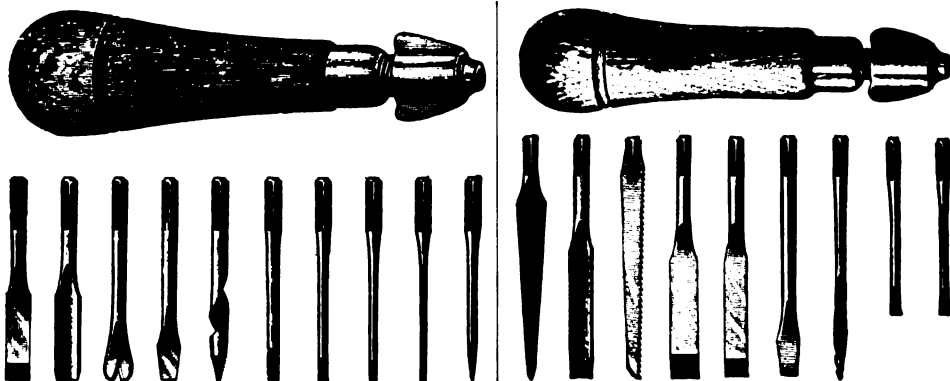


Number	Description	List Price
3A	12 inches, each	\$1.80
3B	16 inches, each	1.90
3C	20 inches, each	2.00
3D	24 inches, each	2.20
3E	30 inches, each	2.50

This extension holds any size bits up to 1 inch. Will follow a $\frac{5}{8}$ bit or larger into the hole. Consists of a steel rod on the end of which is formed a socket. Steel jaws to hold the bits and a milled sleeve to tighten bits into jaws. Used by electricians and bell hangers to drill long holes when wiring through joists.

HOLLOW HANDLE TOOL SETS

Cocobola Handle.



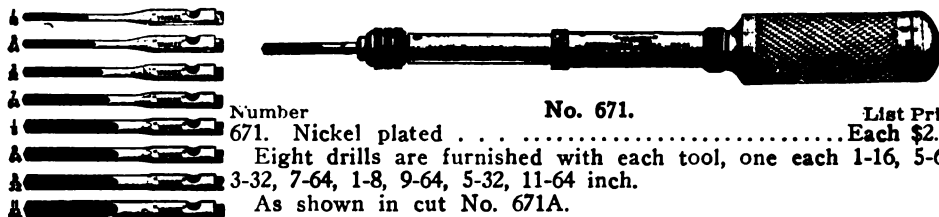
Number **No. 4F.** **No. 2B.** **List Price**
 4F. Tool Handle, with 10 cast steel tools, complete.....Per set \$1.00
 2B. Tool Handle, with 9 cast steel tools, complete.....Per set 2.00

COMBINATION TOOL HEFT



Number **No. 7F.** **List Price**
 7F. Tool Heft, with 12 cast steel tools.....Per set, complete \$1.10
 Cocobola Handle, Steel Cap and Ferrule Nickel Plated.

YANKEE AUTOMATIC DRILL



Number **No. 671.** **List Price**
 671. Nickel platedEach \$2.70
 Eight drills are furnished with each tool, one each 1-16, 5-64,
 3-32, 7-64, 1-8, 9-64, 5-32, 11-64 inch.
 As shown in cut No. 671A.

HALF ACTUAL SIZE

No. 671A.

YANKEE AUTOMATIC DRILL POINTS

Number **List Price**
 671A. Extra set of 8 drill points.....Per set \$0.90

BELL HANGER'S AND ELECTRICIAN'S DRILLS

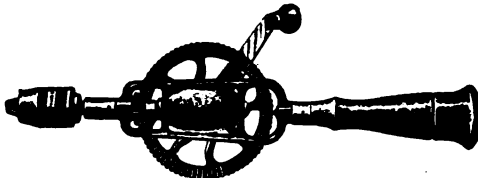


The numbers indicate the size in 32nds. Use number and length in ordering these drills.

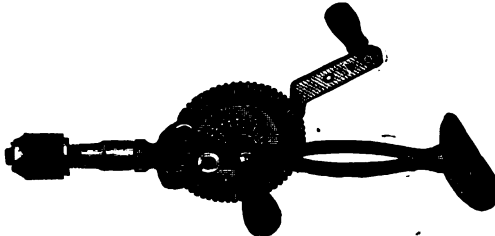
No.	12-inch Per dozen	18-inch Per dozen	24-inch Per dozen	30-inch Per dozen	36-inch Per dozen
6.....	\$ 5.00	\$ 7.00	\$ 9.00	\$11.00	\$13.00
8.....	5.00	7.00	9.00	11.00	13.00
10.....	5.50	7.50	9.50	12.00	13.00
12.....	6.00	8.00	10.00	12.00	13.00
14.....	7.00	9.00	11.00	13.00	14.00
16.....	8.00	10.00	12.00	14.00	15.00
18.....	9.00	11.00	13.00	15.00	16.00
20.....	10.00	12.00	14.00	15.00	16.00
22.....	11.00	13.00	15.00	16.00	17.00
24.....	12.00	14.00	16.00	17.00	18.00



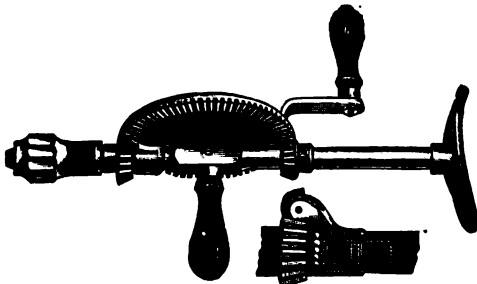
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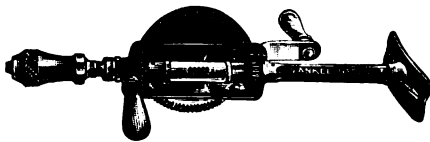
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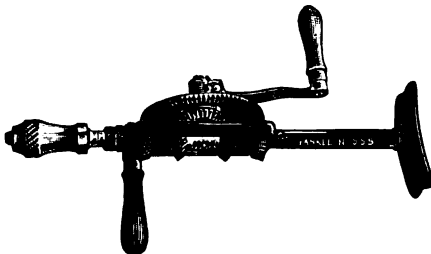
No. 6F.



No. 1F.



No. 550Y.



No. 555Y.

HAND DRILL**Three Jaw Chuck. Cocobola Handle.**

Number	List Price
3F. Each	\$2.50

Furnished with 6 drills, from 1-16 to 9-64 inch; length overall, 10½ inches.

HAND DRILL**Three Jaw Chuck. Cocobola Handle.**

Number	List Price
4F. Each	\$4.00

Furnished with 6 drills, from 1-16 to 9-64 inch; length overall, 12½ inches.

BREAST DRILLS

Number	List Price
6F. Single speed	Each \$6.50

This drill is fitted with three jaw chuck.

2F. Single speed	Each \$5.00
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This drill is fitted with two jaw chuck. Same style as No. 1F.

BREAST DRILLS

Number	List Price
1F. Double speed	Each \$8.00

This drill is fitted with two jaw chuck.

5F. Double speed	Each \$8.00
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This drill is fitted with three jaw chuck. Same style as No. 1F.

"YANKEE" BREAST DRILL**With Right and Left Hand Ratchet**

Number	Movement.	List Price
555Y. Double speed		Each \$10.00
550Y. Single speed		Each 8.50

The adjustable ball bearings in spindle take up all the strain or thrust and relieve all other parts of the tool. Any lost motion can be readily taken up by the adjustment provided on same.

The chuck is of new design and will hold accurately and securely with the two jaws either square or round shank drills or other tools up to ½ inch.

The peculiar advantage of this tool is the shifter on cylinder between the small gears, movement of which in the different notches causes the tool to perform different movements.

1st Notch—The drill is an ordinary breast drill.

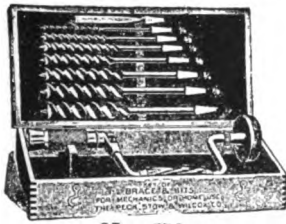
2nd Notch—It becomes a left hand ratchet, useful in removing taps and especially to loosen drill if it becomes jammed.

3rd Notch—It becomes a right hand ratchet.

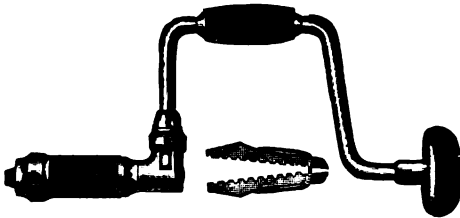
4th Notch—In this notch any movement of the crank in either direction, short or turned continuously, causes the chuck to turn to the right and drill continuously.

5th Notch—In this notch the spindle is locked tight so that the drill chuck can be rapidly opened or closed.

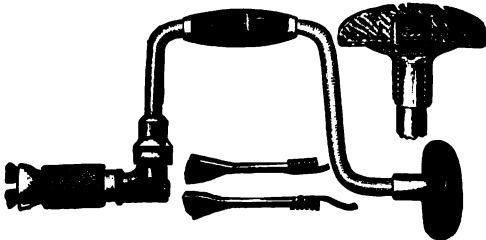
Extreme length, 18 inches; weight, 5½ pounds.



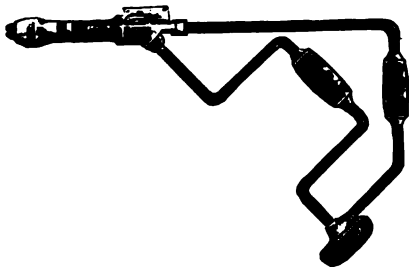
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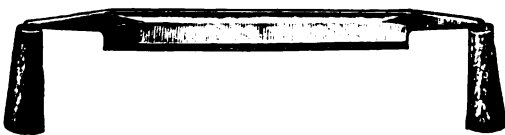
No. 62F.



No. 66F.



No. 585.



No. 540.



No. 542.



No. 531A.

RATCHET BRACE AND BITS

Number	IN SETS	List Price
570.	Per set	\$7.00

Set consists of 7 auger bits, one each $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$ and 1 inch, one 10-inch ball bearing head and nickel plated ratchet brace, with automatic spring chuck; all contained in fancy box.

RATCHET BIT BRACES

Nickel Plated, Barbour Chuck.

Number		List Price
62F.	6-inch sweep	Each \$2.80
82F.	8-inch sweep	Each 2.90
102F.	10-inch sweep	Each 3.10
122F.	12-inch sweep	Each 3.40
142F.	14-inch sweep	Each 3.60

RATCHET BIT BRACES

Nickel Plated, Automatic Chuck.

Ball Bearing Heads.

Number		List Price
66F.	6-inch sweep	Each \$3.20
86F.	8-inch sweep	Each 3.30
106F.	10-inch sweep	Each 3.50
126F.	12-inch sweep	Each 4.00
146F.	14-inch sweep	Each 4.60

CORNER BIT BRACE

Cocobola Handles. Barbour Chuck.

Number		List Price
585.	8-inch sweep	Each \$5.50
586.	10-inch sweep	Each 6.00

Nickel plated and polished. Universal dust proof joint. Handy brace for all-round work.

HEAVY LINEMAN'S DRAW KNIFE

Number		List Price
540.	12-inch blade, 20 $\frac{1}{2}$ inches over all	Per dozen \$21.60
541.	14-inch blade, 22 $\frac{1}{2}$ inches over all	Per dozen 25.20

SOCKET FRAMING CHISEL

Number		List Price
542.	1- inch	Per dozen \$11.00
543.	1 $\frac{1}{2}$ -inch	Per dozen 13.00
544.	2- inch	Per dozen 16.00

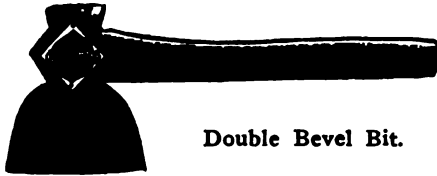
STEEL COLD CHISEL

Number		List Price
531A.	$\frac{1}{4}$ x5 $\frac{1}{4}$ -inch	Per dozen \$1.40
531B.	$\frac{3}{8}$ x5 $\frac{1}{2}$ -inch	Per dozen 1.80
531C.	$\frac{1}{2}$ x6- inch	Per dozen 2.10
531D.	$\frac{5}{8}$ x6 $\frac{1}{2}$ -inch	Per dozen 3.60
531E.	$\frac{3}{4}$ x7- inch	Per dozen 4.80
531F.	$\frac{7}{8}$ x7 $\frac{1}{2}$ -inch	Per dozen 5.60
531G.	1x8- inch	Per dozen 7.25



CHOPPING AXES

Number	List Price Per dozen
4 to 5 pounds....	\$18.00
5 to 6 pounds....	21.00



Double Bevel Bit.

LINEMAN'S HAND AXE

Number	List Price Per dozen
530A. 4-inch.....	\$10.50
530B. 5-inch.....	13.00
530C. 6-inch.....	16.50

NAIL HAMMERS

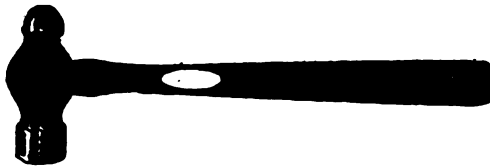
No.	Weight Each.	Price per Doz.
1	1 lb. 4 oz.	\$9.00
1½	1 lb.	8.50
2	13 oz.	8.00
3	7 oz.	7.50



Adze Eye Nail Hammer.
Bell or Straight Face.

MACHINISTS' HAMMERS

Ball Pein.	Straight Pein.	Cross Pein.
No.	Weight Each	Price per Doz.
5-0	4 oz.	\$12.00
4-0	6 oz.	12.00
3-0	8 oz.	12.00
00	12 oz.	12.00
0	1 lb.	12.50
1	1 lb. 4 oz.	13.50
2	1 lb. 8 oz.	14.50
3	1 lb. 12 oz.	15.50
4	2 lbs.	16.50
5	2 lbs. 4 oz.	17.50
6	2 lbs. 8 oz.	19.00
7	2 lbs. 12 oz.	20.50
8	3 lbs.	22.00



Ball Pein Machinists' Hammer.

RIVETING HAMMERS

No.	Weight Each	Price per doz.
0	4 oz.	\$5.50
1	7 oz.	5.75
2	9 oz.	6.00
3	12 oz.	6.25
4	15 oz.	6.50
5	1 lb. 2 oz.	7.00
6	1 lb. 6 oz.	7.50
7	1 lb. 10 oz.	8.00



Rivetting or Engineers' Hammer.

ENGINEERS' HAMMERS

Face and Pein.

No.	Weight Each	Price per Doz.
0	1 lb. 2 oz.	\$12.00
1	1 lb. 10 oz.	13.00
2	2 lbs.	14.00
3	2 lbs. 8 oz.	15.00
4	3 lbs.	16.00
5	3 lbs. 8 oz.	17.00
6	4 lbs. 8 oz.	19.00

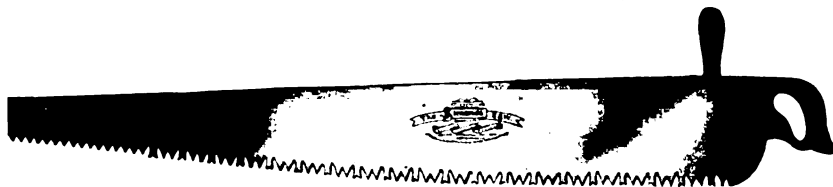
Double Face.

No.	Weight Each.	Price per Doz.
1	1 lb. 8 oz.	\$14.50
2	2 lbs. 6 oz.	16.50
3	3 lbs.	18.00
4	3 lbs. 10 oz.	19.50



Engineers' Hammer—Double Face.

ONE MAN CROSS-CUT SAWS



No. 111. Straight Ground.

Length in feet	3	3½	4	4½	5	5½
List price, each	\$1.92	\$2.24	\$2.56	\$2.88	\$3.20	\$3.52

SIMOND'S HAND, PANEL AND RIP SAWS



No. 8.
Special Crucible Steel, Warranted, Apple Handle, Polished Edges, Skew Back, 5 Screws.

	Panel.			Hand.			Rip.	
Size in inches	16	18	20	22	24	26	28	30
Price per dozen.....	\$14.50	\$16.00	\$17.50	\$19.50	\$21.00	\$22.00	\$25.00	\$28.00

These saws are in quality and finish of steel and handle the most modern hand saws on the market, and are subject to the broadest Simonds Warranty.
Each saw packed in separate case.

SIMOND'S NESTS OF SAWS



No. 80. Nest of Saws with patented adjustable handle, combining one each, Key-hole and Compass Saws.
 Handle and screws.....\$5.00 per dozen. Compass blades, 14-inch.....\$3.00 per dozen.
 Keyhole blades, 10-inch.. 2.00 per dozen.
 Packed four sets in box. Total for Nest.....\$10.00 per dozen sets

SIMONDS COMPASS SAWS



No. 87. Compass Saw, crucible steel, apple handle, warranted.

Inches	10	12	14	16	18
Per dozen (Packed one-half dozen in box).....	\$4.25	\$4.50	\$4.75	\$5.00	\$5.25

KEYHOLE SAW AND PAD



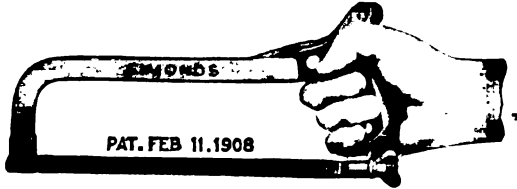
Number		
90.	Keyhole Saw, \$1.40; Handle, 60 cents; complete.....	Per dozen \$2.00
91.	Cast Steel Keyhole Saw Blades, extra ground, set and sharpened...	Per dozen 2.00
92.	Cast Steel Reversible Keyhole Saw Blades.....	Per dozen 2.00
93.	Cast Steel Blind-Makers' Saw Blades.....	Per dozen 1.75

Packed one dozen in box.

BRYANT ZINC COMPANY

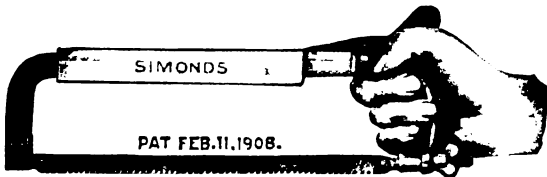
SIMONDS STRAIGHT CUT HACK SAW FRAMES

The frame with a new handle that looks reasonable and is reasonable. Notice the position of the hand. Why shouldn't a hack saw be used in this easy, comfortable, natural manner instead of the old way? Once a mechanic tries the Simonds Straight Cut Frame he sticks to it.



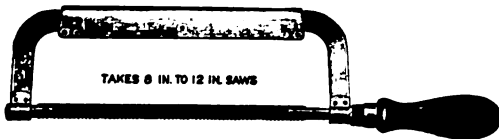
No. 39S.

Number List Price
 39S. Nickel plated; blades can be faced in four directions; 8-inch frame. Packed 1 in a box. Per doz.....\$18.00



No. 41S.

Number List Price
 41S. Nickel plated, extra heavy back; blades can be faced four directions. Adjustable for blades 8 inches to 12 inches. Packed 1 in a box. Per doz. 21.00



No. 40S.

Number List Price
 40S. Nickel plated; adjustable extra heavy back. Packed 1 in a box. Without blades. Per doz. 15.00

SOLID STEEL HACK SAW FRAMES

Nickel Plated and Polished Black Enamel Handle.

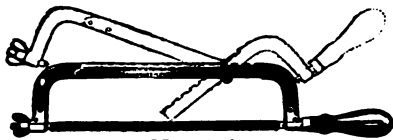
Blade can be faced in four different ways. Furnished each with blade.



No. 20A.

Number List Price
 20A. 8-inch.....Per dozen \$ 9.00
 20B. 9-inch.....Per dozen 9.50
 20C. 10-inch.....Per dozen 10.00
 20D. 12-inch.....Per dozen 10.50
 20E. 14-inch.....Per dozen 11.00

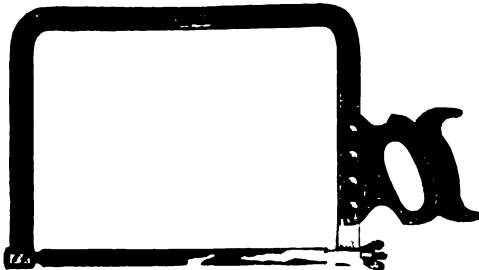
IMPROVED EXTENSION HACK SAW FRAMES . .



No. 50A.

Finest and most serviceable frame made.
 Number List Price
 50A. Price with blade....Per dozen \$12.00
 Made of high grade steel, nickel plated, heavily and highly polished. Takes in blades from 8 inches to 12 inches, inclusive. Blade is adjustable and can be faced four different ways. Handle black enamel.

RAIL HACK SAW FRAMES



No. 1A.

Number List Price
 Per dozen
 1A. 7 in. high, for 9-inch blades..\$15.00
 2A. 10 in. high, for 12-inch blades.. 18.00
 3A. 10 in. high, for 14-inch blades.. 19.00
 4A. 10 in. high, for 16-inch blades.. 23.00
 5A. 10 in. high, for 18-inch blades.. 28.00
 6A. 10 in. high, for 20-inch blades.. 33.00

This saw is especially adapted for cutting off rails, large beams, girders, etc.

Nos. 4, 5 and 6 have handles on each end

SIMONDS HACK SAW BLADES



No. 32S.

An exceptionally high grade blade, made for hard, continuous service. Here is a blade for any work you may have. The strongest argument we can present about the Simonds Saw is the saw itself. Its uniform and accurate construction means high quality.

Simonds blades, because they cut with less resistance, remove no more metal than necessary, and outwear other makes; are the most economical hack saw blades on the market.

PRICE LIST.

No. 32S. Simonds Hand Hack Saw Blades.

				List Price			
Length	Width and Thickness	Per Dozen	Per Gross	Length	Width and Thickness	Per Dozen	Per Gross
6 inch	$\frac{7}{8}$ x .025	\$0.60	\$ 7.00	12 inch	$\frac{1}{2}$ x .025	1.00	12.00
7 inch	$\frac{7}{8}$ x .025	.65	7.50	14 inch	$\frac{1}{2}$ or $\frac{3}{8}$ x .025	1.25	14.80
8 inch	$\frac{7}{8}$ x .025	.70	8.00	16 inch	$\frac{1}{2}$ or $\frac{3}{8}$ x .025	1.45	17.00
9 inch	$\frac{7}{8}$ x .025	.75	9.00	17 inch	$\frac{1}{2}$ or $\frac{3}{8}$ x .026	1.65	19.50
10 inch	$\frac{7}{8}$ x .025	.85	10.00	18 inch	$\frac{1}{2}$ or $\frac{3}{8}$ x .026	1.75	21.00
11 inch	$\frac{7}{8}$ x .025	.95	11.00	20 inch	$\frac{1}{2}$ or $\frac{3}{8}$ x .026	2.00	24.00

Blades .028 or more in thickness are figured as Power Blades.

Odd sizes, not listed, take price of next longer or wider size of same gauge.

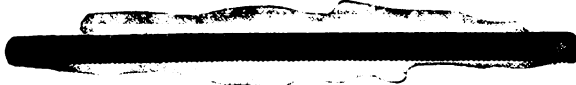
Hand blades made with 14, 24 and 30 teeth per inch. Unless specified, blades with 14 teeth per inch will be sent.

For work in solid cast steel and iron, heavy iron pipe, etc., have hand blades 14 teeth to the inch.

For solid brass and brass pipe use blades with 24 teeth to the inch.

For thin shell tubing and casing, use blades with 30 teeth to the inch.

BAY STATE HACK SAW BLADES



No. 29S.

Being hardened and tempered by a special process, these blades have the necessary degree of hardness and toughness requisite to withstand severe usage.

These blades should be well strained in the frames, and operated not over 60 strokes per minute. Standard 14 teeth per inch. 24 teeth furnished when specified.

			List Price		
Length	Width and Thickness	Per Gross	Length	Width and Thickness	Per Gross
6-inch	$\frac{7}{16}$ x .025	\$7.00	10-inch	$\frac{1}{2}$ x .025	\$10.00
7-inch	$\frac{7}{16}$ x .025	7.50	11-inch	$\frac{1}{2}$ x .025	11.00
8-inch	$\frac{7}{16}$ x .025	8.00	12-inch	$\frac{1}{2}$ x .025	12.00
9-inch	$\frac{7}{16}$ x .025	9.00			

Blades .028 or more in thickness are figured as Power Blades.

THE "CULLEY" FLEXIBLE HACK SAW BLADES



No. 31S.

For plumbers, electricians, bicycle manufacturers and repairers, etc. Used principally for cutting brass, tubing, stringy metals. Not intended for use on cast steel, or such hard metals. They will not break or shell teeth. For hand use only.

Made in the following sizes:

		List Price	
Length,		Per dozen	Per gross
8-inch	.....	\$0.70	\$ 8.00
9-inch	.....	.75	9.00
10-inch	.....	.85	10.00
12-inch	.....	1.00	12.00

Note.—Regular blades have 16 teeth per inch. Fine blades (for tubing) have 24 teeth per inch. For very thin tubing or very thin sheet metal use blades with 30 teeth per inch. Care should be taken to select blades with the proper number of teeth for the material to be cut.



Fig. Nos. 1 and 2.

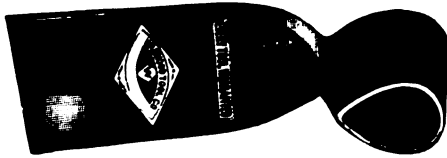


Fig. No. 9.



Fig. No. 15.



Fig. Nos. 14 and 26.



Fig. No. 25.

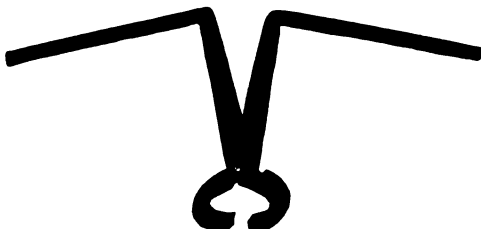


Fig. No. 66W.

STANDARD MATTOCKS

- Fig. 1. Long Cutter Mattock.
- Fig. 2. Short Cutter Mattock.
- Fig. 3. Pick Mattock.

Packed 2 dozen in a case. Polished and painted black. Adze eye No. 3.

Number	Weight, Each	Per Doz. List Price
Fig. 1. Long Cutter	.....6 lbs.	\$17.00
Fig. 1. Long cutter	.....5 lbs.	16.00
Fig. 2. Short cutter	....5½ lbs.	16.50
Fig. 2. Short cutter	.....5 lbs.	16.00
Fig. 2. Short cutter	.....4 lbs.	16.00
Fig. 2. Short cutter	.....3 lbs.	16.00
Fig. 3. Pick Mattock	.....6 lbs.	17.00
Fig. 3. Pick Mattock	.....5 lbs.	16.00

STANDARD GRUB HOE

Fig. 9.

Packed 2 dozen in case. Polished and painted black. Adze eye No. 2.

Number	Weight	Per doz. List Price
0.	Weight 3 lbs. each..	Per doz. \$12.50
1.	Weight 3½ lbs. each..	Per doz. 13.00
2.	Weight 4 lbs. each..	Per doz. 13.50
3.	Weight 4½ lbs. each..	Per doz. 14.00

STANDARD RAILROAD OR CLAY PICKS

Fig. 14. Regular, Point and Chisel.

Fig. 15. Double Point.

Packed 2 dozen in case. Polished point. Painted black. Adze eye No. 3.

Weight	Per dozen List Price
4 to 5 lbs. each.....	Per dozen \$13.00
5 to 6 lbs. each.....	Per dozen 14.00
6 to 7 lbs. each.....	Per dozen 15.00
7 to 8 lbs. each.....	Per dozen 16.00
8 to 9 lbs. each.....	Per dozen 18.00
9 to 10 lbs. each.....	Per dozen 20.00

RAILROAD PICK

Fig. 26.

Packed 2 dozen in case. Oil finish. Adze eye No. 3. Made either with tooth steel points or solid high grade steel.

Weight	Per dozen List Price
4 to 5 lbs. each.....	Per dozen \$13.00
5 to 6 lbs. each.....	Per dozen 14.00
6 to 7 lbs. each.....	Per dozen 15.00
7 to 8 lbs. each.....	Per dozen 16.00
8 to 9 lbs. each.....	Per dozen 18.00
9 to 10 lbs. each.....	Per dozen 20.00

RAILROAD TAMPING PICK, V HEAD

Fig. 25.

Packed 2 dozen in case. Adze No. 3. Extra strong eye. Standard size tamp. High grade solid steel.

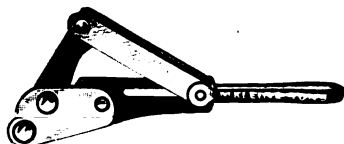
Weight	Per dozen List Price
6 to 7 lbs. each.....	Per dozen \$18.00
7 to 8 lbs. each.....	Per dozen 19.00
8 to 9 lbs. each.....	Per dozen 20.00

RAILROAD RAIL TONGS

Number	List Price
66W. Price per pound.....	\$0.20

NEW "CHICAGO GRIP"

It Grips and Holds and is Most Convenient to Handle.



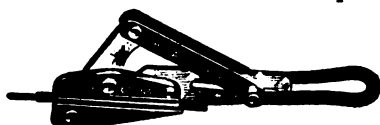
Number		List Price
0358.	For No. 10 wire and smaller.....	Each \$3.80
358A.	For No. 6 wire and smaller.....	Each 4.00
358C.	For No. 0 wire and smaller.....	Each 6.60
358E.	For No. 0000 wire and smaller.....	Each 10.00

NEW "CHICAGO GRIP" WITH PULLEYS

Number		List Price
358.	For No. 10 wire and smaller, for ¼-inch rope.....	Each \$ 4.80
358B.	For No. 6 wire and smaller, for ⅜-inch rope.....	Each 5.00
358D.	For No. 0 wire and smaller, for ½-inch rope.....	Each 7.60
358F.	For No. 0000 wire or smaller, for ⅝-inch rope.....	Each 11.50

NEW "CHICAGO GRIP" For Insulated Wire

Will not Slip or Injure the Insulation.



Number		List Price
358G.	For No. 10 wire and smaller.....	Each \$ 4.50
358I.	For No. 4 wire and smaller.....	Each 6.50
358K.	For No. 00 wire and smaller.....	Each 8.00
358M.	For No. 0000 wire and smaller.....	Each 10.00

NEW "CHICAGO GRIP" WITH PULLEYS For Insulated Wire

Number		List Price
358H.	For No. 10 wire and smaller, for ¾-inch rope.....	Each \$ 5.50
358J.	For No. 4 wire and smaller, for ½-inch rope.....	Each 7.50
358L.	For No. 00 wire and smaller, for ½-inch rope.....	Each 9.00
358N.	For No. 0000 wire and smaller, for ⅝-inch rope.....	Each 11.50

NEW "CHICAGO LINEMAN'S TOOL"



Number		List Price
3358.	For No. 10 wire and smaller, single purchase.....	Each \$10.00
3358A.	For No. 6 wire and smaller, single purchase.....	Each 10.20
3358C.	For No. 0 wire and smaller, single purchase.....	Each 12.80
3358R.	For No. 10 wire and smaller, double purchase.....	Each 11.80
3358S.	For No. 6 wire and smaller, double purchase.....	Each 12.00
3358T.	For No. 0 wire and smaller, double purchase.....	Each 14.60

NEW "CHICAGO LINEMAN'S TOOL" For Insulated Wire

Number		List Price
3358I.	For No. 4 wire and smaller, single purchase.....	Each \$12.60
3358K.	For No. 00 wire and smaller, single purchase.....	Each 14.10
3358U.	For No. 4 wire and smaller, double purchase.....	Each 14.50
3358V.	For No. 00 wire and smaller, double purchase.....	Each 16.00



No. 3710G.



No. 365.



No. 366.



No. 368.



No. 360.



No. 373.



No. 363U.



No. 359.

COME ALONG CLAMP

Electro Galvanized Finish.

Number		List Price Each
3710G.	For No. 8 wire and smaller.....	\$1.20
3711G.	For No. 6 wire and smaller.....	2.00
3712G.	For No. 0 wire and smaller.....	2.50

LANDEE'S CLAMP

Malleable Iron Polished.

Number		List Price Each
365.	Each	\$2.50

CLAMP — STYLE A

Number		List Price Each
366.	Polished brass, for No. 8 and finer wire	\$3.50
367.	Galvanized steel, for No. ½-inch and finer wire	5.50

HAVEN'S STEEL CLAMP

Electro Galvanized Finish.

Number		List Price Each
368.	For No. 8 wire and finer.....	\$3.00
369.	For No. ½ wire and finer.....	5.00

COMMON ECCENTRIC CLAMP

Arranged for Attaching Strap.

Number		List Price Ea.
360.	Polished brass, for No. 8 and finer..	\$2.00
361.	Polished steel, for No. 8 and finer..	1.60

PARALLEL SCREW CLAMP

For Trolley Wire.

Number		List Price Each
373.	Grooved for Nos. 0 and 00..	\$3.60
373A.	Grooved for Nos. 00 and 000..	4.10
373B.	Grooved for Nos. 000 to 0000..	5.50
373C.	Grooved for Nos. 00 fig. 8..	5.50
373D.	Grooved for Nos. 000 fig. 8..	5.50
373E.	Grooved for Nos. 0000 fig. 8..	5.50

NEW STRAND OR MESSENGER WIRE GRIP

For Messenger Wire.

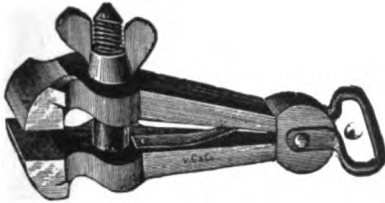
Number		List Price Each
363U.	Size 1-S, for ¾ ₁₆ to ¾ inch....	\$20.00
363T.	Size 2-S, for ¼ to ½ inch....	22.00
363S.	Size 3-S, for ¼ ₁₆ to ¾ inch....	24.00

For Bare Trolley Wire.

Number		List Price Each
363C.	Size 1-T, for Nos. 6 to 2-0 B. & S. wire	\$20.00
363D.	Size 2-T, for Nos. 2 to 4-0 B. & S. wire	22.00

AMERICAN GRIP

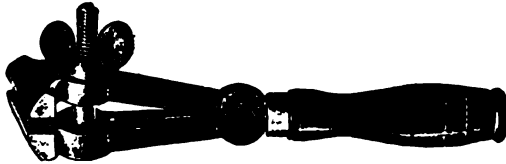
Number		List Price Each
359.	For No. 6 wire and smaller.....	\$4.00
359A.	For No. 0 wire and smaller.....	8.00



No. 375.

LINEMEN'S VISE WITH LOOP

Number	List Price
375. 5½-inch vise with loop..	Each \$2.20
376. 6-inch vise with loop....	Each 2.60
377. Jack strap for vise....	Each 1.50



No. 662V.

HAND VISE

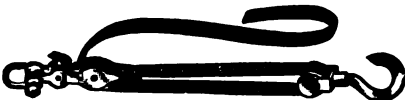
Number	List Price
662V. 3-inch	Each \$1.50
662S. 4-inch	Each 1.70
662T. 5-inch	Each 2.00



No. 481A.

HOWES WIRE TOOL WITH VISE

Number	List Price
481A. Single purchase with 5½-inch vise	Each \$ 8.70
481C. Double purchase with 5½-inch vise	Each 10.20



No. 481.

HOWES WIRE TOOL

Number	List Price
481. Single purchase	Each \$6.50
481B. Double purchase	Each 8.00

Arranged for attaching Grips.

The swivel hook is steel with an opening large enough to go over an insulator pin or other convenient object to anchor to. The forward end has a locking device to hold the load at any distance. It is arranged so it can be used with a vise or with a grip.



No. 480.

LINEMAN'S BLOCK WITH STRAP

Number	List Price
480. With 12 feet of strap.....	Each \$6.00

Weight 2¾ pounds.

This block has a light steel galvanized shell, wood rollers brushed with metal. The forward block has a locking device for holding the load at variable distances. The outer end of each block has an eye for attaching a grip.

LINEMAN'S WOOD BLOCK WITH EYE at ENDS for FASTENING GRIPS



No. 339A.

Number	List Price
339A. 3-in. blocks, for ¼-in. rope.....	Per pair \$3.40
339. 4-in. blocks, for ½-in. rope.....	Per pair 3.50
340. 5-in. blocks, for ¾-in. rope.....	Per pair 5.40

BEST PURE MANILA ROPE.

Our Manila Rope is made expressly for our trade, of selected hemp, by manufacturers enjoying the highest reputation in this country.

We have at all times the most complete assortment of sizes, and can fill orders promptly and satisfactorily. We cater especially to railroad, vessel and contractors' trade requiring carefully made and thoroughly reliable rope, and we can supply any size required up to 4-inch diameter, either 3 or 4 strand. Prices quoted on application.



GALVANIZED CAST IRON ELECTRIC LIGHT PULLEY BLOCKS.

For 1/2-inch Rope.



No. 3270A.

Number		Per dozen	List Price
3270.	3-inch, single, with 1 eye....	\$ 7.00	
3270A.	3-inch, single, with 2 eyes....	7.00	
3271.	3-inch, double, with 1 eye....	10.00	
3271A.	3-inch, double, with 2 eyes....	10.00	
3274.	3-inch, single, with hook.....	10.50	
3274A.	3-inch, single, with hook and eye	Per dozen	10.50
3275.	3-inch, double, with hook.....	Per dozen	13.50
3275A.	3-inch, double, with hook and eye	Per dozen	13.50



No. 3271A.

For 9-16-inch Rope.



No. 3274A.

3272.	3 1/2-inch, single, with 1 eye... Per dozen	\$ 9.00	
3272A.	3 1/2-inch, single, with 2 eyes.. Per dozen	9.00	
3273.	3 1/2-inch, double, with 1 eye.. Per dozen	12.00	
3273A.	3 1/2-inch, double, with 2 eyes.. Per dozen	12.00	
3276.	3 1/2-inch, single, with hook... Per dozen	12.75	
3276A.	3 1/2-inch, single, with hook and eye	Per dozen	12.75
3277.	3 1/2-inch, double, with hook... Per dozen	15.50	
3277A.	3 1/2-inch, double, with hook and eye	Per dozen	15.50



No. 3275A.

SELF-LOCKING LINEMAN'S SLACK TACKLE.

Number		List Price
479A.	Galvanized, weight 2 1/2 lbs.....	Per set \$5.50

Light steel shell blocks, fitted with snubbing hook to lock load in any position. This is a great convenience and time saver for the man on the pole. Also in handling a vertical load. To lock the load, simply pull the luff rope under the hook. To release, simply pull the rope. The forward block is arranged with a snap hook with spring guard. It may be used as an ordinary block with hook or with a wire grip attached for handling wire. The back block is arranged with an anchor hook for fastening to an insulator pin, or other convenient anchorage. Furnished with 25 feet of 3/8-inch rope.



No. 479A.

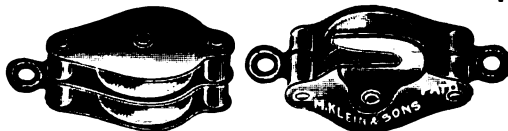
SELF-LOCKING TROUBLEMAN'S BLOCKS



Number		List Price
479B.	Galvanized, weight 2 1/2 pounds.....	Per set \$5.50

This set is similar to above, but has a snap hook at each end for attaching grips. Furnished with 25 feet of 3/8-inch rope.

SELF-LOCKING LINEMAN'S EYE BLOCKS



No. 479C.

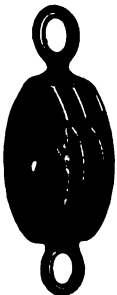
Number		List Price
479C.	Galvanized, weight 2 pounds.....	Per set \$5.00

This set is similar to above, but has an eye at each end for attaching grips. Furnished with 25 feet of 3/8-inch rope.

GALVANIZED MALLEABLE IRON PULLEY BLOCKS



No. 331E.



No. 331C.



No. 331A.

For 3/8-inch rope.

Number	Description	List Price
331	2 1/4-inch, single, with 1 eye... Per dozen	\$ 2.00
331A	2 1/4-inch, single, with 2 eyes... Per dozen	2.00
331B	2 1/4-inch, double, with 1 eye... Per dozen	2.80
331C	2 1/4-inch, double, with 2 eyes... Per dozen	2.80
331D	2 1/4-inch, triple, with 1 eye... Per dozen	8.50
331E	2 1/4-inch, triple, with 2 eyes... Per dozen	8.50
2333	2 1/4-inch, single, with hook... Per dozen	3.75
2333A	2 1/4-inch, single, with hook and eye Per dozen	3.75
2334	2 1/4-inch, double, with hook... Per dozen	4.50
2334A	2 1/4-inch, double, with hook and eye Per dozen	4.50
331F	2 1/4-inch, triple, with hook... Per dozen	11.30
331G	2 1/4-inch, triple, with hook and eye Per dozen	11.30



No. 2333A.

For 1/2-inch rope.

332	3-inch, single, with 1 eye... Per dozen	\$ 3.00
332A	3-inch, single, with 2 eyes... Per dozen	3.00
332B	3-inch, double, with 1 eye... Per dozen	4.00
332C	3-inch, double, with 2 eyes... Per dozen	4.00
333A	3-inch, triple, with 1 eye... Per dozen	10.60
333B	3-inch, triple, with 2 eyes... Per dozen	10.60
2335	3-inch, single, with hook... Per dozen	5.15
2335A	3-inch, single, with hook and eye.. Per dozen	5.15
2336	3-inch, double, with hook... Per dozen	6.00
2336A	3-inch, double, with hook and eye.. Per dozen	6.00
333F	3-inch, triple, with hook... Per dozen	13.40
333H	3-inch, triple, with hook and eye.. Per dozen	13.40



No. 2334A.

For 5/8-inch rope.

033	3 1/4-inch, single, with 1 eye... Per dozen	\$ 3.50
034	3 1/4-inch, single with 2 eyes... Per dozen	3.50
035	3 1/4-inch, double, with 1 eye... Per dozen	5.00
036	3 1/4-inch, double, with 2 eyes... Per dozen	5.00
2337	3 1/4-inch, single, with hook... Per dozen	5.75
2337A	3 1/4-inch, single, with hook and eye Per dozen	5.75
2338	3 1/4-inch, double, with hook... Per dozen	7.20
2338A	3 1/4-inch, double, with hook and eye Per dozen	7.20

For 3/4-inch rope.

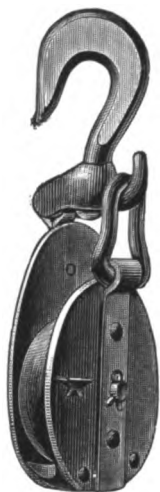
037	4-inch, single, with 1 eye... Per dozen	\$ 7.50
037A	4-inch, single, with 2 eyes... Per dozen	7.50
037B	4-inch, double, with 1 eye... Per dozen	9.25
037C	4-inch, double, with 2 eyes... Per dozen	9.25
2339A	4-inch, single, with hook... Per dozen	9.00
2339B	4-inch, single, with hook and eye.. Per dozen	9.00
2339C	4-inch, double, with hook... Per dozen	11.40
2339D	4-inch, double, with hook and eye.. Per dozen	11.40



No. 331G.

For 3/4-inch rope.

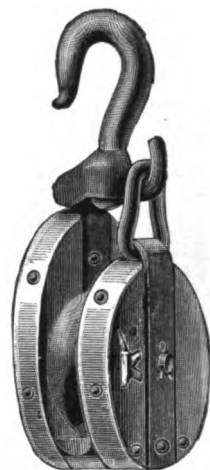
038	5-inch, single, with 1 eye... Per dozen	\$11.00
038A	5-inch, single, with 2 eyes... Per dozen	11.00
038B	5-inch, double, with 1 eye... Per dozen	13.50
038C	5-inch, double, with 2 eyes... Per dozen	13.50
2340	5-inch, single, with hook... Per dozen	13.20
2340A	5-inch, single, with hook and eye.. Per dozen	13.20
2340B	5-inch, double, with hook... Per dozen	16.20
2340C	5-inch, double, with hook and eye.. Per dozen	16.20



No. 121.
Snatch-Block

STEEL SHELL PULLEY BLOCK, JAPANNED, WITH HOOK.

No.	Size of Block	Size of Rope	No. of Sheaves	List Price Each
103	3-inch....	$\frac{3}{8}$ -inch.....	single	\$0.70
104	3-inch....	$\frac{3}{8}$ -inch.....	double	1.30
105	3-inch....	$\frac{3}{8}$ -inch.....	triple	1.75
106	4-inch....	$\frac{1}{2}$ -inch.....	single .....	.85
107	4-inch....	$\frac{1}{2}$ -inch.....	double	1.60
108	1-inch....	$\frac{1}{2}$ -inch.....	triple	2.15
109	5-inch....	$\frac{5}{8}$ -inch.....	single .....	.90
110	5-inch....	$\frac{5}{8}$ -inch.....	double	1.75
111	5-inch....	$\frac{5}{8}$ -inch.....	triple	2.25
112	6-inch....	$\frac{3}{4}$ -inch.....	single	1.10
113	6-inch....	$\frac{3}{4}$ -inch.....	double	2.00
114	6-inch....	$\frac{3}{4}$ -inch.....	triple	2.90
115	7-inch....	$\frac{7}{8}$ -inch.....	single	1.30
116	7-inch....	$\frac{7}{8}$ -inch.....	double	2.40
117	7-inch....	$\frac{7}{8}$ -inch.....	triple	3.50
118	3-inch....	1-inch.....	single	1.65
119	3-inch....	1-inch.....	double	2.85
120.	8-inch....	1-inch.....	triple	4.25



No. 348B.
Snatch Block.

STEEL SHELL SNATCH BLOCKS, JAPANNED, WITH SWIVEL HOOK AND DROP LINK.

121.....	6-inch.....	$\frac{7}{8}$ -inch	\$5.00
122.....	7-inch.....	$\frac{7}{8}$ -inch	5.50
123.....	8-inch.....	1-inch	7.00



No. 104.
Double

WOOD SHELL PULLEY BLOCKS WITH HOOK.

No.	Size of Block	No. of Sheaves	Size of Rope	Plain Bushed	List Price
341A.	3 in.,	single, for	$\frac{3}{8}$ -in. rope....	Each	\$0.70
341B.	3 in.,	double, for	$\frac{3}{8}$ -in. rope....	Each	1.30
341C.	3 in.,	triple, for	$\frac{3}{8}$ -in. rope....	Each	1.75
341.	$3\frac{1}{2}$ in.,	single, for	$\frac{3}{8}$ -in. rope..	Each	.75
342.	$3\frac{1}{2}$ in.,	double, for	$\frac{3}{8}$ -in. rope..	Each	1.45
0342.	$3\frac{1}{2}$ in.,	triple, for	$\frac{3}{8}$ -in. rope..	Each	2.00
342A.	4 in.,	single, for	$\frac{1}{2}$ -in. rope....	Each	.85
342B.	4 in.,	double, for	$\frac{1}{2}$ -in. rope....	Each	1.60
342C.	4 in.,	triple, for	$\frac{1}{2}$ -in. rope....	Each	2.15
343.	5 in.,	single, for	$\frac{5}{8}$ -in. rope....	Each	.90
344.	5 in.,	double, for	$\frac{5}{8}$ -in. rope....	Each	1.75
344A.	5 in.,	triple, for	$\frac{5}{8}$ -in. rope....	Each	2.25
345.	6 in.,	single, for	$\frac{3}{4}$ -in. rope....	Each	1.10
346.	6 in.,	double, for	$\frac{3}{4}$ -in. rope....	Each	2.00
346A.	6 in.,	triple, for	$\frac{3}{4}$ -in. rope....	Each	2.90
347.	8 in.,	single, for	1-in. rope.....	Each	1.65
348.	8 in.,	double, for	1-in. rope....	Each	2.85
348A.	8 in.,	triple, for	1-in. rope....	Each	4.25



No. 341B.
Double



No. 105.
Triple

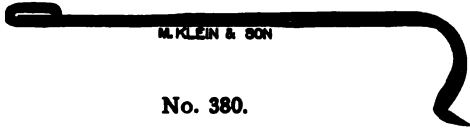
WOOD SHELL SNATCH BLOCKS.

With Swivel Hook and Drop Link.

No.	Size of Block	Size of Rope	Plain Bushed	List Price
348B.	6 inch, for	$\frac{7}{8}$ -inch rope.....	Each	\$4.00
348C.	7 inch, for	$\frac{7}{8}$ -inch rope.....	Each	4.75
348D.	8 inch, for	1-inch rope.....	Each	5.75



No. 341C.
Triple



No. 380.

WESTERN CLIMBERS

Number	List Price
380. Without straps, per pair...	\$3.20

Lengths from 15 to 18 inches by 1/2 inch variations.

STRAPS FOR WESTERN CLIMBERS



No. 380A.

Number	List Price
380A, per set	\$2.00

The set consists of two upper straps with plain oval pads and two lower straps as shown in cut. Made of the very best harness leather.

No. 380D. Per set	\$2.50
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Same as No. 380A, but with sheep lined pads.

No. 380E. Per set	\$2.50
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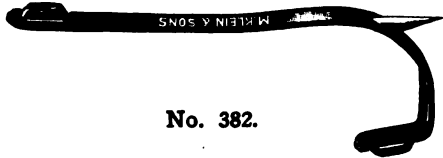
Same as No. 380A, but with felt lined pads

EASTERN CLIMBERS

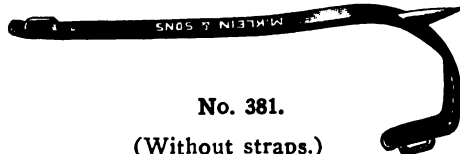
Note—In ordering climbers always mention the length wanted. Eastern pattern, styles Nos. 381 and 382, lengths from 14 to 19 inches varying by 1/2 inches.

Quality and workmanship is the best in either. The only difference is in the loop through which the straps pass. The No. 381 has the loops riveted into the shank, while in the No. 382 they are punched out of the metal of the shank. 1/4

If straps are wanted with climbers mention it in the order. We never send straps unless it is mentioned.



No. 382.



No. 381.

(Without straps.)



No. 382A.

Number	List Price
382. Punched loop	Per pair \$3.60
381. Riveted loop	Per pair 4.00

STRAPS FOR EASTERN CLIMBERS

The set consists of two upper straps with 4x4 plain leather pads and two lower straps, as shown in cut. Made of the very best harness leather.



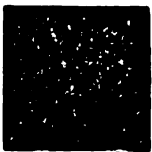
382A. Per set	\$2.00
382B. Same as above, with sheep lined pads	Per set \$2.40
382C. Same as above, with felt lined pads	Per set 2.40
381D. Per set	2.40



No. 381D.

The set consists of two upper straps with 4x4 plain leather pads and two lower angle bottom straps, as shown in cut. Made of the very best harness leather.

381C. Same as above, with sheep lined pads	Per set \$3.00
381B. Same as above, with felt lined pads	Per set 3.00



No. 382E.

SOFT PADS FOR EASTERN CLIMBERS

Number	
382E. Sheep lined	Per pair \$0.80
382F. Felt lined	Per pair .80

LINEMAN'S TOOL BELTS

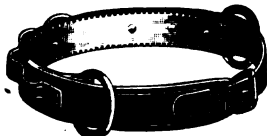


No. 383A and No. 383E.

Number	List Price
383A. 2¼-inch belts with rings.....	Each \$2.10
383C. 2¼-inch belts, double, with rings....	Each 3.00
383E. 3½-inch belts with rings.....	Each 2.90

Note.—When ordering belts please state if wanted for 38, 40, 42, 44 or 46 inch waist.

LEATHER POUCH



No. 383C.

Number	List Price
62. Weight 6 ounces	Each \$0.80

For holding screws, staples, etc. Made with loops to slip into belt. State for what size belt pouch is wanted.

BELT AND SAFETY STRAP



No. 62.

Number	List Price
384. 2¼-inch belt, including safety strap...	Each \$5.00

Weight, each 3½ pounds.

The safety strap is 1¾ inches wide and 6 feet long, and provided with a strong snap at each end. Strap may be shortened or lengthened by adjusting buckle, or it may be detached entirely from the belt.

LINEMAN'S SAFETY STRAP



No. 385R.

Number	List Price
385. 1¾ in. by 6 ft., with japped snap....	Each \$2.90
385R. 1¾ in. by 6½ ft., with roller snap.....	Each 3.00
385S. 1¾ in. by 6½ ft., swivel roller snap....	Each 3.30
386. 2 in. by 6 ft., with roller snap.....	Each 3.30
386B. 2 in. by 6 ft., with japped snap.....	Each 3.00

COMBINED SAFETY AND JACK STRAP



No. 384.



No. 384B.

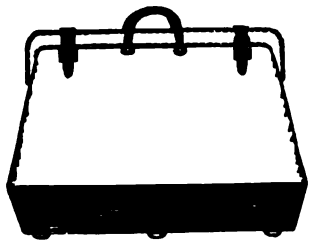
Number	List Price
384B. 1¾ in. by 6½ ft. strap with fixed japped snap on one end and roller snap at the other. Weight, each 30 ounces....	Each \$3.30

JACK OR VISE STRAP



No. 377.

Number	List Price
377. Regular jack strap for vise, 1¾ in. by 5½ ft. Weight, each 13 ounces.	Each \$1.50
377A. Regular jack strap with either snap or clevis at one end for attaching grip; 1¾ in. by 5½ ft. Weight, each 18 ounces	Each 1.60



No. 393A.

**LINEMAN'S CANVAS TOOL BAG,
W. U. PATTERN**

Equipped with Leather Handles, Sides and Bottom.

Number	List Price
393A. 12-inch	Each \$4.50
393J. 14-inch	Each 4.70
393E. 16-inch	Each 4.80
393 I. 18-inch	Each 5.00
393. 20-inch	Each 5.10
393H. 24-inch	Each 6.00

Made of one piece No. 6 white duck, leather reinforced on four sides, steel frame and studs, ends stitched with leather welt seam.



No. 2393E.

LINEMEN'S ALL LEATHER TOOL BAG

Number	List Price
2393E. 12-inch	Each \$ 7.70
2393C. 16-inch	Each 8.00
2393B. 18-inch	Each 8.00
2393A. 20-inch	Each 8.40
2393. 24-inch	Each 10.00

We can furnish any of the above tool bags with lock and key, shoulder strap, etc., additional as follows:

Lock and Key.....	Each, net extra	\$0.30
Shoulder Strap	Each, net, extra	.50
Clasps	Each, net, extra	.50

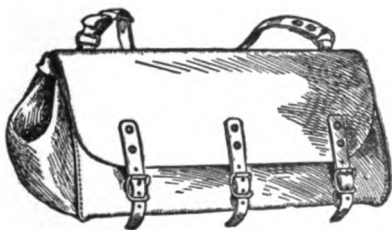


No. 393B.

**INSPECTOR'S BLACK LEATHER TOOL
BAG**

Number	List Price
393B. 15 inches long, 12 inches high; weight, each 3 pounds	Each \$6.00
393K. 20 inches long, 12 inches high.....	Each 7.00

Bag with 1¼-inch shoulder straps made entirely of leather, tongue and buckle fastenings, convenient for inspector, wireman, or lineman.



No. 393R.

**ELECTRICIAN'S AND INSPECTOR'S
TOOL BAG**

Number	List Price
393R. 16-inch	Each \$ 9.00
393S. 20-inch	Each 10.00
393T. 24-inch	Each 11 00

This bag is made of extra heavy selected russet leather, and is a very neat appearing article. The bottom is built up of one thickness each, leather, heavy strawboard, and duck, and is shod with heavy steel studs. All seams are welt finish. It is provided with extension straps across the ends of the opening, so as to permit its being widened up when additional room is required. It has three retaining straps on the flap, and two extra strap loops riveted on the back for carrying a saw, bell hangers' bit, etc. It is also provided with shoulder strap for carrying.

INSPECTOR'S LEATHER TOOL BAG, RUSSET LEATHER



No. 393C.

Number List Price
393C. Weight, each 2½ pounds... Each \$10.00

20x8-inch bag, made entirely of leather; has tongue and buckle fastenings and shoulder strap.

BLACK LEATHER CARBON BAG



No. 393D.

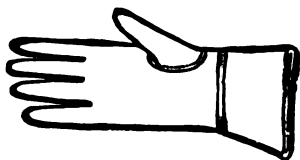
Number List Price
393D. Riveted bag Each \$3.50
Weight, each 2¾ pounds.



No. 393G.

Number List Price
393G. Sewed bag Each \$4.50
Weight, each 3 pounds.

ELECTRIC OR LINEMAN'S RUBBER GLOVES



No. 58C.

Palms and Fingers Reinforced.

With Gauntlet.

Number List Price
58C. Size 13, to fit size 9 hand..... Per pair \$6.00
58F. Size 14, to fit size 9½ hand..... Per pair 6.00
58G. Size 15, to fit size 10 hand..... Per pair 6.00

HEAVY ACID RUBBER GLOVES

Number List Price
58D. With 5-inch gauntlet, furnished in sizes as above..... Per pair \$5.00
58E. With 9-inch gauntlet, furnished in sizes as above..... Per pair 6.50

ELECTRICIAN'S SEAMLESS RUBBER GLOVES

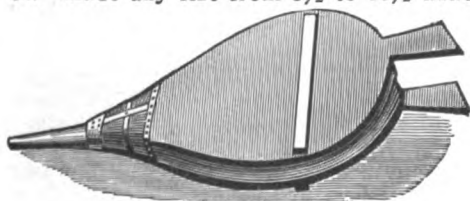
Pure Gum, Extra Long Wristlets.

These gloves run in hand sizes from 8½ to 11, varying by half sizes.

Number List Price
60. Any size from 8½ to 11..... Per pair \$5.00

SPECIAL LINEMAN'S GLOVES, PURE GUM

Number List Price
61. Made any size from 8½ to 10½ hand..... Per pair \$6.00



No. 66B.

HAND BELLOWS

Number List Price
66B. 6-inch..... Per dozen \$10.00
77B. 7-inch..... Per dozen 11.00
88B. 8-inch..... Per dozen 12.00
99B. 9-inch..... Per dozen 13.00
110B. 10-inch..... Per dozen 15.00

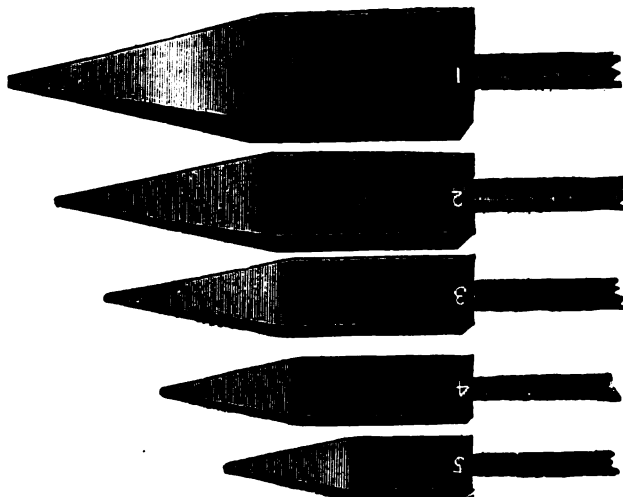
STANDARD SOLDERING COPPERS



Number		List Price	Number		List Price
1500.	½ pound	.....Each	1506.	3 pounds	.....Each
1501.	¾ pound	.....Each	1507.	3½ pounds	.....Each
1502.	1 pound	.....Each	1508.	4 pounds	.....Each
1502A.	1¼ pounds	.....Each	1510.	5 pounds	.....Each
1503.	1½ pounds	.....Each	1512.	6 pounds	.....Each
1504.	2 pounds	.....Each	1514.	7 pounds	.....Each
1505.	2½ pounds	.....Each			

Prices fluctuate. Will quote on application.

The weight given is that of each copper (not pair). Any of above coppers fitted with handle, 5c net extra.



PONY SOLDERING COPPERS

Fitted with Black Lacquered Handles.

Cut shows actual size of copper.

Number		List Price
51.	Length 12 inches over all	.....Each \$1.00
52.	Length 11½ inches over all	.....Each .90
53.	Length 10½ inches over all	.....Each .70
54.	Length 9 inches over all	.....Each .50
55.	Length 8½ inches over all	.....Each .40

THE "R-F" SOLDERING COPPER

(Patented January 17, 1905.)

A Self Heater.

This is an entirely new device of great merit and usefulness to electricians, jewelers and mechanics who have use for a small soldering copper that can be heated in a few minutes by the use of the alcohol cup which is shown raised and in operation in figure one. A small quantity of alcohol will heat the copper so that any ordinary job may be done without the inconvenience of starting a plumbers' fire pot, gasoline torch, or the use of a gas jet. This handy little tool is entirely self-contained and complete in itself, the handle being so made that it holds the copper upright while heating and when in use alcohol cup may be set back out of the way, as shown in figure two. The Soldering Copper is about four times as large as the illustration; it stands, complete, seven and one-half inches high on a table and weighs about four ounces. There is no other soldering copper like this unique device which has now for the first time been placed on the market.

Fig. 1.—Cut showing method of heating copper with alcohol cup.

Fig. 2.—Cut showing cup lowered out of the way; copper ready for use.

Packed one in a carton.



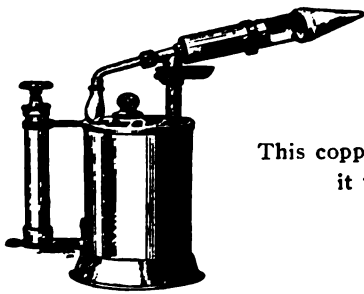
Fig. 1.



Fig. 2.

Number		List Price
55T.	Each	.....\$2.00

RITTER SOLDERING COPPERS



Number	List Price
525A. For pint size torch.....	\$1.70
525. For quart size torch	1.70

This copper is heated by attaching it to the burner of a blow torch.

(See cut.)



No. 525.

ROSIN CORE FLUX SOLDER

Number	List Price
57A. 1-lb. spools, in wire form..lb.	\$0.50
57B. 5-lb. spools and over.....lb.	.50



No. 57A.



No. 560.

MELTING POTS

Number	List Price
560. 5-inch cast iron pot.... Each	\$0.80
561. 6-inch cast iron pot.... Each	1.20
562. 8-inch cast iron pot.... Each	1.50



No. 555.

POURING LADELS

Number	List Price
555. 2½-inch bowl..... Each	\$0.60
556. 3-inch bowl..... Each	.60
557. 4-inch bowl..... Each	.80
558. 5-inch bowl..... Each	1.20



No. 379C

SHAVE HOOKS

Number	List Price
379C. Oval	Each \$0.60
379D. Triangle	Each .60

For scraping lead sleeves, lead pipe, lead cover cable, ends of pot heads, etc.



No. 379D.

HOT BLAST GASOLINE BLOW TORCHES



No. 74T. Pint size.
No. 3T. Quart size.

Number Price

Utility.

74T. Price each, net...\$3.25 .

Reliance.

3T. Price each, net... 3.75

Electric.

23T. Price each, net... 3.25

King.

30T. Price each, net... 4.00



No. 23T. Pint size.
No. 30T. Quart size.



No. 54T. Pint size.
No. 29T. Quart size.

Diamond Combination.

54T. Price each, net... 3.50

King Combination. . .

29T. Price each, net... 4.25

Everlite Combination.

63T. Price each, net... 3.50

Pocket Combination.

4T. Price each, net... 4.00



No. 63T. Pint size.
No. 4T. Quart size.



No. 12T. Quart size.

Old Reliable.

12T. Price each, net... 3.75

Old Reliable Combination

15T. Price each, net... 4.00

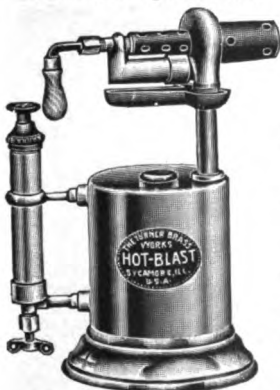
(Same as No. 12T, but arranged with soldering iron attachment.)

Combination Hot Blast.

21T. Price each, net...\$4.25



No. 21T. Quart size.



No. 20T. Quart size.

White Brazier.

20T. Price each, net... 4.50

Auto Hot Blast Torch.

16T. Price each, net...3.75

Auto Combination.

48T. Price each, net... 4.00

(Same as above, but arranged with soldering attachment.)

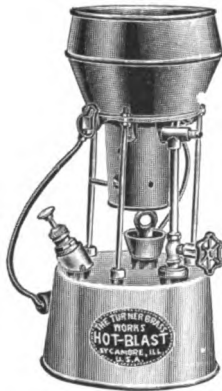


No. 16T. Pint size.

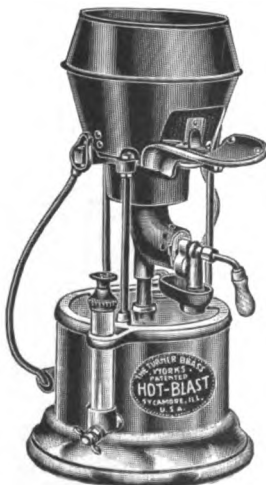
Hot Blast Gasoline Fire Pots and Furnaces



No. 550.



No. 73T.



No. 31T.

"White's Bonanza"

Number	Price
36T Price each, net	\$4.50
39T Price each, net	4.50
36T & 39T Tank, 3 qt. size.	
34T Price each, net	6.00
38T Price each, net	.600
34T & 38T Tank, 1 gal. size.	

Duro Furnace

550 Price each, net\$3.50

The Duro has drawn steel reservoir, heavily galvanized drawn steel coil cup, wrought steel bottom, patent wire handle, improved filling plug, safety air cock joints. All other iron parts are malleable. All parts are interchangeable.

Steel Tank Coil Furnace

Number	Price each, net
73T With Pump	\$5.00
49T With Bulb	4.75

To meet the increasing demand for an extra strong high grade coil furnace, that will stand hard usage, we offer to the trade our No. 73T-49T, which is equipped throughout with the very best of material and the best that mechanical skill can produce.

The tank is made of one-piece drawn steel, without a seam, retinned in and out, which makes it absolutely perfect, and impossible for leaks to occur, and more durable than galvanized. The price is certainly reasonable and within reach of all.

White's Pioneer Coil Furnace

Number	Price each, net
75T With Pump	\$4.00
42T With Bulb	3.75

This furnace has a strong, carefully made galvanized iron tank. All parts are made of the very best material, and are interchangeable, therefore renewable at small expense. Use 74-degree gasoline

Combination Furnace

31T Price each, net.....\$8.00

For electricians. The construction of this furnace enables the user to heat two 3-lb. soldering coppers and a pot of lead at the same time. It can be used in the wind and storm without affecting the flame. Thousands are in daily use. All parts are interchangeable. We warrant this tool to please you.

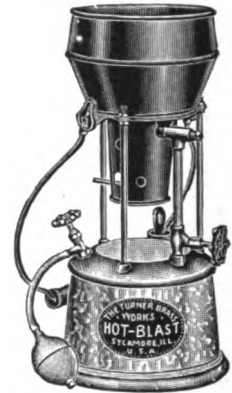
Lineman's Combination Furnace

Number	Price each, net
76T With Bulb	\$5.75
77T With Pump	6.00

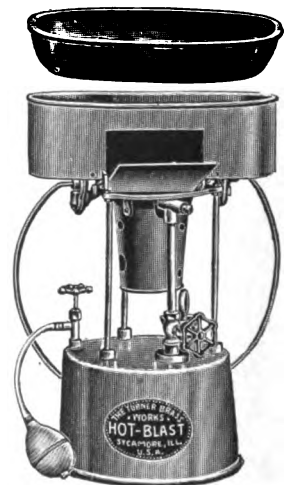
We present to you herewith a special furnace made with a shield to hold an 8-inch oblong melting pot and heat a pair of soldering coppers at the same time. It will melt 10 pounds of solder in 6 minutes. From practical observation we find that it is just the thing for wiping joints by dipping wire into the pot. This important feature will be immediately appreciated by mechanics who are familiar with this line of work. The tank is made of one piece drawn steel. A melting pot accompanies each furnace.



No. 36T.—No. 39T.
No. 34T.—No. 38T.



No. 42T.



No. 76T.

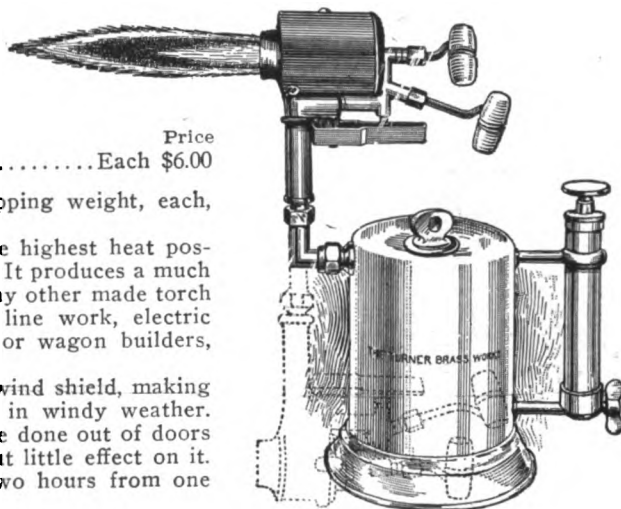
DOUBLE JET GASOLINE TORCH

Number Price
96T. One quart size, net.....Each \$6.00

The burner is swivel. Shipping weight, each, 5 pounds

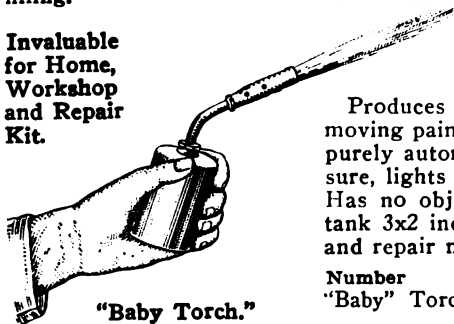
No. 96T torch generates the highest heat possible to obtain from gasoline. It produces a much larger volume of flame than any other made torch and is excellent for electric line work, electric railways, lighting plants, car or wagon builders, special plumbing, etc.

The burner is fitted with a wind shield, making this torch an ideal appliance in windy weather. Brazing and other work can be done out of doors and the strongest wind has but little effect on it. This torch will burn about two hours from one filling.



No. 96T.

Invaluable for Home, Workshop and Repair Kit.



"Baby Torch."

THE "BABY" TORCH

Produces intensely hot flame for soldering, welding, removing paint, around the repair shop. Powerful, compact, purely automatic, absolutely safe, works without air pressure, lights with match, burns two hours with one filling. Has no objectionable features of other torches. Size of tank 3x2 inches. Used and recommended by electricians and repair men.

Number List Price
"Baby" Torch, each\$2.00

CHARCOAL SOLDERING FURNACE, GALVANIZED IRON

Number List Price
374. With removable cast iron top.....Each \$8.00

Shipping weight, 12 pounds.

For melting solder and heating soldering irons. Opening in top admits 6-inch melting pot. Furnace is provided with grate.

BOX WOOD TURN PIN

For expanding ends of lead pipe, lead sleeves, pot heads, etc.

Number List Price
1221A. SmallEach \$0.50
1221B. MediumEach .50
1221C. LargeEach .50



No. 1221A.

WIPING CLOTHS

Number List Price
1236M. MoleskinEach \$0.50
1236T. TickingEach .30



NO. 1230M.

BOX WOOD DRESSER

Number List Price
1226W. Each\$1.50

For shaping lead sleeves, lead pipe, pot heads, etc.

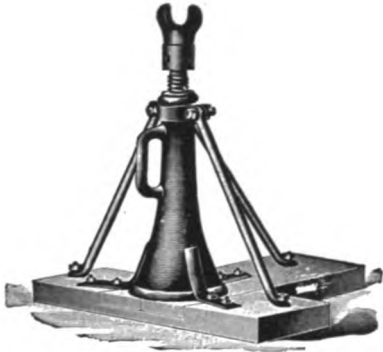


No. 1226W.



No.374.

CABLE REEL JACK



Number 389. Per pair\$38.00

A pair of these jacks will support cable reels of any size while the cable is being run off. The forked head will hold a 2½-inch diameter shaft, and will swivel to any position. The cable may be raised or lowered while it is supported on the jacks.

These jacks are fitted with 2x16-inch locomotive jack screws, braced on oak bases.

LOCOMOTIVE OR SCREW JACKS



Diam. of Screw, Inches.	Height of Stand, Inches.	Price Each.	Diam. of Screw, Inches.	Height of Stand, Inches.	Price Each.
1¼	4	\$ 2.90	2	24	\$13.50
1¼	6	3.10	2¼	6	7.00
1¼	8	3.40	2¼	8	7.50
1¼	10	3.80	2¼	10	8.25
1¼	12	4.20	2¼	12	9.00
1¼	14	4.60	2¼	14	10.00
1½	4	3.25	2¼	16	11.00
1½	5	3.50	2¼	18	12.00
1½	6	3.75	2¼	20	13.25
1½	8	4.25	2¼	22	14.50
1½	10	4.75	2¼	24	15.75
1½	12	5.25	2½	6	7.75
1½	14	6.00	2½	6½	8.00
1½	16	6.75	2½	8	8.75
1¾	6	4.50	2½	10	9.75
1¾	8	5.00	2½	12	10.75
1¾	10	5.75	2½	14	12.00
1¾	12	6.25	2½	16	13.25
1¾	14	6.75	2½	18	14.50
1¾	16	7.50	2½	20	15.75
1¾	18	8.50	2½	22	17.00
2	5	5.00	2½	24	18.25
2	6	5.25	2½	28	22.00
2	8	6.00	2½	32	26.00
2	10	6.75	3	14	19.50
2	12	7.50	3	16	20.75
2	14	8.25	3	18	22.00
2	16	9.25	3	20	23.25
2	18	10.25	3	22	24.50
2	20	11.50	3	24	25.75
2	22	12.50	3	30	30.00

For Height Over All, add to Height of Stand, Inches.

Capacity, Tons.	Height of Stand, Inches.
1¼-inch	10
1½-inch	12
1¾-inch	16
2-inch	20
2¼-inch	24
2½-inch	28
3-inch	36

All material of superior quality, and workmanship of the best.

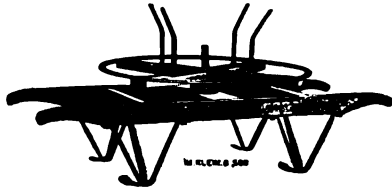
Screws wrought steel with machine-cut thread. Has swivel cap, closed on top to prevent any dirt from entering between cap and screw. Cap is held in place by set screw running in groove on top.

Every jack warranted to safely carry loads given below.

Lever will be sent only when ordered, and will be charged extra.

All screws warranted to carry weights listed.

PAY-OUT REEL ON BARROW LIGHT REEL



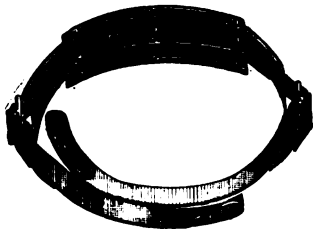
No. 385B.

For Telephone Work.

Number	List Price
385A. Reels complete with guard irons	
.....Each	\$15.00

Shipping weight, 80 pounds each.

PAY-OUT REEL ON BARROW HEAVIER REEL



No. 385C.

For Electric Light Work.

Number	List Price
385B. Reels complete with guard irons..	Each \$20.00

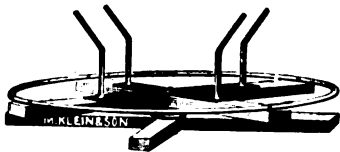
Shipping weight, 90 pounds each.

LEATHER SHOULDER STRAPS

Number	List Price
385C. Shoulder Straps for carrying pay-out reel	Per set \$8.00

Weight per set, 4¾ pounds.

COMMON PAY-OUT OR WAGON REEL



No. 386A.

Number	List Price
386A. Each	\$9.00

Common pay-out reel complete with guard irons.
Shipping weight, 40 pounds each.

IMPROVED TAKE-UP REEL

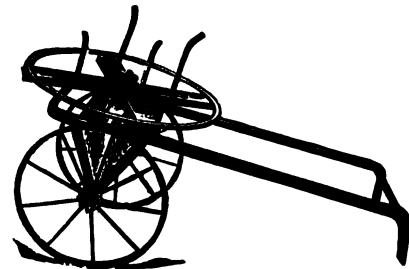


No. 387.

Number	List Price
387. For 18-inch coil.....	Each \$20.00
Shipping weight, 62 pounds each.	
Number	List Price
387A. For 21-inch coil.....	Each 20.00
Shipping weight, 65 pounds each.	

The improved reel has a separate guard piece (as shown in cut), which is slipped on shaft and fastened with a flat key, which arrangement allows the wire to be removed very easily and quickly. It does away with the loose toggle guard irons of the old style reel.

THE WASSON REEL



No. 387W.

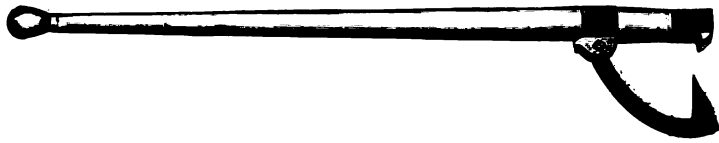
Number	List Price
287W. Wasson reel	Each \$24.00

This reel and cart is made of steel and is strong and light and always ready; it carries its own tools, as well as pins, insulators and other material; has brake to keep the wire from running away; can be anchored to the ground.

Is used by telephone, telegraph and electric light companies.

BRYANT ZINC COMPANY

CANT HOOK



Number List Price
 This is the strongest Cant Hook made. Handles are made of select hickory. Malleable iron clasp, with extension toe ring. Duck bill hook, hand forged, from crucible tool steel.
 399. 4½-foot hickory handle Each \$3.00

CANT HOOK HANDLE



Number List Price
 399A. 2⅝ inches by 4½ feet Each \$1.00
 Made of select hickory. These handles we consider will outwear two handles made of rock maple. While it is true they cost a trifle more money, still they are cheaper handles.

SWIVEL CARRYING HOOK OR TIMBER CARRIER



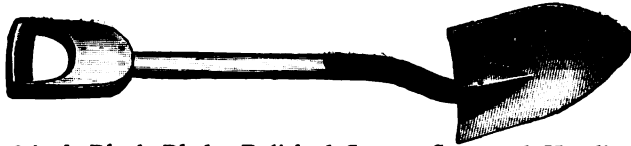
Number List Price
 405. 4-foot handle Each \$4.00
 406. 5-foot handle Each 4.50
 407. 6-foot handle Each 5.50
 The clip on this Carrier, as you will observe, is bolted to the handle, and in case of any shrinkage the bolt can be tightened, which is one of the advantages of this style of tool. The hooks have chisel points and are hung in swivel so they will adjust themselves to any angle desired. They are made from crucible steel, hand forged, and clip from malleable iron.

TIMBER LUG OR CARRYING HOOK



Number List Price
 405A. 4-foot handle Each \$4.00
 406A. 5-foot handle Each 4.50
 The hooks are hung in swivels so they will adjust themselves to any angle desired. They are made from crucible steel, have chisel points, and the swivel and clip from malleable iron.
 Either of the above pattern of Timber Carrier will be found very useful in bridge and general railroad construction; or, in fact, in any work where heavy timbers are to be handled. They reduce to a minimum the heavy lifting and tugging necessary when these tools are not employed.

"D" HANDLE ROUND POINT SHOVELS



9-inch Black Blade, Polished Straps, Seasoned Handle.

Number		List Price
433R.	Size No. 2, "Best" grade.....	Per dozen \$24.00
1433R.	Size No. 2, "First" grade.....	Per dozen 20.00

"D" HANDLE SQUARE POINT SHOVELS



9-inch Black Blade, Polished Straps, Seasoned Handle.

Number		List Price
1433S.	Size No. 2, "First" grade.....	Per dozen \$20.00
433S.	Size No. 2, "Best" grade.....	Per dozen 24.00

Our "Best" grade round and square point "D" Handle Shovels are made of select crucible steel, especially adapted for shovels. They have selected handles and are intended for the heaviest service.

Our "First" grade round and square point "D" Handle Shovels are also made of the same quality steel, but are lighter, and have a lower grade handle. There are several grades of cheaper shovels, but we only list the two highest grades, but can furnish cheaper ones if wanted.

LONG HANDLE TELEGRAPH SPOON SHOVELS



**Extra Heavy Straight Handle, Flat Toe, W. U. Pattern.
9-inch Front and Back Polished Straps, Seasoned Handles.**

Number		List Price
439.	6-foot	Per dozen \$30.00
440.	7-foot	Per dozen 32.00
441.	8-foot	Per dozen 34.00
442.	9-foot	Per dozen 36.00

LONG HANDLE TELEGRAPH SPOON SHOVELS

**Extra Heavy Straight Handle, Flat Toe, W. U. Pattern.
22-inch Front and Back Polished Straps, Seasoned Handles.**

Number		List Price
442A.	6-foot	Per dozen \$32.00
443.	7-foot	Per dozen 34.00
444.	8-foot	Per dozen 36.00
445.	9-foot	Per dozen 38.00

LONG TELEGRAPH SPOON HANDLES



Seasoned Handles.

Number		List Price
454.	6 feet x 2 inches in diameter.....	Per dozen \$13.00
455.	7 feet x 2 inches in diameter.....	Per dozen 17.00
456.	8 feet x 2 inches in diameter.....	Per dozen 20.00
457.	9 feet x 2 inches in diameter.....	Per dozen 27.00

BRYANT ZINC COMPANY

LONG HANDLE TELEGRAPH SHOVELS

Round Point Western Union Pattern, 22-inch Front and Back Polished Straps.
Seasoned Handles.



Number		List Price
430A	6 feet, 80 lbs.....	Per dozen \$30.00
430	7 feet, 95 lbs.....	Per dozen 32.00
431	8 feet, 110 lbs.....	Per dozen 34.00
432	9 feet, 115 lbs.....	Per dozen 36.00

These shovels are made of a select grade of crucible steel especially adopted for that purpose. They have the proper seasoned handles, heavy and sound stock. The handles have the popular "Western Union" bend, and are well reinforced with long steel straps, the straps are made in one piece with the blade. They are adopted for the very hardest service and are giving the best satisfaction.

LONG TELEGRAPH SHOVEL HANDLES

Seasoned Handles. Western Union Pattern.



Number		List Price
449	6-foot handles	Per dozen \$13.00
450	7-foot handles	Per dozen 15.00
451	8-foot handles	Per dozen 17.00
452	9-foot handles	Per dozen 22.00

LONG HANDLE TELEGRAPH SHOVELS

Round Point, Straight Handles, 22-inch Front and Back Polished Straps.
Seasoned Handles.



Number		List Price
433A.	6 feet, 90 lbs.....	Per dozen \$30.00
433	7 feet, 100 lbs.....	Per dozen 32.00
434	8 feet, 110 lbs.....	Per dozen 34.00
435	9 feet, 115 lbs.....	Per dozen 36.00

These shovels are the same quality as above, but have an entirely straight handle. This feature is of advantage in working in the bottom of deep post holes or in stiff soils and in confined places. The handle is protected by long front and back straps integral with the blade; the straps run along the handle for a length of 22 inches. This not only protects the handle from chafing, but strengthens it at a point where it has to sustain great strains.

LONG TELEGRAPH SHOVEL HANDLES

Seasoned Handles, Straight Pattern



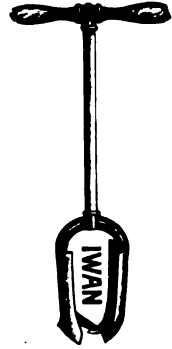
Number		List Price
449A.	6-foot handles.....	Per dozen \$12.00
450A.	7-foot handles.....	Per dozen 14.00
451A.	8-foot handles.....	Per dozen 16.00
452A.	9-foot handles.....	Per dozen 21.00

POST HOLE AUGER

Number	List Price
396F. 10 inch, 6 foot stem, each.....	\$ 7.00
396. 12 inch, 6 foot stem, each.....	8.00
396A. 14 inch, 6 foot stem, each.....	9.00
396B. 14 inch, 8 foot stem, each.....	10.00



Klein Post Hole Auger.



Iwan's Patent Post Hole Auger.

ADJUSTABLE WOOD HANDLE

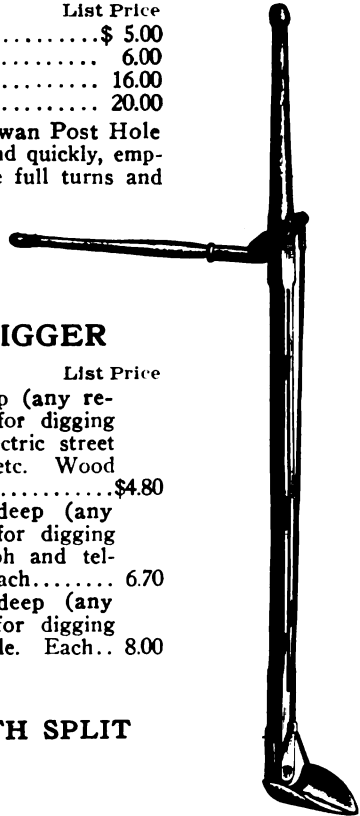


Number	List Price
398. For No. 396B Post Hole Auger, each.....	\$2.50

IWAN'S PATENT POST HOLE AUGER

Number	List Price
396I. 8 inch, 4 feet over all, each.....	\$ 5.00
396C. 10 inch, 4 feet over all, each.....	6.00
396E. 12 inch, 6 feet over all, each.....	16.00
396G. 14 inch, 6 feet over all, each.....	20.00

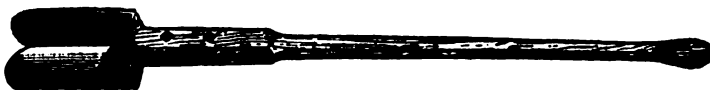
Strength and time saved by using Iwan Post Hole Auger, which makes a hole smoothly and quickly, empties easily and is very durable. Three full turns and it is full of earth and lots of it.



THE LOCK LEVER DIGGER

Number	List Price
396L. Digger digs holes 4 feet deep (any required diameter), and is used for digging holes for railway signal posts, electric street railway poles, fire alarm poles, etc. Wood handle. Each	\$4.80
396M. Digger digs holes 5 feet deep (any required diameter), and is used for digging holes for ordinary height telegraph and telephone poles, etc. Iron handle. Each.....	6.70
396N. Digger digs holes 6 feet deep (any required diameter) and is used for digging holes for longer poles. Iron handle. Each..	8.00

POST HOLE DIGGER, WITH SPLIT HANDLES



Number	List Price
396D. 5-foot handles, each	\$2.00
396H. 7-foot handles, each	2.50

BRYANT ZINC COMPANY

SPUD DIGGING TOOL AND TAMPING BAR



List Price

No. 461. 9 feet, each.....\$5.50

The most useful tool ever invented for digging holes. With it one man can do the work of three. It is one-half lighter, cheaper and will work three times faster than a solid digging bar. Handles are made of crucible steel tubing. Blades are made of best tool steel and tempered. These Spuds are provided with tamper for tamping ground around pole or post.

THE ELECTRIC TAMPING BAR

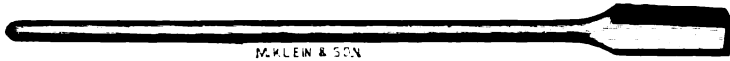


List Price

No. 461A. 8 feet, each.....\$4.00

There being no friction on sides, this Tamper will pack the ground twice as solid with one thrust. The entire thrust being on bottom without friction at sides gives it a very decided advantage over others. The handles are made of crucible steel tubing and the ends are made of the best refined malleable. This tool is almost indestructible and will last a lifetime.

WOOD HANDLE TAMPING BARS

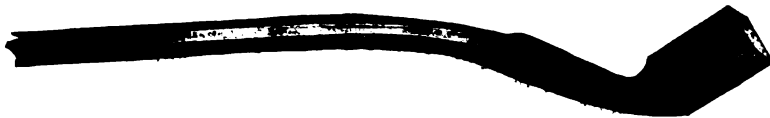


List Price

No. 397. 7 feet, each\$3.00
No. 397A. 8 feet, each 3.50

Handle made of select second growth Hickory, well seasoned, steel shoe.

RAILROAD TIE STEEL TAMPING BARS



List Price

No. 62W. 5½ feet, weight 14 lbs., price per lb.....\$0.20

RAILROAD CLAW BAR, WITH HEEL



List Price

No. 62W. Standard Weight, 20 to 25 lbs. and 28 to 30 lbs., price per lb.....\$0.20

WEDGE POINT CROW BAR



List Price

No. 57W. Base sizes, 10 to 40 lbs., hammer forged, of uniform quality high carbon steel.
 Price per lb. \$0.20

PINCH POINT CROW BAR



List Price

No. 56W. Base sizes 10 to 40 lbs., price per lb. \$0.20

LINING BAR



List Price

No. 58W. Base sizes 10 to 40 lbs., price per lb. \$0.20

CROW AND DIGGING BAR



List Price

No. 418B.	1 1/8 x 6 feet, weight 22 lbs., each	\$4.00
No. 418C.	1 1/8 x 7 feet, weight 26 lbs., each	4.20
No. 418.	1 1/8 x 8 feet, weight 30 lbs., each	4.80
No. 421C.	1 x 6 feet weight 18 lbs., each	3.40
No. 421B.	1 x 7 feet, weight 21 lbs., each	3.70
No. 418A.	1 x 8 feet, weight 24 lbs., each	4.00

TAMPING AND DIGGING BAR



List Price

No. 421E.	1 1/8 x 6 feet, weight 23 lbs., each	\$4.00
No. 421D.	1 1/8 x 7 feet, weight 27 lbs., each	4.50
No. 421.	1 1/8 x 8 feet, weight 31 lbs., each	5.00
No. 421G.	1 x 6 feet, weight 19 lbs., each	3.50
No. 421F.	1 x 7 feet, weight 22 lbs., each	4.00
No. 421A.	1 x 8 feet, weight 25 lbs., each	4.50

These bars are made of a grade of steel purposely selected, and made up for us. This steel has high resisting qualities and elasticity. It is a high priced steel to use for digging bars, but its use is justified in the saving it will afford in work performed. A cheap digging bar that will bend at every strain is a time waster, and a drain on the wage account. The slight additional first cost is a mere nominality, and will pay compound interest every day this tool is used.

LOY DIGGING TOOL



List Price

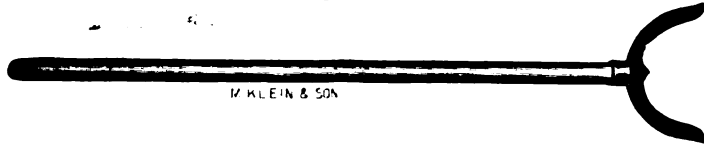
460. 8 feet, shipping weight 15 lbs., each \$4.50

A very useful tool for digging post holes in hard soil, consisting of a wide, flat steel blade, tapering to a chisel point, and attached to an 8-foot hardwood handle.

BRYANT ZINC COMPANY

RAISING FORK FOR WOOD POLE

Handles made of Washington Fir, fork of Crucible Steel.



		Standard Size.	List Price
No. 409.	10 feet, 1 $\frac{3}{4}$ -inch handle, each.....		\$2.70
No. 410.	12 feet, 1 $\frac{3}{4}$ -inch handle, each.....		2.90
No. 411.	14 feet, 1 $\frac{3}{4}$ -inch handle, each.....		3.10
No. 412.	16 feet, 1 $\frac{3}{4}$ -inch handle, each.....		3.30
		Heavy Size.	List Price
No. 409A.	10 feet, 2 $\frac{1}{8}$ -inch handle, each.....		\$3.00
No. 410A.	12 feet, 2 $\frac{1}{8}$ -inch handle, each.....		3.30
No. 411A.	14 feet, 2 $\frac{1}{8}$ -inch handle, each.....		3.50
No. 412A.	16 feet, 2 $\frac{1}{8}$ -inch handle, each.....		3.80
No. 413A.	18 feet, 2 $\frac{1}{8}$ -inch handle, each.....		4.00
No. 414A.	20 feet, 2 $\frac{1}{8}$ -inch handle, each.....		4.20

RAISING FORK FOR IRON POLE

Handles made of Washington Fir, fork of Crucible Steel.



		Standard Size.	List Price
No. 696.	10 feet, 1 $\frac{3}{4}$ -inch handle, each.....		\$2.70
No. 697.	12 feet, 1 $\frac{3}{4}$ -inch handle, each.....		2.90
No. 698.	14 feet, 1 $\frac{3}{4}$ -inch handle, each.....		3.10
No. 699.	16 feet, 1 $\frac{3}{4}$ -inch handle, each.....		3.30
		Heavy Size.	List Price
No. 696A.	10 feet, 2 $\frac{1}{8}$ -inch handle, each.....		\$3.00
No. 697A.	12 feet, 2 $\frac{1}{8}$ -inch handle, each.....		3.30
No. 698A.	14 feet, 2 $\frac{1}{8}$ -inch handle, each.....		3.50
No. 699A.	16 feet, 2 $\frac{1}{8}$ -inch handle, each.....		3.80
No. 699B.	18 feet, 2 $\frac{1}{8}$ -inch handle, each.....		4.00
No. 699C.	20 feet, 2 $\frac{1}{8}$ -inch handle, each.....		4.20

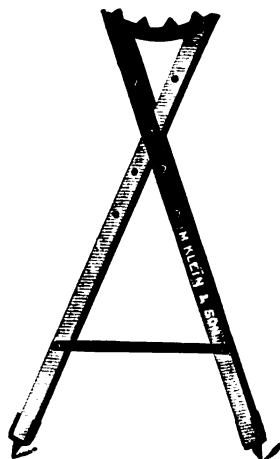
PLAIN PIKE POLES

Handles made of Washington Fir, Pikes of Crucible Steel.



		Standard Size.	List Price
No. 0414.	10 feet, 1 $\frac{3}{4}$ -inch handle, each.....		\$1.50
No. 414.	12 feet, 1 $\frac{3}{4}$ -inch handle, each.....		1.70
No. 415.	14 feet, 1 $\frac{3}{4}$ -inch handle, each.....		1.80
No. 416.	16 feet, 1 $\frac{3}{4}$ -inch handle, each.....		2.00
		Heavy Size.	List Price
No. 0414B.	10 feet, 2 $\frac{1}{8}$ -inch handle, each.....		\$1.80
No. 414B.	12 feet, 2 $\frac{1}{8}$ -inch handle, each.....		2.00
No. 415B.	14 feet, 2 $\frac{1}{8}$ -inch handle, each.....		2.15
No. 416B.	16 feet, 2 $\frac{1}{8}$ -inch handle, each.....		2.50
No. 417B.	18 feet, 2 $\frac{1}{8}$ -inch handle, each.....		2.80
No. 417C.	20 feet, 2 $\frac{1}{8}$ -inch handle, each.....		3.00

POLE SUPPORTERS

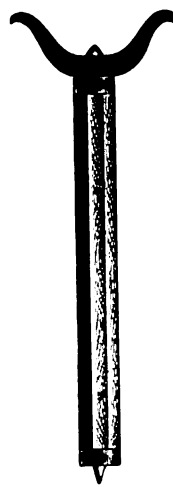


No. 3930.
Wood "Jenney Pattern."

MULE PATTERN

Made of 4-inch timber, octagon shape, fork and pike made from crucible steel.

	List Price
No. 3950. 6 feet, each.....	\$6.00
No. 3960. 7 feet, each.....	7.00
No. 3961. 8 feet, each....	8.00



No. 3950.
Wood "Mule Pattern."

WOOD JENNEY POLE SUPPORTS

	List Price
No. 3930. 6 feet, each.....	\$7.50
No. 3940. 7 feet, each.....	8.00
No. 3941. 8 feet, each.....	8.50

Made of 1 3/4 x 3 1/2 inches good solid, clear oak, fork and pike hand forged from crucible steel, braced and bolted, making it a very strong pole support.

METAL POLE SUPPORTERS

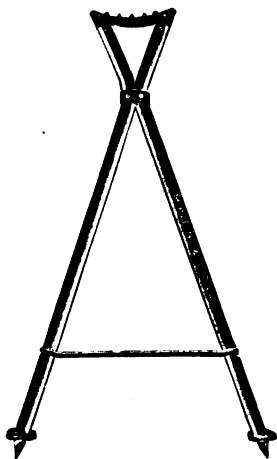
"JENNEY PATTERN."

	List Price
No. 3946. 6 feet, each.....	\$12.50
No. 3947. 7 feet, each.....	13.50
No. 3948. 8 feet, each.....	14.50

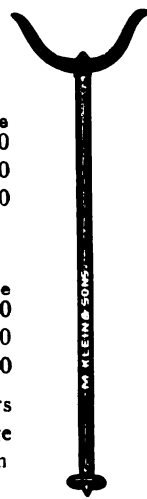
"MULE PATTERN."

	List Price
No. 3966. 6 feet, each.....	\$11.00
No. 3967. 7 feet, each.....	11.50
No. 3968. 8 feet, each.....	12.00

These are the most serviceable supporters on the market. They have the advantage over the wooden pattern of being both light and strong.

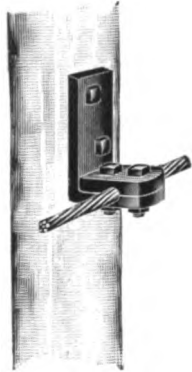


No. 3946.
Iron "Jenney Pattern."



No. 3966.
Iron "Mule Pattern."

The small diameter of the uprights makes them more convenient to handle, and allows the follow-up man to work with more agility than with the wooden pattern. The flange of the foot prevents sinking into soft ground. They are made in the customary sizes, 6 feet, 7 feet and 8 feet. Telephone, telegraph or electric railway companies cannot afford to overlook these very useful tools. They will pay their cost the first day used.



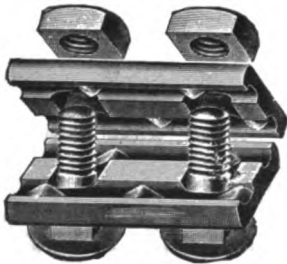
No. 519P.

STRAND SUPPORTS OR "L" BRACKETS

	List Price
No. 519P. For ½ inch strand, plain, each.....	\$.26
No. 520P. For ¾ inch strand, plain, each.....	.20
No. 521P. For ¼ inch strand, plain, each.....	.16
No. 519G. For ½ inch strand, galvanized, each.....	.32
No. 520G. For ¾ inch strand, galvanized, each.....	.26
No. 521G. For ¼ inch strand, galvanized, each.....	.22

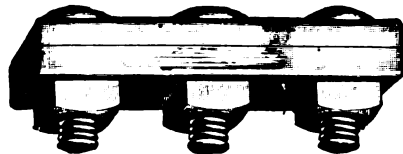
The "L" Messenger Bracket has become the standard for heavy single strand construction. The upright leg is bored for ½ inch lag screws or bolts.

The faces of the groove are rounded, which avoids marring the strand.



No. 427.

GUY WIRE OR STRAND CLAMPS



No. 429.

Hot Pressed steel strand clamps, a much lighter and cheaper clamp than any other make and just as strong. Electro galvanized.

	List Price
No. 429. 3-bolt 5-inch galvanized clamp for 7/8-inch or ½-inch strand, each.....	\$.18
No. 429G. 3-bolt 4-inch galvanized clamp for ¾-inch or smaller strand, each.....	.17
No. 427. 2-bolt 3-inch galvanized clamp for ¾-inch or smaller strand, each.....	.13



No. 1427P.

GUY HOOKS OR GUY STRAND SUPPORT

A Guy Strand Support keeps the guy from slipping down the pole.

Strong rises or drops in messenger strands can be held absolutely with a guy hook.

	List Price
No. 1427P. 1-bolt Guy Hook, plain, each.....	\$.07
No. 1428P. 2-bolt Guy Hook, plain, each.....	.12
No. 1429P. 3-bolt Guy Hook, plain, each.....	.20
No. 1427G. 1-bolt Guy Hook, galvanized, each.....	.08
No. 1428G. 2-bolt Guy Hook, galvanized, each.....	.14
No. 1429G. 3-bolt Guy Hook, galvanized, each.....	.24



No. 71.

OPEN LINKS OR REPAIR LINKS

Polished Open End.

	List Price
No. 71. 5/8 x 2 x 1 ½ inches, each.....	\$.10
No. 72. 3/8 x 2 ½ x 1 ½ inches, each.....	.10

WIRE ROPE CLIPS



No. 429A.

		Plain.	List Price
No. 429A.	For	¼-inch strand, each.....	\$0.11
No. 429B.	For	⅝-inch strand, each.....	.11
No. 429C.	For	¾-inch strand, each.....	.12
No. 429D.	For	½-inch strand, each.....	.15

		Galvanized.	List Price
No. 429E.	For	¼-inch strand, each.....	\$0.15
No. 429F.	For	⅝-inch strand, each.....	.15
No. 429G.	For	¾-inch strand, each.....	.16
No. 429H.	For	½-inch strand, each.....	.19



No. 425A.

GALVANIZED WIRE ROPE THIMBLES

		List Price
No. 425A.	¼-inch, each	\$0.08
No. 425B.	⅝-inch, each .....	.08
No. 425C.	¾-inch, each .....	.09
No. 425D.	½-inch, each .....	.10
No. 425E.	¾-inch, each .....	.14
No. 425F.	¾-inch, each .....	.16

TURN BUCKLES, ELECTRO GALVANIZED WITH HOOK AND EYE



No. 422F.

Lengths Between Heads.

		List Price
No. 422F.	¾x 9-inch, hook and eye, each..	\$0.86
No. 422G.	¾x12-inch, hook and eye, each..	.96
No. 422B.	½x 9-inch, hook and eye, each..	1.04
No. 422D.	½x12-inch, hook and eye, each..	1.20
No. 423A.	¾x 9-inch, hook and eye, each..	1.32
No. 424.	¾x12-inch, hook and eye, each..	1.48
No. 424B.	¾x 9-inch, hook and eye, each..	1.56
No. 424D.	¾x12-inch, hook and eye, each..	1.76
No. 425C.	1 x 9-inch, hook and eye, each..	2.20
No. 425B.	1 x12-inch, hook and eye, each..	2.48

TURNBUCKLES, ELECTRO GALVANIZED WITH EYE AT END.



No. 422.

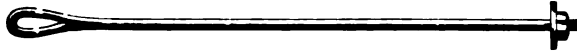
Lengths Between Heads.

		List Price
No. 422.	¾x 9-inch, two eyes, each.....	\$0.94
No. 422E.	¾x12-inch, two eyes, each.....	1.06
No. 422A.	½x 9-inch, two eyes, each.....	1.12
No. 422C.	½x12-inch, two eyes, each.....	1.26
No. 423.	¾x 9-inch, two eyes, each.....	1.38
No. 423B.	¾x12-inch, two eyes, each.....	1.56
No. 424A.	¾x 9-inch, two eyes, each.....	1.64
No. 424C.	¾x12-inch, two eyes, each.....	1.86
No. 425.	1 x 9-inch, two eyes, each.....	2.40
No. 425A.	1 x12-inch, two eyes, each.....	2.72

BRYANT ZINC COMPANY

ANCHOR RODS

Furnished with 2x2x $\frac{1}{8}$ square washers.



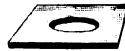
		List Price
No. 470P.	$\frac{1}{2}$ inch x 6 feet, plain	per 100 \$27.00
No. 470G.	$\frac{1}{2}$ inch x 6 feet, galvanized	per 100 35.28
No. 471P.	$\frac{1}{2}$ inch x 7 feet, plain	per 100 31.46
No. 471G.	$\frac{1}{2}$ inch x 7 feet, galvanized	per 100 40.50
No. 472P.	$\frac{1}{2}$ inch x 8 feet, plain	per 100 35.70
No. 472G.	$\frac{1}{2}$ inch x 8 feet, galvanized	per 100 46.00
No. 480P.	$\frac{5}{8}$ inch x 6 feet, plain	per 100 36.40
No. 480G.	$\frac{5}{8}$ inch x 6 feet, galvanized	per 100 50.54
No. 481P.	$\frac{5}{8}$ inch x 7 feet, plain	per 100 44.66
No. 481G.	$\frac{5}{8}$ inch x 7 feet, galvanized	per 100 58.60
No. 482P.	$\frac{5}{8}$ inch x 8 feet, plain	per 100 48.26
No. 482G.	$\frac{5}{8}$ inch x 8 feet, galvanized	per 100 63.26
No. 490P.	$\frac{3}{4}$ inch x 6 feet, plain	per 100 49.96
No. 490G.	$\frac{3}{4}$ inch x 6 feet, galvanized	per 100 70.78
No. 491P.	$\frac{3}{4}$ inch x 7 feet, plain	per 100 59.54
No. 491G.	$\frac{3}{4}$ inch x 7 feet, galvanized	per 100 85.60
No. 492P.	$\frac{3}{4}$ inch x 8 feet, plain	per 100 65.36
No. 492G.	$\frac{3}{4}$ inch x 8 feet, galvanized	per 100 90.04

GROUND TERMINAL RODS, GALVANIZED



		List Price
No. 500P.	$\frac{1}{4}$ inch x 4 feet, plain	per 100 \$10.00
No. 500O.	$\frac{3}{8}$ inch x 5 feet, plain	per 100 12.10
No. 500R.	$\frac{3}{8}$ inch x 6 feet, plain	per 100 14.30
No. 500S.	$\frac{1}{2}$ inch x 6 feet, plain	per 100 19.70
No. 500T.	$\frac{1}{2}$ inch x 7 feet, plain	per 100 23.20
No. 500.	$\frac{1}{4}$ inch x 4 feet, galvanized	per 100 11.50
No. 500A.	$\frac{3}{8}$ inch x 5 feet, galvanized	per 100 17.60
No. 501.	$\frac{3}{8}$ inch x 6 feet, galvanized	per 100 21.00
No. 502.	$\frac{1}{2}$ inch x 6 feet, galvanized	per 100 26.66
No. 503.	$\frac{1}{2}$ inch x 7 feet, galvanized	per 100 31.50

SQUARE WASHERS



	No. in 100 lbs.	Size of Bolt	List Price per 100 lbs.			
			Plain	Galv.		
No. 683.	2	2 x 2 x $\frac{1}{8}$ inches	850	$\frac{1}{2}$ and $\frac{3}{8}$ inch	\$4.90	\$7.40
No. 684.	2	2 x 2 x $\frac{1}{8}$ inches	560	$\frac{1}{2}$ and $\frac{5}{8}$ inch	4.50	7.00
No. 685A.	2	$2\frac{1}{4}$ x $2\frac{1}{4}$ x $\frac{1}{8}$ inches	600	$\frac{1}{2}$ and $\frac{5}{8}$ inch	4.90	7.40
No. 686A.	2	$2\frac{1}{4}$ x $2\frac{1}{4}$ x $\frac{1}{8}$ inches	400	$\frac{1}{2}$ and $\frac{5}{8}$ inch	4.50	7.00
No. 686.	3	3 x 3 x $\frac{1}{8}$ inches	210	$\frac{1}{2}$, $\frac{5}{8}$ and $\frac{3}{4}$ inch	4.40	6.90
No. 687.	4	4 x 4 x $\frac{1}{8}$ inches	110	$\frac{1}{2}$, $\frac{5}{8}$ and $\frac{3}{4}$ inch	4.40	6.90

Square Washers of any other dimensions or size of hole.

Special price on application.

Jenne Friction Jacks



No. 1

Steel pivots, bronze boxes, malleable iron frame and lever socket, wrought-iron rings, hanger and lifting bar.

Suggestions.

Should lifting bar become oily, burn it off or scour it off with coal ashes or sand. If bar is frosty, burn it off with paper. To dismantle jack for repairs, unscrew bar cap.



No. 2

No. 0 For raising low joints, and light track repairs.

No. 1 For surface and track repairs.

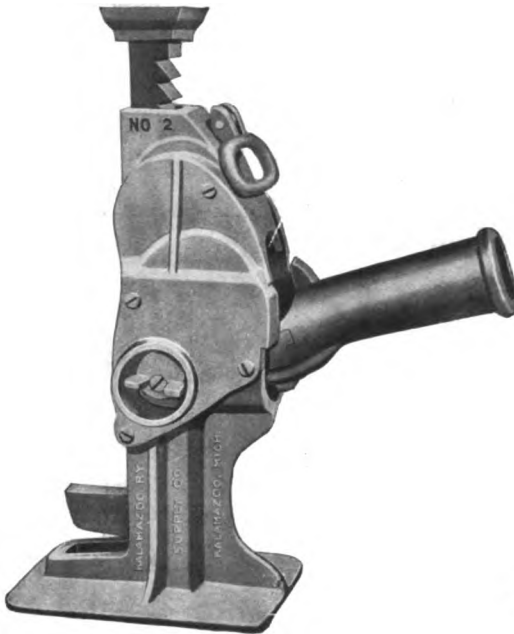
No. 2 For heavy ballasting, surfacing, and general track repairs.

No.	Height, Bar Down, Inches	Raise of Bar, Inches	Height, Bar Raised, Inches	Size of Bar, Inches	Weight, Pounds	Capacity	List Price
0	27	10	37	1¼	40	3½	\$16 00
1	31	12	43	1½	60	6	20 00
2	35	15	50	1¾	90	10	24 00

GUARANTY.

We Fully Guarantee the materials and workmanship in Ratchet Jacks and Friction Jacks, also the lifting capacity up to the limit specified.

We furthermore assure all purchasers and users of Ratchet and Friction Jacks that no patents are infringed, and that there are no restrictions whatever to the free manufacture, sale, and use of these appliances.

Ratchet Jacks**No. 1. Tripping Track Jack.****No. 2. Automatic Lowering Jack.**

Are the most desirable track, bridge and car lifting Jacks on the market. Their practical merit has been demonstrated during 25 years to almost every railroad maintenance man in America.

Best distribution of metal to withstand strains; correct shape and dimensions; choicest materials and workmanship employed in their manufacture; interchangeability of parts with similar jacks of other make—are some of the superior features of construction of these Jacks.

Dimensions and Prices.

Number	Height, Bar Down, Inches.	Raise of Bar, Inches.	Height, Bar Raised, Inches.	Size of Bar, Inches.	Weight, Pounds.	Capacity, Tons.	List Price.
1 trip	24	13½	37½	1½ x 1½	62	10	\$18 00
"	31	19	50	1½ x 1½	105	15	32 00
12 "	17¾	8	25¾	1½ x 1½	50	10	17 00
*17 "	24	13¾	37¾	1½ x 1½	63	10	18 00
*20 "	31	19	50	1½ x 1½	106	15	32 00
2 A. L.	21	10	31	1½ x 1½	65	10	25 00
3 "	26½	15	41½	1¾ x 1½	85	12	30 00
4 "	22	10	32	2 x 2	100	15	35 00
5 "	28	15	43	2 x 2	115	15	40 00
8 "	11	5	16	1½ x 1½	48	10	22 00
*18 "	21	10	31	1½ x 1½	68	10	25 00
*19 "	28	17½	45½	2 x 2	102	15	35 00

Jacks marked (*) are single-acting; all others are double-acting.

Wheelbarrows



No. 10 Concrete Barrow

The most successful wet concrete barrow on the market. Wheels to its destination 3 cubic ft. sloppy concrete without losing a drop. Channel legs. Bone dry maple metal tipped extended handles. Angle iron cross brace and V brace riveted to legs. 16 gauge steel tray. Roller bearing or self-lubricating wheel. Handles painted red. Weight 900 lbs. dozen.

This barrow has gained the greatest popularity of any barrow ever made. Over 20,000 of them sold in the first year of its life. Its guaranteed capacity is three cubic ft. wet concrete which it handles with comparative ease.

No. 10 **List Price each**\$8.50



No. 8 Concrete Conveyor

All steel. Tubular and angle iron carriage. 16 gauge steel tray. Roller bearing or self-lubricating wheel, 1½-in. tire. Guaranteed capacity 3 cubic ft. thin wet concrete. Handled and dumped by one man on a single plank with ease. Weight 80 lbs. each.

This barrow is meeting with increasing favor every day. For handling wet concrete easily, pouring into forms, etc., it has no equal. Several thousand of them in use. This style of barrow necessitates a roller bearing wheel. Imitations are worthless without it

No. 8 **List Price each**\$15.00

Wheelbarrows

No. 3 Barrow

Clear bone dry maple handles, surfaced 4 sides. 16 gauge steel tray. 3 cubic ft. capacity. Roller bearing or self-lubricating wheel. Note improved leg construction, which eliminates the possibility of broken handles. Weight 600 lbs. doz. Woodwork painted red.



We designed this barrow as an improvement on all other makes of pan shaped barrows. That we have succeeded is evidenced by their universal adoption by all large users of this style of barrow.

	List Price each
No. 3	\$6.34

No. 6 Barrow



Same construction as No. 5 with the addition of the metal tipped extended handles which enables the operator to dump either forward or sideways as occasion requires. For general contractors' work this barrow has no equal. Capacity 3½ cubic ft. Weight 780 lbs. doz. Handles painted red.

Others have tried to imitate this barrow but our channel iron leg and riveted brace system combined with our roller bearing wheel, crowns this barrow Monarch of Them All.

	List Price each
No. 6	\$7.50

No. 7 Tubular Steel Barrow

Combination tubular and channel steel frame braced and riveted to form the strongest steel frame ever invented. Tray 16, 14 and 12 gauge steel. Roller bearing or self-lubricating wheel. 1½-in. tire. This barrow will stand hardest of usage. Capacity 3½ cubic ft. Weight 900 lbs. dozen.



This barrow has the same capacity as No. 6. Having the advantage of all steel construction which eliminates the possibility of broken handles and insures longer life to the barrow.

	List Price each
No. 7. 16 gauge	\$ 8.00
No. 7. 14 gauge	9.00
No. 7. 12 gauge	10.00

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