

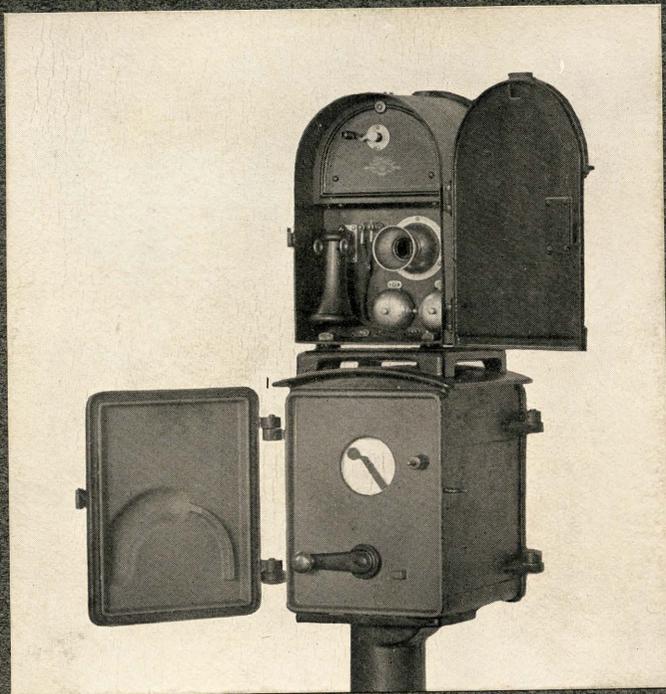
GENERAL RAILWAY SIGNAL COMPANY

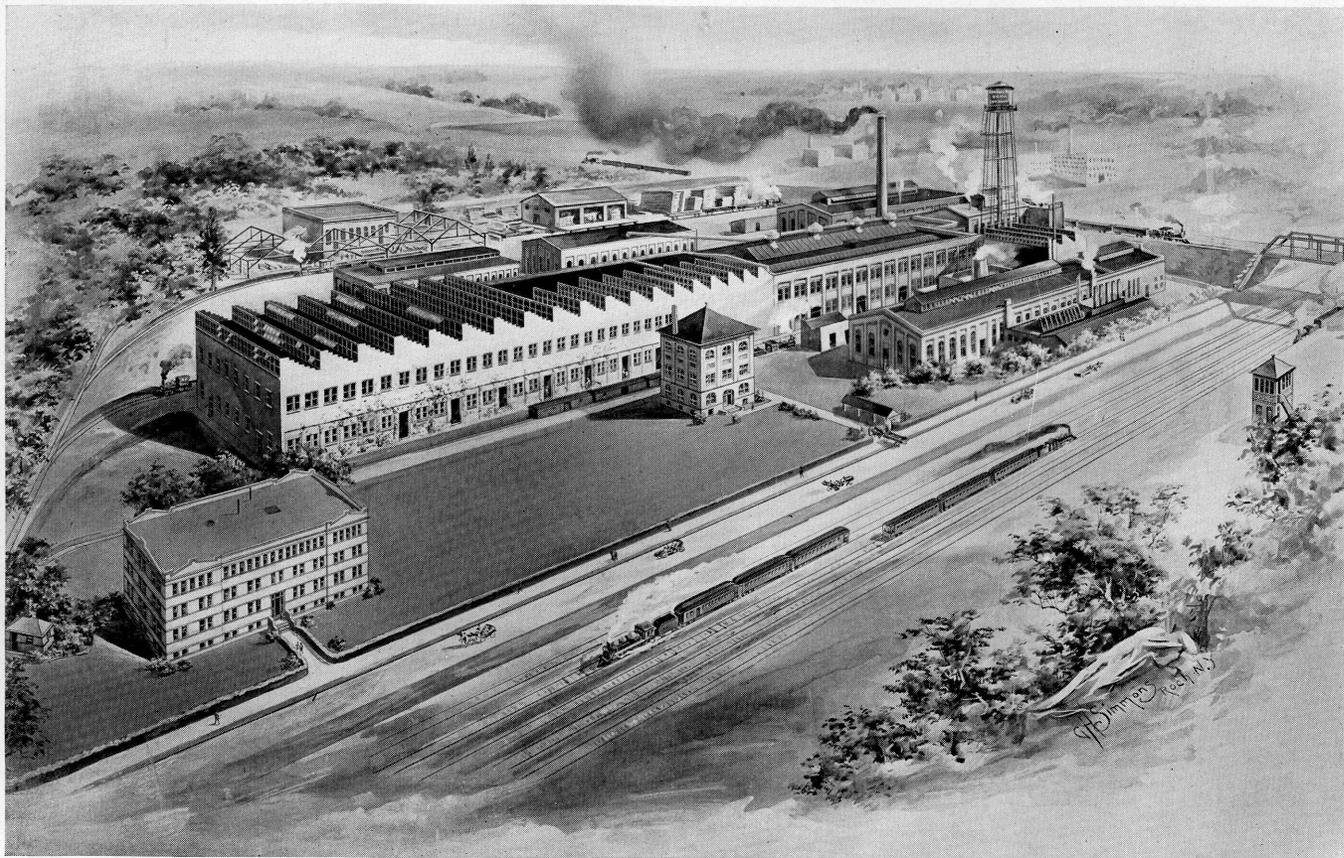
1909

BULLETIN No. 105

SUPPLEMENTING CATALOGUE, SECTIONS 1, 2 AND 5

OUTLYING SWITCH LOCK
MODEL 1 FORM A





MAIN OFFICE AND FACTORY OF THE GENERAL RAILWAY SIGNAL CO., AT ROCHESTER, N. Y.

GENERAL RAILWAY SIGNAL COMPANY

MAIN OFFICE AND WORKS, ROCHESTER, N. Y.

CHICAGO
1339 MONADNOCK BLOCK

NEW YORK
708 NIGHT AND DAY BANK

MONTREAL
305 EASTERNTOWNSHIPS BANK

BLOCK SIGNALS

AUTOMATIC
SEMI-AUTOMATIC
CONTROLLED MANUAL
FOR
STEAM AND ELECTRIC ROADS

INTERLOCKING

ELECTRIC
PNEUMATIC
ELECTRO-PNEUMATIC
MECHANICAL
OR COMBINATIONS OF ABOVE
TO MEET ALL CONDITIONS

TUNNEL SIGNALS

THE MOST EFFICIENT AND COMPACT MADE

CROSSING GATES

MECHANICAL AND ELECTRICAL

GROCE TELEPHONE SELECTORS

PLANS, ESTIMATES, PROPOSALS AND
DESCRIPTIONS UPON REQUEST

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THE Model 1 Switch Lock, illustrated and described herein, is presented to the attention of our customers as a device of exceptional merit for controlling the entrance or exit of trains to or from yards, passing sidings, and similar situations; and consists of a manually-operated plunger lock attached to the switch point which, in turn, is electrically locked, the control being located at any desired point, such as an inter-locking or block tower, telegraph office, etc.

This lock is provided with an indicator showing the trainman when the switch may be unlocked, and is mounted on a special base in an iron case provided with two doors; one opening with the regular switch key in the hands of the trainman, giving access to the indicator and operating handle of the plunger lock, and the other provided with a special key for the use of the signal maintainer, giving access to the electric lock. The base is cast with a special duct for the carrying of wires to the lock and with a socket for making trunking connections in a neat, workmanlike manner.

A circuit breaker operated by the plunger lock handle, capable of controlling four circuits, and one normally closed contact on the lock armature, are provided for such circuit control as may be desired, a segment being provided on the lock handle so arranged that the armature of the electric lock cannot assume its full normal position until the plunger lock handle is in its full normal position, locking the switch and thus preventing the premature closing of any circuits controlled by the lock armature.

GENERAL RAILWAY SIGNAL COMPANY.

Rochester, N. Y., March 1, 1909.

NOTICE

PRICES herein cover electric locks for both switch lock and lever wound to 50 ohms—for higher resistance the following prices are to be added to list :

51 to 150 ohms inclusive	..	..	..	..	..	..	..	\$1.50
151 to 500 ohms inclusive	..	..	..	..	..	..	..	2.50
501 to 2,000 ohms inclusive	..	..	..	..	..	..	..	4.00

Telephones are not included with equipments for tower indicators or lever locks. If required, add \$90 to list prices.

Standard Bridging Telephones will be furnished unless otherwise specified.

In ordering lever locks, specify type of machine to which same is to be applied.

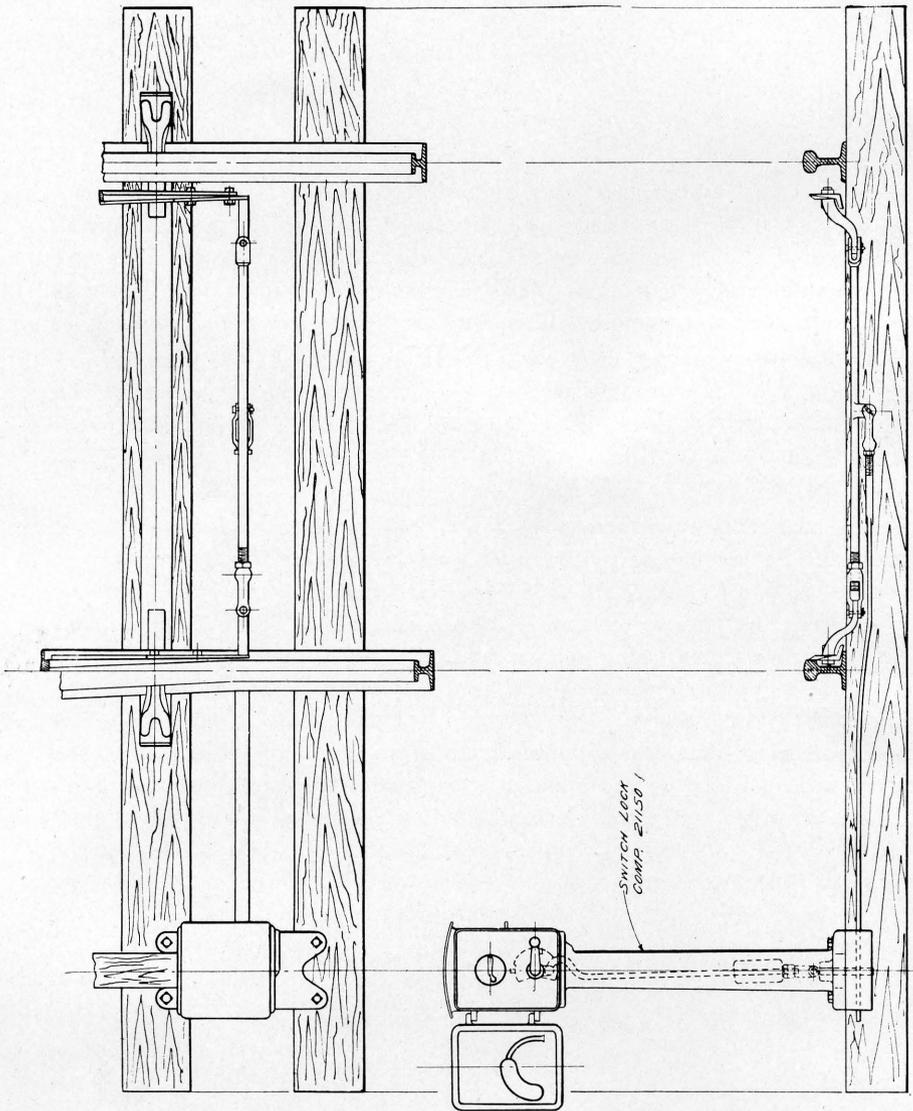


FIG. 1

FIG. 1 shows the connections between the switch lock and the switch points, and it will be noted that when the lock handle is in the normal position that the crank operating the lock plunger is on its low center, thereby preventing the moving of the plunger from beneath.

To unlock the switch, it is necessary to throw the handle from right to left through an arc of 180 degrees; this brings the plunger crank on the upper center, where it will remain until the handle is moved far enough to the right to cause the weight of the plunger to pull it toward the full-locked position.

Lugs and recesses are arranged on the door so that it cannot be closed unless the handle has been moved at least 90 degrees toward the locked position, at which point the plunger will rest upon the lock rod when the switch is in the reverse position. This arrangement is provided in order that the trainman may, after he has unlocked the switch by throwing the handle from right to left and has reversed the switch points, throw the lock handle to a vertical position and close and lock the door, so that when his train has passed the switch all that remains for him to do is to throw the switch and lock the switch stand in the usual way, the lugs and recesses being so arranged that the lock handle is free to move to the full normal position, restoring the circuit controlled by the lock armature, as soon as the switch is returned to the normal position and the plunger drops into the hole in the lock rod.

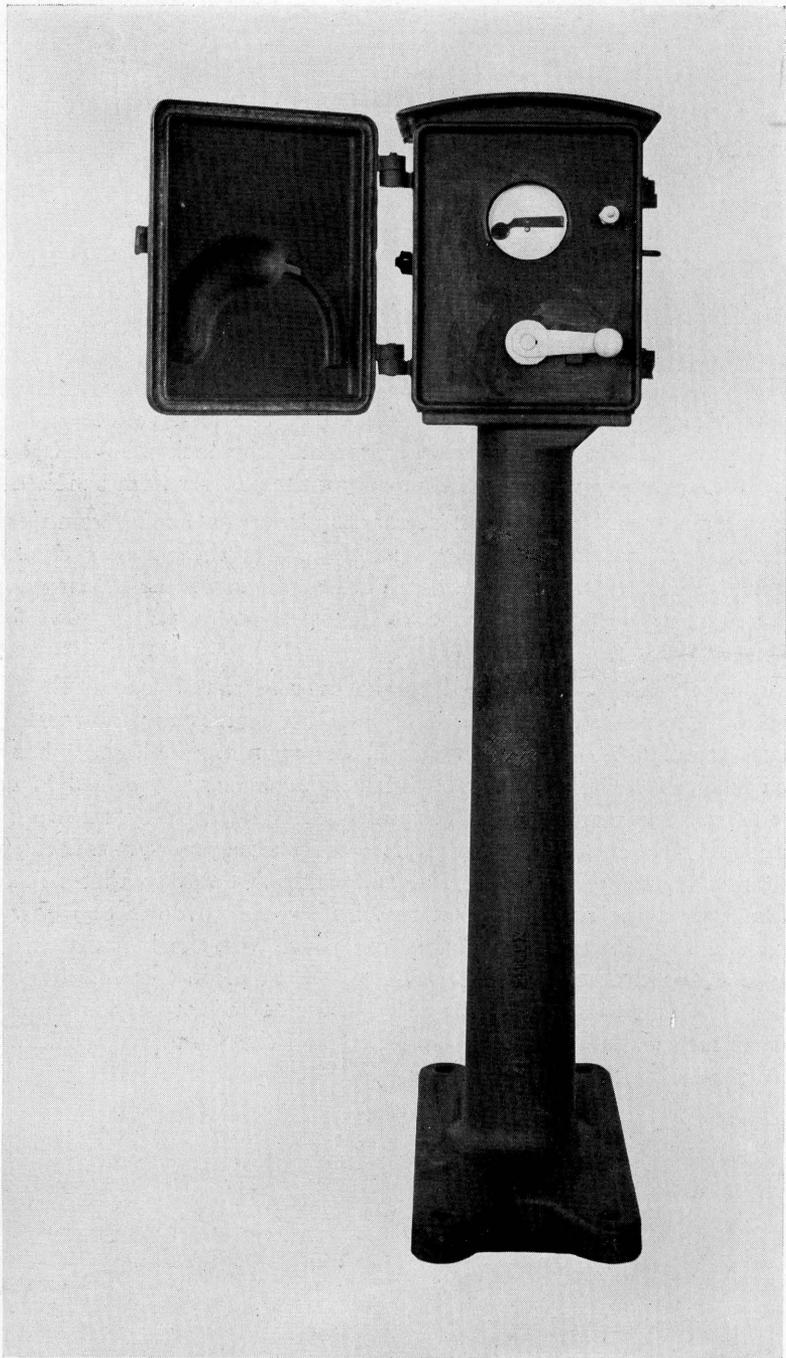


FIG. 2

[10]

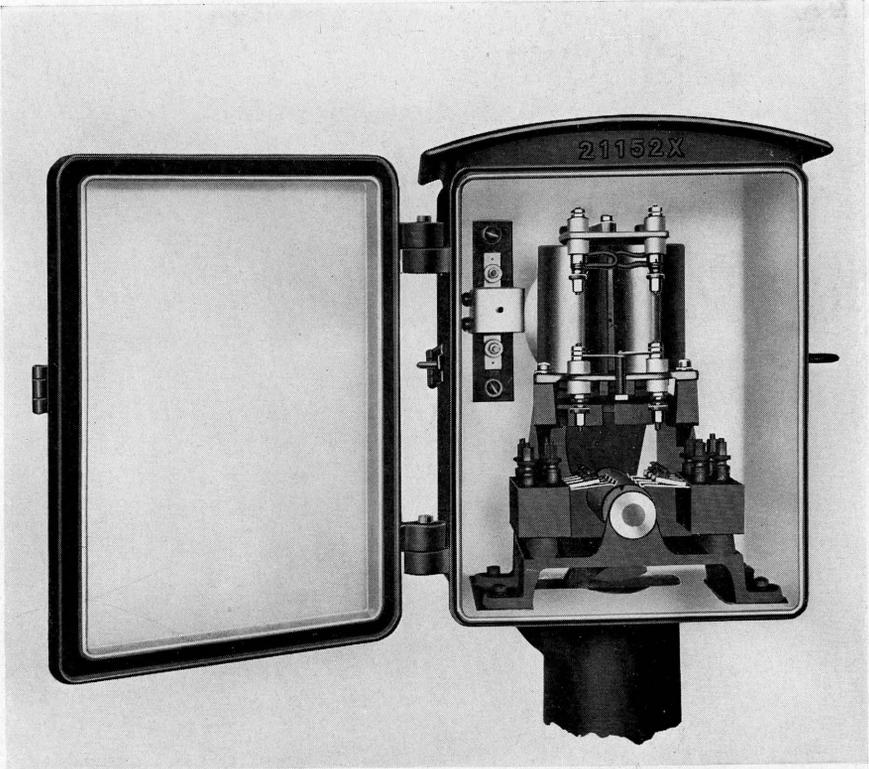


FIG. 3

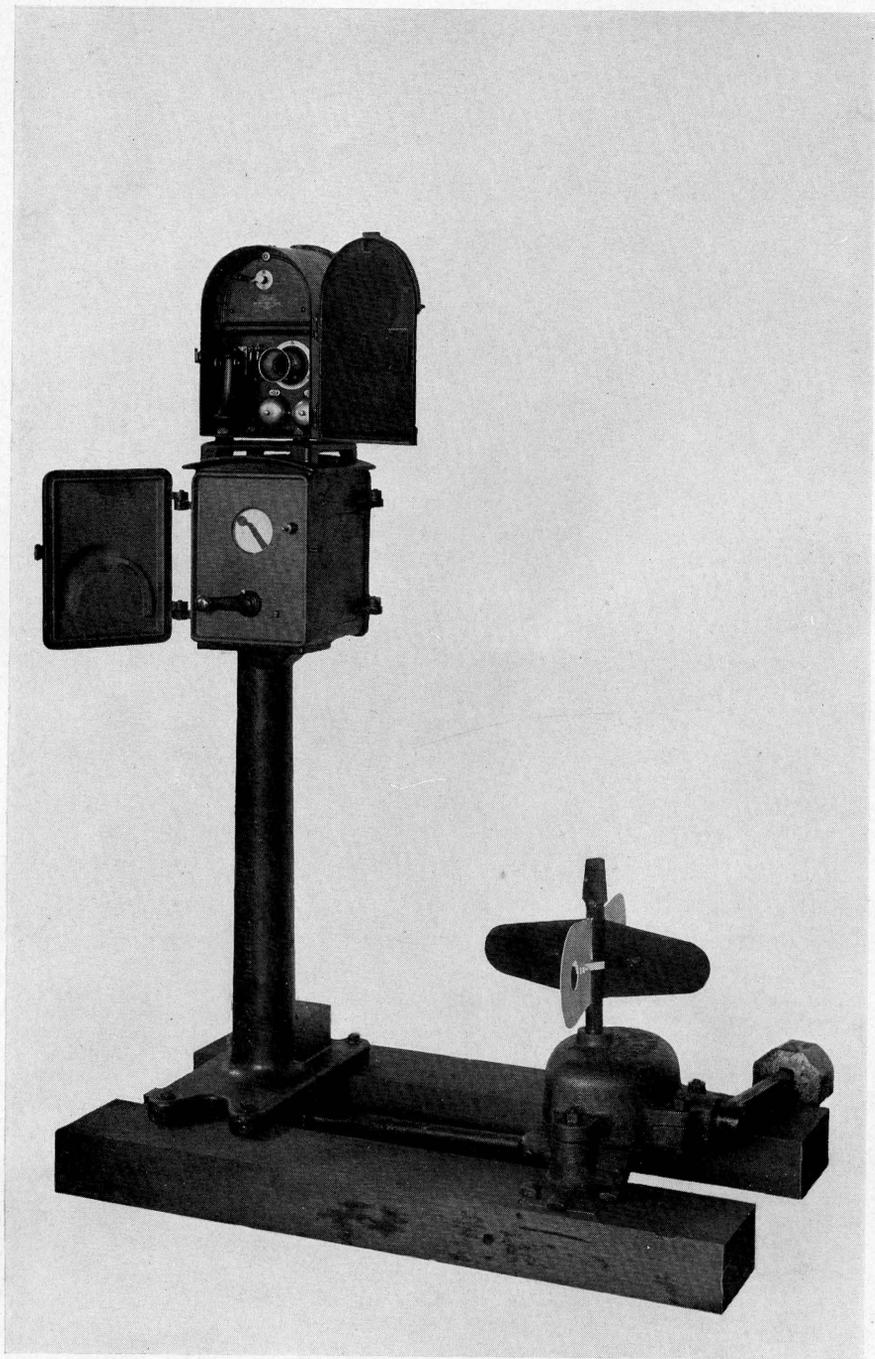


FIG. 4

[12]

FIG. 4 shows the lock with a telephone attached. The telephone has been designed with great care and with special reference to the hard usage to which it is subjected in installations of this character. It is provided with a magneto call bell and dry battery and is entirely self-contained in an iron case fastened to the top of the lock case. All parts are extremely accessible for repair or inspection, being mounted on an iron front plate which, by taking out three screws, can be removed, bringing with it all of the telephone mechanism. As in the case of the switch lock, the door is arranged to be opened with an ordinary switch key.

The telephone can be used upon any telephone circuit which may run near the lock location, if so desired, or it can be operated on the switch lock wire, as shown in Fig. 6, a condenser being provided with the instrument.

Wall telephones of the same design are provided at the control location.

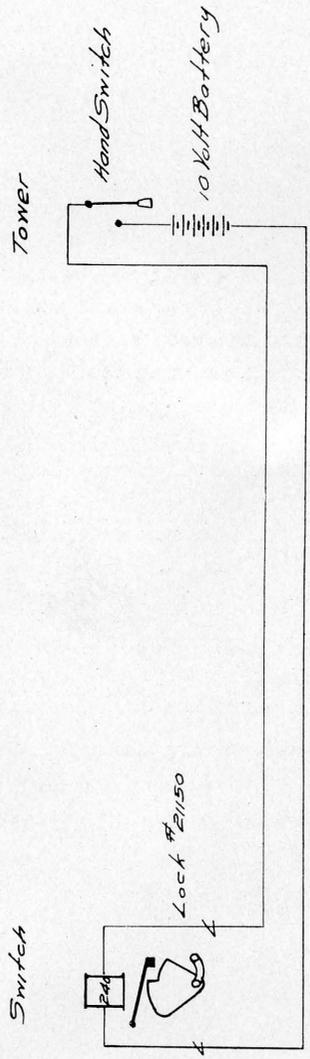


FIG. 5

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THE simplest circuit for operating the outlying switch lock is shown in Fig. 5. It consists of the lock and ordinary hand switch in the tower, ten cells of battery, and two line wires. This arrangement, exclusive of line wire and lightning arresters, will require the following material for the installation :

Order No.	DESCRIPTION	List Price
21150 16150	Model 1 Switch Lock	\$80.00
6616	Front Rod	4.00
14090	Lock Rod	3.10
6479	Switch Point Lug	1.08
6480	Switch Point Lug	1.08
12431	Hand Switch	5.00
	10 Cells Gravity Battery	22.00

For information regarding ordering, see page 7

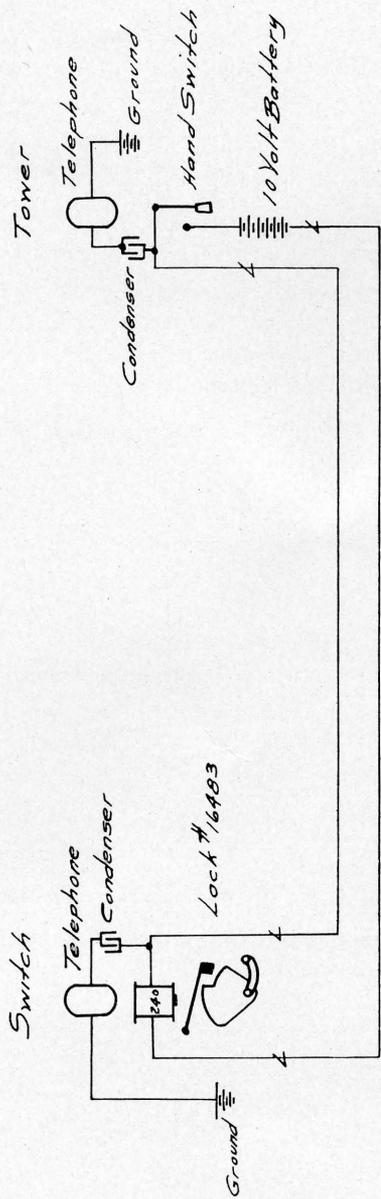


FIG. 6

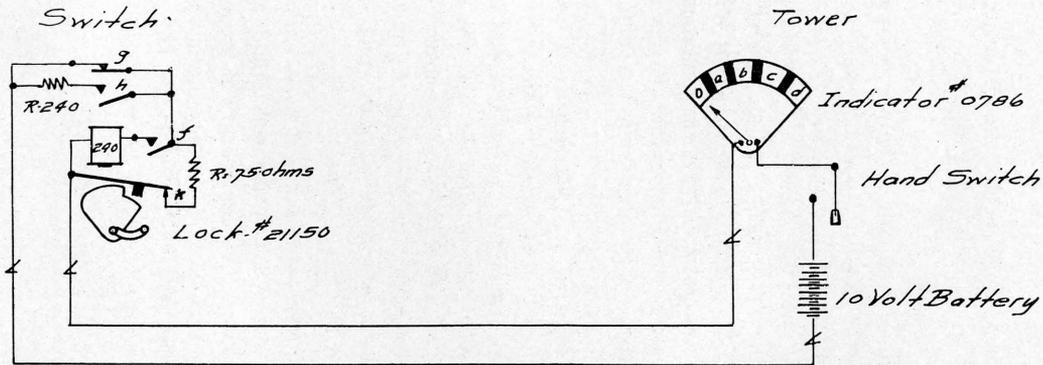
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FIG. 6 shows the same circuit for operating the lock as in Fig. 5, with the addition of the telephone. As shown, the telephone is operated from the lock wire with a ground return, a condenser being provided between the lock wire and the telephone.

Exclusive of line wire and lightning arresters, the following materials are required for installation of this character :

Order No.	DESCRIPTION	List Price
21150 16150	Model 1 Switch Lock	\$80.00
	Telephone complete with Condenser	55.00
	Wall Telephone complete with Condenser for Tower	35.00
6616	Front Rod	4.00
14090	Lock Rod	3.10
6479	Switch Point Lug	1.08
6480	Switch Point Lug	1.08
12431	Hand Switch	5.00
	10 Cells Gravity Battery	22.00

For information regarding ordering, see page 7



- f* = Contact, operated by Lock Door, made when door is open.
- g* = Contact operated by Lock Handle, broken when Switch is unlocked.
- h* = Contact operated by Lock Handle, made when Switch is unlocked.
- K* = Back contact on Lock Armature

- Indicator Needle of *a* = Switch unlocked.
- " " " *b* = Lock Door open.
- " " " *c* = Switch locked in normal position.
- " " " *d* = Something out of order.
- " " " *0* = " " " "

FIG. 7

FIG. 7 shows the addition of an indicator in the tower designed to show the various movements of the switch lock and door, the dial being divided into sections showing "switch unlocked," "door open," "switch locked normal," "out of order."

As will be noted, no more line wire is required for this arrangement of circuits than in the simplest arrangement shown in Fig. 5. The operation is as follows:

When the hand switch in the tower is closed a circuit is established which, starting from the battery in the tower, passes through the hand switch, the indicator, the lock wire, the back contact on the armature of the lock, a contact on the lock handle and the common, back to battery. The resistance in this circuit is so arranged that it is the lowest of any operating circuit that can be made. The needle of the indicator will stand at C, giving the indication "switch locked normal." When trainman opens the door of the switch lock, the contact F, operated by the door, will close and establish another circuit, which consists of the hand switch, the indicator, the lock wire, the lock magnet, the contact on the lock handle and the common, back to battery. This circuit is of a higher resistance than the first circuit, and the indicator needle will then move to the position B, indicating "door open." This circuit has lifted the lock armature, the plunger lock handle is unlocked, and when thrown to the left, the contact H is made and the contact G is broken. This establishes another circuit, which is of still higher resistance than either of the other two, and the indicator needle now moves to a third position at A, indicating "switch unlocked."

If, for any reason, the circuit is interrupted, such as by a broken line wire, no current will flow, and the indicating needle will stand at zero, indicating that something is out of order. If, on the other hand, there should be a short circuit between the two line wires, or any other abnormal reduction in the resistance of the circuit, the indicator needle will assume the position D, also indicating that something is out of order.

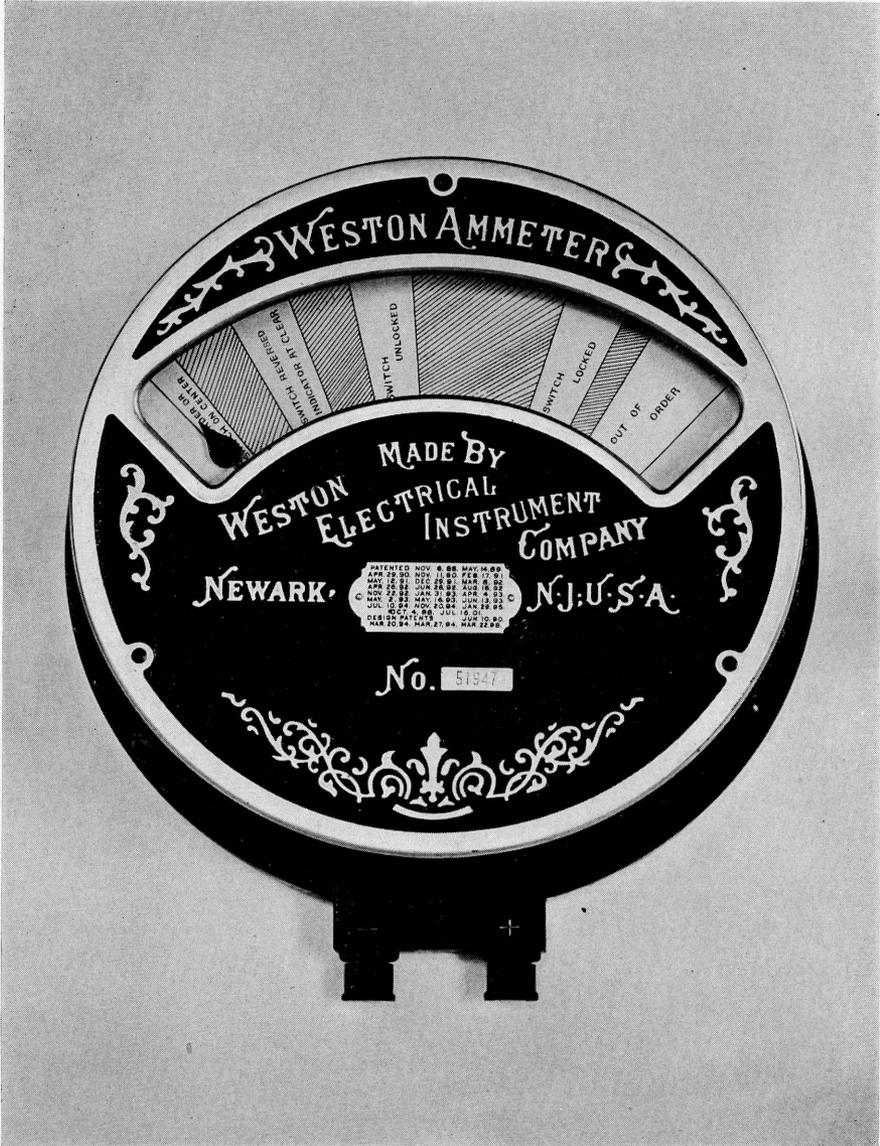


FIG. 8

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As the trainman returns the switch and lock to its normal position the various steps are indicated in the reverse order in which they were shown when the switch was normal.

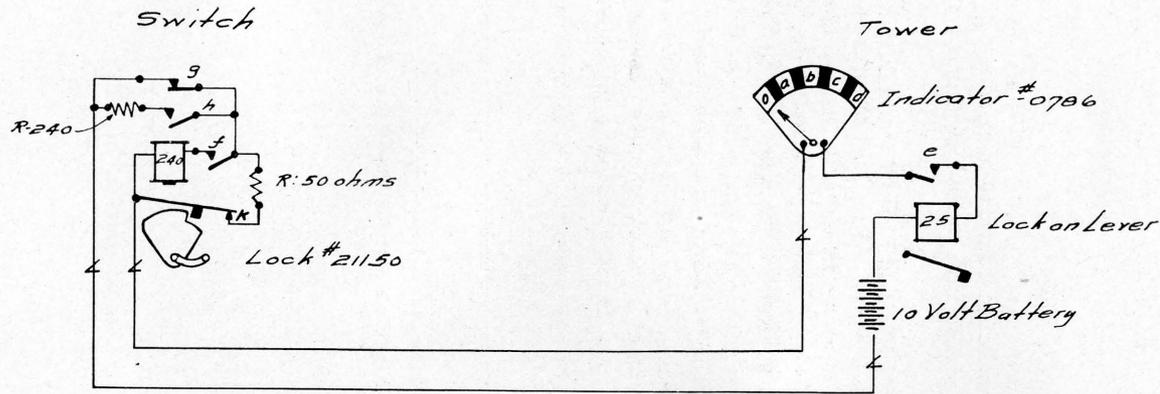
This scheme is a very simple, effective, and cheap method of indicating at the point of control what is taking place at the outlying switch.

The appearance of the indicator is shown in Fig. 8.

Exclusive of line wire and lightning arresters, the material required is as follows:

Order No.	DESCRIPTION	List Price
21150 16150	Model 1 Switch Lock with Resistance Units and Door Circuit Breaker	\$85.00
6616	Front Rod	4.00
14090	Lock Rod	3.10
6479	Switch Point Lug	1.08
6480	Switch Point Lug	1.08
12431	Hand Switch	5.00
0786	Indicator	60.00
	10 Cells Gravity Battery	22.00

For information regarding ordering, see page 7



e = Contact on Lever

f = Contact operated by Lock Door made when door is open.

g = Contact operated by Lock Handle broken when Switch is unlocked.

h = Contact operated by Lock Handle made when Switch is unlocked.

k = Back contact on Lock Armature

Indicator Needle at a = Switch unlocked

" " " b = Lock Door open

" " " c = Switch locked in normal position

" " " d = Something out of order

" " " o = " " " "

FIG. 9

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IN Fig. 9 is shown the arrangement of circuits where it is desired to control the outlying switch lock by means of a lever in an interlocking machine, thereby obtaining any desired interlocking between the outlying switch and the interlocked functions.

This circuit is the same as that shown in Fig. 7, with the addition of a circuit controller E on the latch of the interlocking lever in place of the hand switch, and an electric lock on the lever so arranged as to prevent the return of the lever to its full normal position until the outlying switch has been returned to its normal position and locked. The operation of the indicator is the same as in Fig. 7.

The operation of the lock is as follows :

When the first circuit is made, that is, the circuit which has the lowest resistance, the lever lock will be picked up. When the plunger lock handle is operated, the contact G is broken before H is made, thereby opening the circuit of the electric lock for a sufficient time to cause it to drop, and while the closing of the circuit at H will restore a path for current through the lock it also introduces a resistance in this path sufficiently great to prevent its operation. This resistance will remain in the lock circuit under all conditions until the door has been closed and the plunger lock handle returned to its normal position, thereby restoring the low resistance circuit through the opening of contacts F and H and the closing of contact G.

Exclusive of line wire and lightning arresters, the material required is as follows :

Order No.	DESCRIPTION	List Price
21150 16150	Model 1 Switch Lock with Resistance Units and Door Circuit Breaker	\$85.00
6616	Front Rod	4.00
14090	Lock Rod	3.10
0479	Switch Point Lug	1.08
0480	Switch Point Lug	1.08
	Lever Lock	44.80
	10 Cells Gravity Battery	22.00

For information regarding ordering, see page 7

