

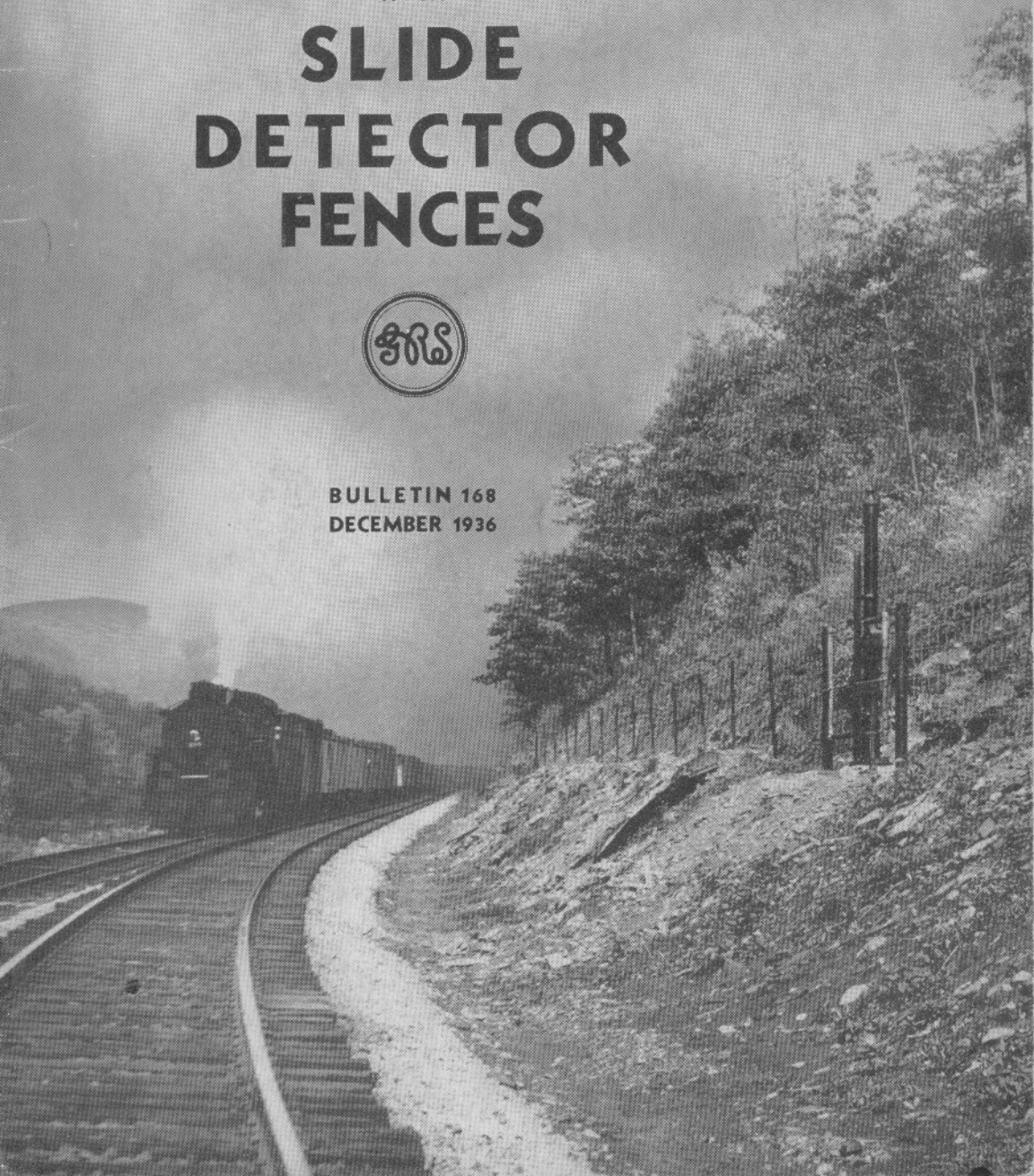
# ECONOMICAL PROTECTION

with

# SLIDE DETECTOR FENCES



BULLETIN 168  
DECEMBER 1936



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GENERAL RAILWAY  
SIGNAL COMPANY  
ROCHESTER, N. Y.

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**ECONOMICAL  
PROTECTION**  
with  
**SLIDE  
DETECTOR  
FENCES**



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**GENERAL RAILWAY SIGNAL COMPANY**

ROCHESTER, N. Y.



Typical Slide Area

# ECONOMICAL PROTECTION WITH SLIDE DETECTOR FENCES

Slide Detector Fences, now being used on a number of railways for protection against derailment from land slides, are proving economically sound. Their purpose is to protect the right-of-way through cuts, at the base of rocky slopes or in tunnels. Should a slide occur due to falling rocks, snow or ice slides, falling trees or other foreign material, and strike the fence in the protected area, the governing signals would display a "Stop" indication.

In automatic block signal territory, the Slide Detector Fence is easily and simply connected with the automatic signal circuits so that the signals display "Stop" and "Approach" indications in the event of a slide. In non-automatic signal territory, automatic signals giving standard "Proceed" as well as "Stop" indications should be installed.

## **Advantages**

The outstanding advantage of the Detector Fence is economical twenty-four hour-a-day protection whereby a warning signal is displayed immediately a slide occurs. To provide equivalent protection with watchmen would be impracticable if not impossible. It would be necessary to patrol the entire slide area and also have those men in a position to stop trains quickly when a slide occurred.

The protection provided by an installation of Slide Detector Fences will offset the carrying charges many times. The slight increase in cost of maintenance necessary for this equipment is negligible.

## **Installation**

Slide Detector Fences are constructed and located according to local conditions in the slide area. The fence is usually located about twenty feet from the nearest

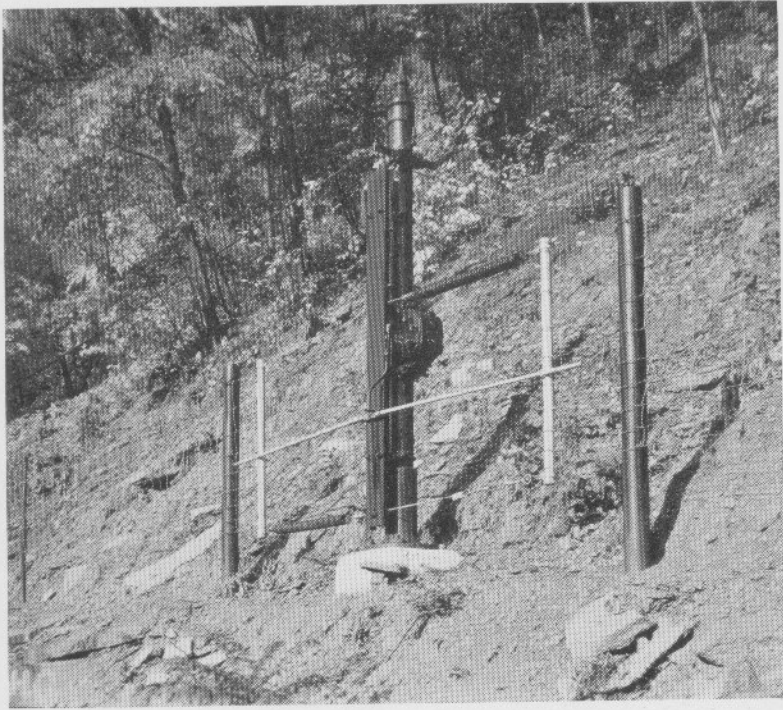


Figure 1—Circuit Controller Location between fence sections.

rail and is installed in sections up to four hundred feet long. A fence may consist of one or any number of sections according to the length of the area to be protected. In some cases where conditions warrant additional protection, a second parallel fence is installed on the slope approximately fifty feet above the first fence.

The height of the fence and the distance the fence is suspended above the ground level will also depend largely upon the physical characteristics of the slide area. The usual practice is to use a five-foot, pole-suspended fence mounted from one to two feet above ground level to allow for small stones rolling under without operating the fence.

For the construction of the fence, obsolete signal equipment may be utilized for fence and controller supports.

## Details and Operation

A Slide Detector Fence consisting of more than one section may have each end of the fence rigidly fastened to the fence posts, except where very long fence sections are used necessitating controllers at each end of the slide area as employed in a single section fence. The fence is loosely stapled to all intermediate fence posts to allow for lateral movement of the fence, which indirectly operates the circuit controller, when the fence is struck by a weight sufficient to cause a dangerous condition.

The fence is spring supported at circuit controller locations between fence sections as shown by Figure 1. When a slide occurs, the pressure exerted against the fence forces it to slide laterally through the loose staples in the intermediate fence posts. This movement is transmitted through the fence to the operating pipe which is fastened rigidly to the fence. (See Figure 2.) The operating pipe moving away from the equalizing bar disengages, causing the equalizing bar, together with the operating rod, to be pulled downward by the spring attached at bottom of trigger support. The circuit controller is operated, breaking the line control circuit of the governing signals causing them to display a "Stop" indication until the obstruction is removed.

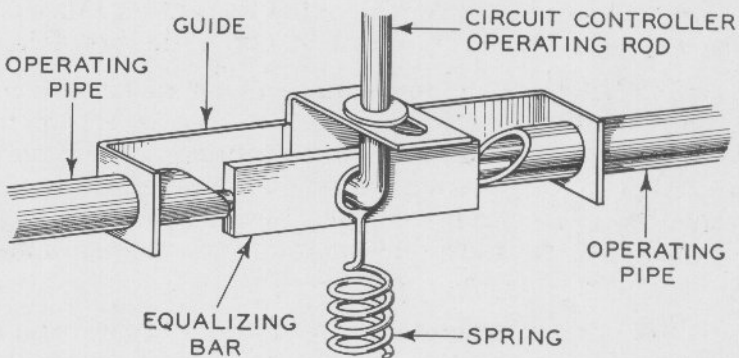


Figure 2—Trigger Arrangement.

and the circuit controller reset manually by the maintainer.

The adjustment of the trigger arrangement and the clearance under the fence will be important factors in reducing unnecessary operations. The adjustment may be so arranged to allow small stones to strike the fence without causing an emergency operation.

At some locations where a series of fences are used, an indicator is provided so that a maintainer on the track may determine which circuit controller has been operated.

If the fence is located in automatic block territory, the circuit controller is included in the line control circuit, while outside of automatic block territory it may be used in series with special automatic signals.



Figure 3—Second parallel fence installed above the first fence for additional protection.



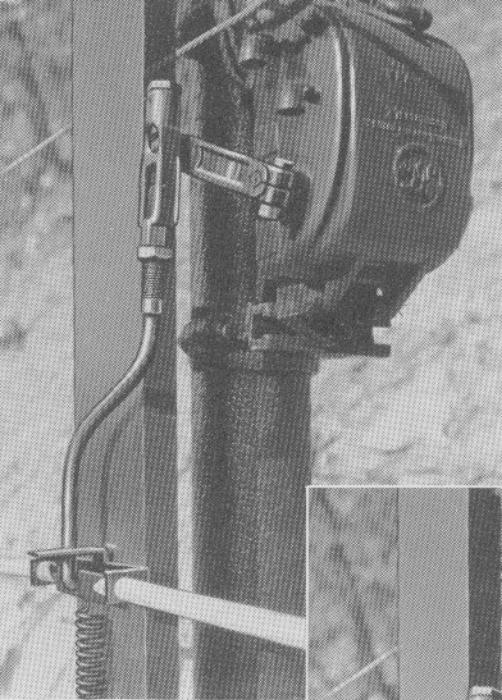


Figure 4—Trigger Arrangement  
Normal Position.

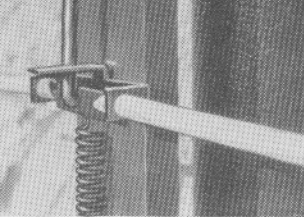


Figure 5—Trigger Arrangement  
Tripped.

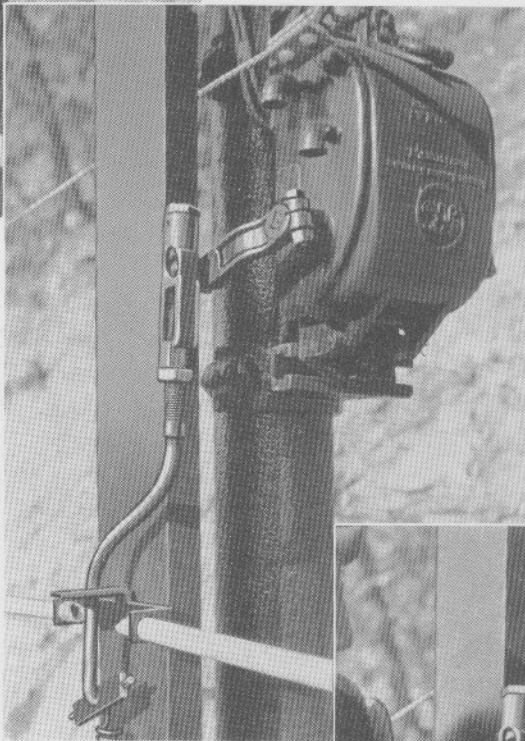
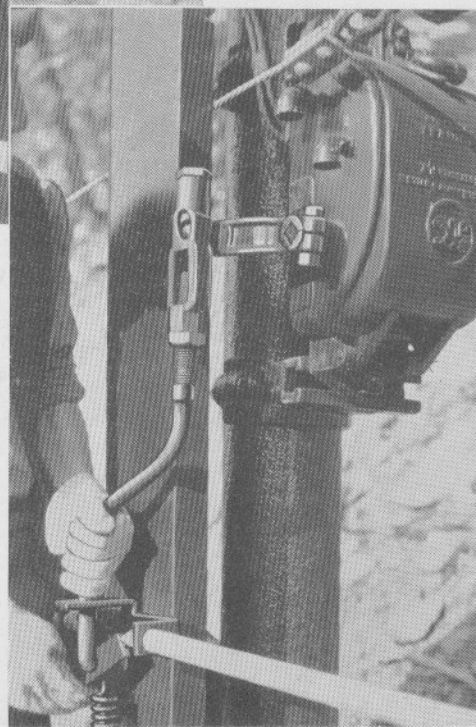


Figure 6—Maintainer  
resetting trigger.



## Model 7 Switch Circuit Controller

Simplicity and permanency are the outstanding features of the Model 7 Switch Circuit Controller. It is exceptionally strong, simple, accessible and reliable.

The housing is made up so that a smooth rounded external surface, with no projecting corners, is provided. A special reinforcing bridge in the cover gives added strength. This bridge carries a gasket which is used to separate the terminal board from the contacting and operating parts.

The cover is hinged low on the case and when opened, the mechanism is well exposed, thus making it readily accessible for connecting the wires to the binding posts on the terminal board or for inspection, adjustment and cleaning of the contacting and operating parts.

Special provision has been made to eliminate the effects of moisture and corrosion. A valuable feature of the Model 7 is the cadmium plating of all interior steel surfaces.

Binding posts and all other brass parts are nickel plated.

Four ventilating ports, located on opposite sides of the contact fingers, create a draft across the interior of

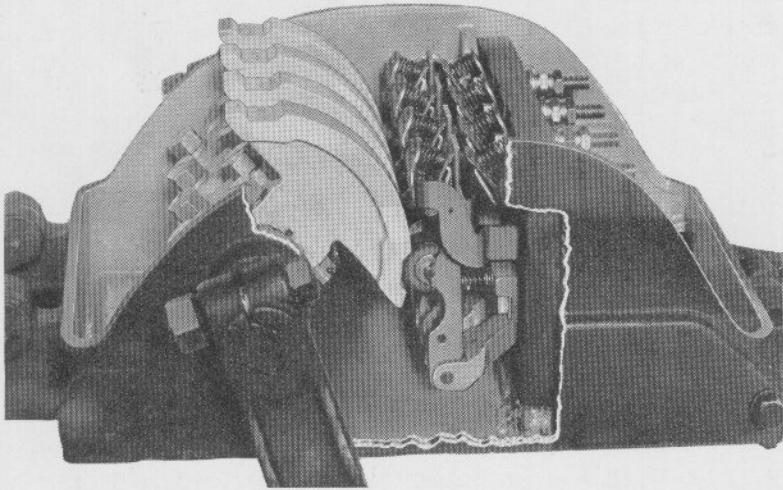


Figure 7—Model 7 Switch Circuit Controller.

the housing thereby driving out dampness and lessening the corrosive effects of moisture and the frosting or freezing of moisture on the contacts. Heavy brass screening designed for long service is provided in the ports. A special gasketed cover makes the Model 7 weather-proof.

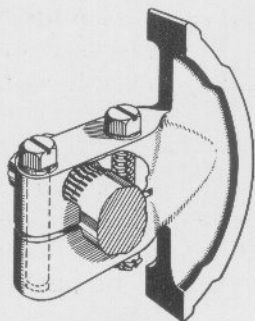


Figure 8—  
Cam Adjustment.

The cams are wide to prevent tipping or moving sideways on the shaft.

The controller is very sensitive. A small movement of the crank, from the point where the cam starts to engage gives a quick and positive operation of the contacts.

### Additional Features

The contact finger structure is made integral with the terminal board and can be easily removed to facilitate the assembly, repair or cleaning of the circuit controller.

Any side movement of the operating shaft is prevented by washers held in place by cotter keys.

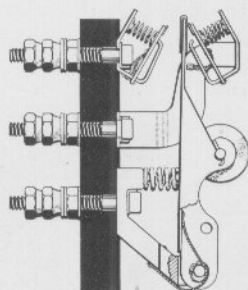


Figure 9—Contact  
Construction.

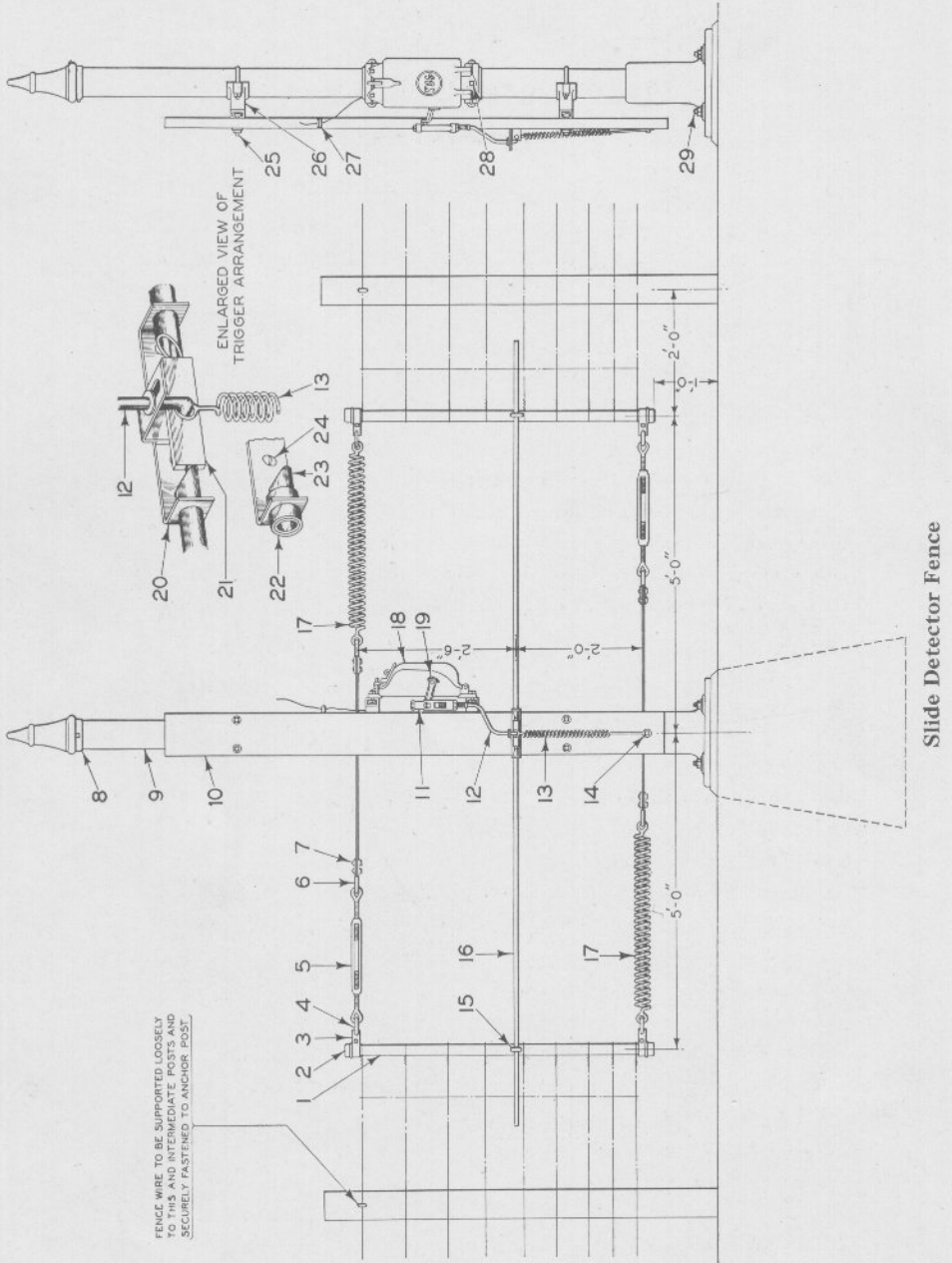
### Ordering Information

Model 7 Switch Circuit Controllers—Catalog E Vol. 4 Section K, Part 1.

Type SA Signals—Catalog E Vol. 2 Section H, Part 26.

Type K Relays—Catalog E Vol. 1 Section E, Parts 21 and 22.

See Catalog Section in the back of this bulletin for ordering information on Slide Detector Fences.



## Slide Detector Fence Detail Parts

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
<b>Order by plate, figure number and name</b>		
1	Pipe, 2" x 4'6" lg., both ends threaded to receive pipe caps Fig. 2..	21490-9
2	Pipe Cap, 2", for pipe Fig. 1. ....	1436-1
3	Pipe Clamp Complete, for pipe Fig. 1, includes bolt and nut. ....	317-31 Gr. 1
4	Split Link, for fastening turnbuckle to pipe clamp. ....	0548-1
5	Turnbuckle, two eyes, 5/8" x 19 1/2" closed, used as shown. ....	12143-1
6	Guy Thimble, for 5/16" messenger wire. ....	54693-1
7	Guy Clamp Complete, includes bolts and nuts. ....	56392
8	Pinnacle, for 5" pipe, includes set screws. ....	26902 0210
9	Mast, 5" pipe, specify length, includes base. ....	48848-9 38394
10	Wood Plank, 8' x 8" x 2" .....	
11	Self Adjusting Controller Socket, for switch circuit controller. ....	55011
12	Operating Rod, for trigger arrangement. ....	38317-26
13	Spring, for circuit controller. ....	1581-22
14	Lag Screw, 1/2" x 4 1/2" lg., for fastening spring Fig. 13 to plank. ...	063-2
15	"U" Bolt, 1/2", with nuts and lock washers, for fastening pipe Fig. 16 to pipe Fig. 1. ....	5183-3 Gr. 1
16	Operating Pipe, 3/4" x 6' lg., for trigger arrangement. ....	47292-2
17	Main Spring, as shown. Two required. ....	1581-23
18	Circuit Controller Complete, includes contacts, operating rod, terminal board and all riveted parts. For details see Catalog E Vol. 4 Plate K0131. ....	53530 Gr. 4
19	Crank Complete, for circuit controller. ....	38660-3 Gr. 2
20	Guide, for trigger arrangement. ....	56393

(Continued on following page)

## Slide Detector Fence Detail Parts

Drawing references are shown for convenience in checking shipping lists and invoices.

Fig. No.	Name	Drawing Reference
<b>Order by plate, figure number and name</b>		
21	Equalizer, as shown . . . . .	56394
22	Half Coupling, $\frac{3}{4}$ " , for fastening pipe Fig. 23 to guide Fig. 20, two required . . . . .	025-1
23	Pipe, $\frac{3}{4}$ " , used on trigger arrangement when only one operating pipe required . . . . .	47292-1
24	Wood Screw, No. 14 x $2\frac{1}{4}$ " fl. hd., for fastening guide Fig. 20 to post, five required . . . . .	0170-1
25	Bolt with nut and washer, for fastening plank to clamp Fig. 26 . . .	{ 0314 { 073
26	Pipe Clamp, for 5" pipe includes U bolt and nuts. Four required . . .	43980-1 Gr. 1
27	Bridle Ring, $1\frac{1}{4}$ " eye, $\frac{1}{2}$ " opening, for cable . . . . .	51340-1
28	Bolt includes nut and lock washer, for fastening circuit controller to clamp Fig. 26 . . . . .	{ 0299 { 029
29	Anchor Bolt, 1"-8 x 24" with nut, lock washer and flat washer, for fastening base to foundation . . . . .	{ 42145 { 0570 { 074

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