

The Union Switch & Signal Co.

FOUNDED BY GEO. WESTINGHOUSE 1881

Swissvale, Pa.

GENERAL OFFICE AND WORKS: SWISSVALE, PA.

UNION THREE ASPECT FLAGMAN Style "DW"



DISTRICT OFFICES:

Hudson Terminal Bldg.
New York

Canadian Express Bldg.
Montreal

Candler Annex
Atlanta

Railway Exchange Bldg.
St. Louis

Peoples Gas Bldg.
Chicago

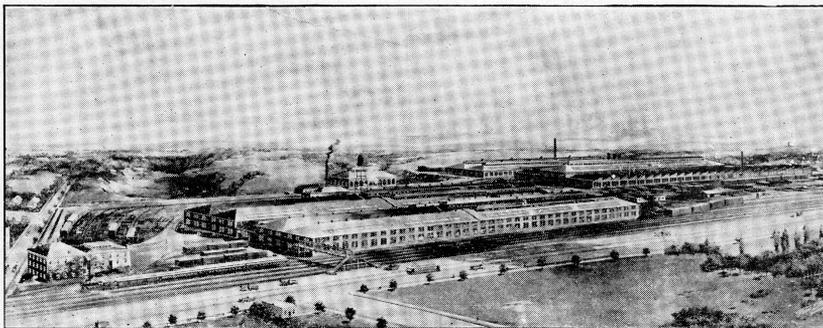
Pacific Bldg.
San Francisco

Bulletin No. 86

The
Union Switch & Signal Company

FOUNDED BY GEO. WESTINGHOUSE 1881

Swissvale, Pa.



GENERAL OFFICE & WORKS: SWISSVALE, PA.

Floor Space, 550,254 Sq. Ft. Employees, 3,000.

Designers, Manufacturers and Erectors of Electro-Pneumatic, Electric, Electro-Mechanical, and Purely Mechanical Appliances for Railway Protection.

Automatic, Semi-Automatic and Manually Operated Block Signals

Electro-Pneumatic, Electric, Electro-Mechanical and Mechanical Interlockings to suit conditions

Plans and Estimates on Application

Also Producers of

Railroad and General Forgings; Forgings for Automobiles and Aeroplanes

Castings

Gray Iron, Mild Steel,
Brass, Bronze and Aluminum



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THE UNION SWITCH & SIGNAL CO.

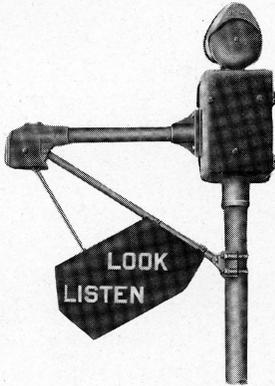


Fig. 1
"CLEAR"
ASPECT
(Red Disc Concealed)

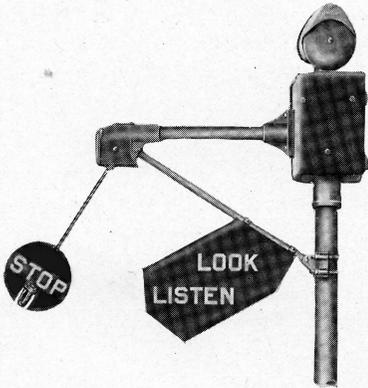


Fig. 2
"STOP"
ASPECT
(Red Disc Swinging)

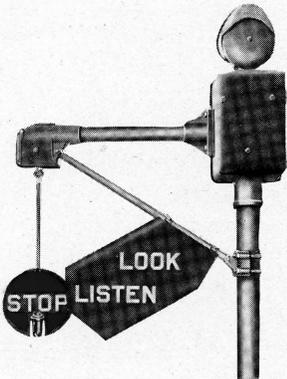


Fig. 3
EMERGENCY
"STOP"
ASPECT
(Red Disc Displayed)

NOTE: The Distinctive Difference Between the "CLEAR" ASPECT, Fig. 1 and the Emergency "STOP" ASPECT, Fig. 3.

UNION
THREE ASPECT
AUTOMATIC FLAGMAN
STYLE "DW"

It is generally conceded that the most important principle in railway signaling is that which requires a signal to indicate "**Stop**" when there is a failure of any part of the apparatus to function properly, or when there is an interruption of the power supply. This principle cannot be embodied in a signal indicating "**Stop**" solely by the continuous movement of a disc or arm, because when such movement ceases for any reason the "**Stop**" indication will be lost.

The growing demand for a special type of visual signal (ordinarily known as an automatic flagman) to protect dangerous grade crossings has resulted in the development by this company of a signal which, while displaying "**Stop**" indication by the movement of a disc in normal operation, is so designed that a failure of any part of the apparatus or the absence of power will cause a second or emergency "**Stop**" indication, which is entirely different and distinct from the "**Proceed**" indication. In other words, this signal has three aspects, one indicating "**Proceed**," and either of the other two indicating "**Stop**."

Under normal conditions this flagman indicates the approach of a train by swinging a red banner on which appears the word "**Stop**," and displaying a red light attached to the banner, as shown in Fig. 2. When no train is approaching the banner is held to one side between two screens upon which is painted "**Look and Listen**," as shown in Fig. 1, and the lamp suspended from the banner is not lighted. If the circuit through the holding magnets is broken, but the apparatus is otherwise in good condition, the banner will swing irrespective of the approach of a train. If the circuit is broken through the operating magnet but not through the holding magnet the banner will be retained in its extreme position between the screens until a train approaches, when it will be released and ultimately assume a vertical position with the banner stationary but fully displayed, as shown in Fig. 3. If current is totally cut off the mechanism or if the operating parts become disconnected, the banner will also assume the vertical position and be fully displayed.

The operating mechanism is enclosed in a waterproof case and consists essentially of operating magnets for driving the swinging banner and of holding magnets for retaining the banner at one end of its arc of travel. A circuit controller provides for the selection be-

THE UNION SWITCH & SIGNAL CO.

tween the pairs of operating magnets. This flagman is designed to operate normally at 10 volts D. C. It requires an average of 0.4 ampere for swinging the banner, and 0.4 ampere for the 5-watt 12-volt lamp, making an average of 0.8 ampere drawn from the battery while the banner is swinging. The holding magnets are of 1000 ohms resistance and require normally 10 mil-amperes when the flagman is latched in the clear position. The control of this flagman is so arranged that it is unnecessary to break the operating circuit through relay contacts. The only current passing through these contacts is that of 10 mil-amperes required for holding the mechanism in its latched position.

The flagman can be equipped with a bell and with either an oscillating or fixed lamp. If desired, the fixed lamp can be arranged to burn oil and to give flashes of light as the banner swings to and fro.

The control of the flagman can be effected by any of the well-known automatic or non-automatic methods in general use, and the flagman itself adapted to any ordinary condition of highway protection.

It is evident that a successful endeavor has been made in the design of this flagman to provide the maximum protection which can be afforded by a device of this kind. It is one step in advance of any similar device for the protection of grade crossings.

Prices and estimates furnished on application to our nearest district office.

THE UNION SWITCH & SIGNAL COMPANY.

December, 1916.

Union Switch & Signal Company
Swissvale, Pa.

**UNION
THREE ASPECT
FLAGMAN
STYLE "DW"**

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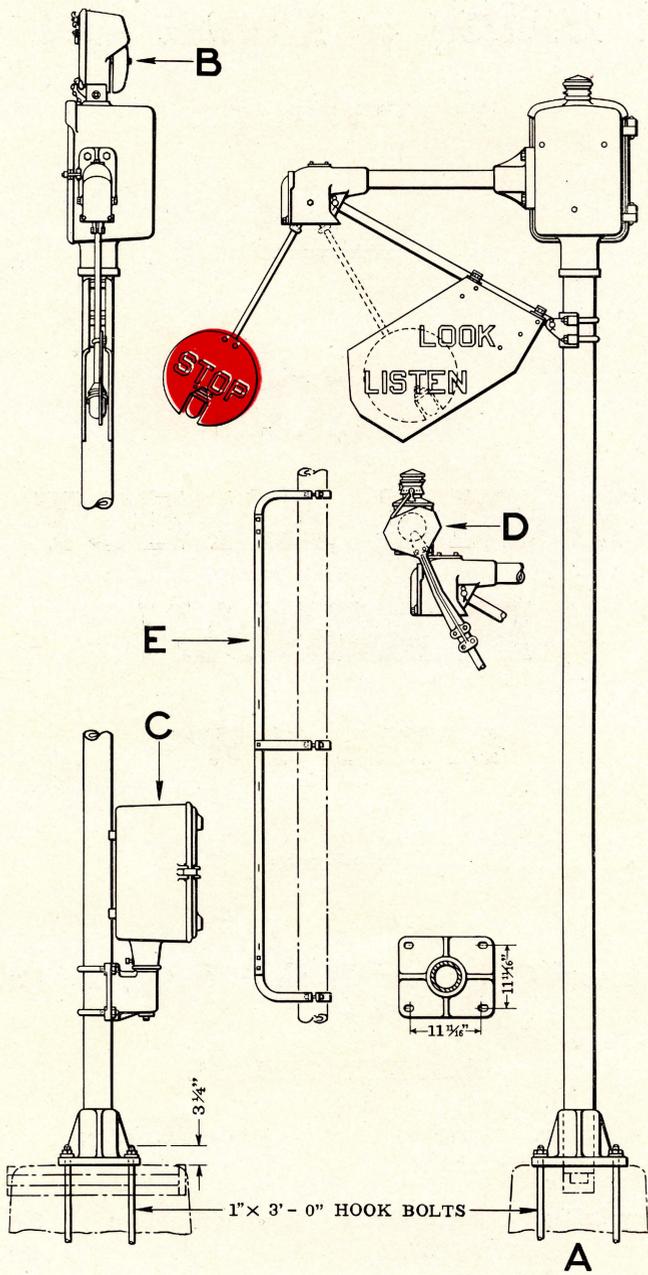
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SUPPLEMENT No. 1 to BULLETIN No. 86.



UNION SWITCH & SIGNAL CO.

UNION THREE ASPECT FLAGMAN
STYLE "DW"

Order by name, plate and figure and give this supplement number.

The drawing reference is shown merely for convenience in checking material with shipping lists and invoices.

Fig.		Drawing Reference	List Price
A	Three Aspect Automatic Flagman, as shown	E-2999	
Aa	As above, with fixed oil burning lamp and flashing attachment only, Fig. D.....		
Ab	As above, with model 15 crossing bell only, Fig. B		
Ac	As above, with relay box only, Fig. C		
Ad	As above, with model 15 crossing bell and relay box, Figs. B and C.....		
Ae	As above, with model 15 crossing bell, relay box and fixed oil burning lamp and flashing attachment, Figs. B, C and D.....		
Af	As above, with model 15 crossing bell and fixed oil burning lamp and flashing attachment, Figs. B and D.....		
Ag	As above, with relay box and fixed oil burning lamp and flashing attachment, Figs. C and D..		
B	Model 15 Crossing Bell.....		
C	Relay Box, with brackets and "U" bolts for housing two Interlocking Relays.....		
D	Fixed Oil Burning Lamp and flashing attachment.....		
*E	Ladder complete with stays.....		

*Ladder not furnished as part of new units—should be ordered separately if desired.

THE UNION SWITCH & SIGNAL CO.
Publicity Department
Swissvale, Pa.



MARK

Press of
MURDOCH, KERR & Co.
Pittsburgh, Pa.