

**INSTRUCTION PAMPHLET U-5004**

**August, 1931**

**INSTALLATION AND ADJUSTMENT  
OF  
STYLE "DW"  
AUTOMATIC FLAGMAN**

**UNION SWITCH & SIGNAL CO.  
SWISSVALE, PA.**

**2M-8-31-4**

**PRINTED  
IN  
U.S.A.**

# **AUTOMATIC FLAGMAN INSTRUCTIONS**

## **BANNER-ARM SUPPORTING BRACE**

When assembling the pipe brace that supports the outer end of the banner arm, the clamp which holds the pole end of this brace should be pushed upward on the pole far enough to insure that this brace carries its share of the load. This will prevent springing the mechanism case when the "U" bolts on the clamp are drawn up.

Flagman Mechanisms are set up, adjusted, and checked before shipment, hence should not be readjusted unless they fail to pass Service Inspection outlined below.

## **DRIVING ROD CONNECTION**

The length of driving rod between mechanism and banner should be adjusted so that armatures are equally spaced from pole faces when banner is in vertical or mid-position (Fig. 1). Length of Rod may be changed by means of screw jaw provided at one end of rod. Screw jaw end of rod should be connected to mechanism.

## **SERVICE INSPECTION**

### **Check Following Points to Insure Correct Installation**

#### **First:**

With battery on the mechanism and banner swinging as upon approach of train, stall the banner by hand in the center position to see that it automatically starts swinging again when released. This test is to insure that there is no dead position from which the banner will not start to swing under its own power.

#### **Second:**

With banner latched up in first notch K, see that contact C and D, also arcing tips E and F are all open.

#### **Third:**

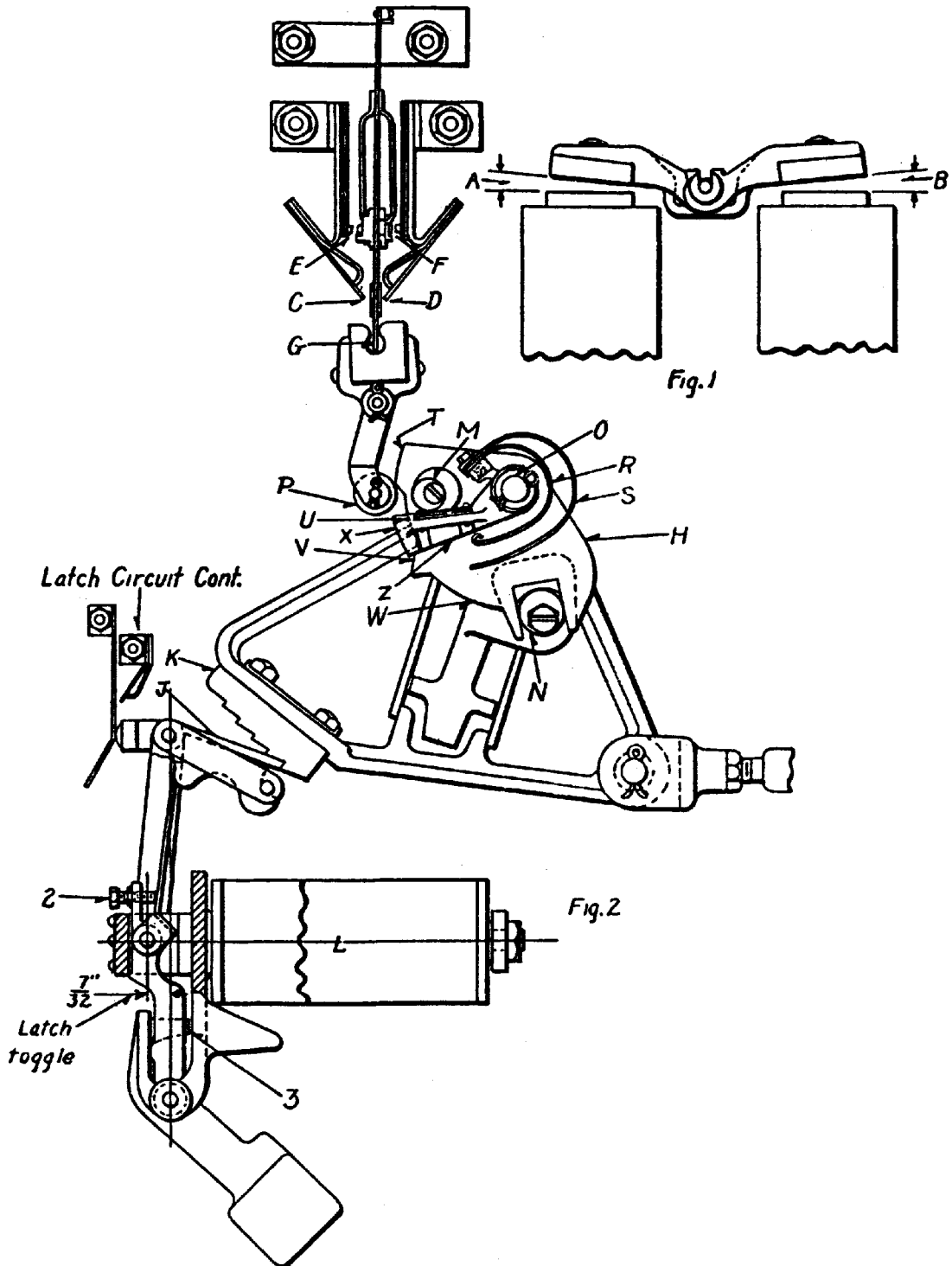
The latch magnet L should release the banner from the clear or latched up position when voltage falls to 10% of rated operating voltage.

#### **Fourth:**

All bearings should operate freely. There should be no binding or noticeable friction in the driving connections. Upon releasing the signal from latched position by removing all battery, the banner should swing back and forth several times before coming to rest.

# INSTRUCTIONS FOR DETAILED INSPECTION AND ADJUSTMENT OF MECHANISM

If the Flagman fails to meet service test outlined above, complete inspection and adjustments, if needed, may be made as follows:



## AUTOMATIC FLAGMAN MECHANISM

## CIRCUIT CONTROLLER AND CAMS

The working surfaces of cam H (Fig. 2) are arranged for 3-Position operation of the circuit controller. When roller P engages surface U of this cam, contacts C and E should both be closed and the right-hand set of operating magnets energized. When the roller engages surface X of the floating segment Z, contacts D and F should both be closed and the left-hand set of operating magnets energized. When roller P engages either surface T or W (both of these surfaces are the same distance from the center O of this cam) spring G should be on the center and all four contacts, C, D, E and F should be open. In this position contacts C and D should each have about  $\frac{1}{32}$ " opening and contacts E and F should each have about  $\frac{1}{16}$ " opening.

In the operation of the mechanism when the cam is rotating in the clockwise direction, roller P should be raised by the inclined surface V so that segment Z will snap under the roller, thus opening contact C and E and closing contact D and F just before air gap B (Fig. 1) is closed, that is just before the right hand operating armature strikes its pole piece. If necessary, correction of this adjustment can be made by means of eccentric N.

Likewise, in the counter clockwise movement of the cam, the roller should drop from surface X to surface U, thus opening contacts D and F and closing contacts C and E just before air gap A (Fig. 1) is closed, that is, just before the left-hand operating armature strikes its pole piece. If necessary, correction of this adjustment can be made by means of eccentric M.

Spring S is provided so as to give a snap action to the floating segment Z when the roller P has been raised sufficiently high by inclined surface V in the clockwise movement of the cam to permit the segment to pass under the roller, and should only be brought into action for a short distance. Spring R is to counter balance weight of small cam and should have just sufficient tension to lift cam up to its stop. In earlier type mechanisms two separate, straight springs were provided. The upper one of these should be given the same adjustment as R and lower one adjusted as S.

Spring R is provided to return the floating segment to its position against eccentric M after the snap action has taken place.

Contact spring G should have sufficient pressure to force roller P to the right to engage one of the cam surfaces at all times.

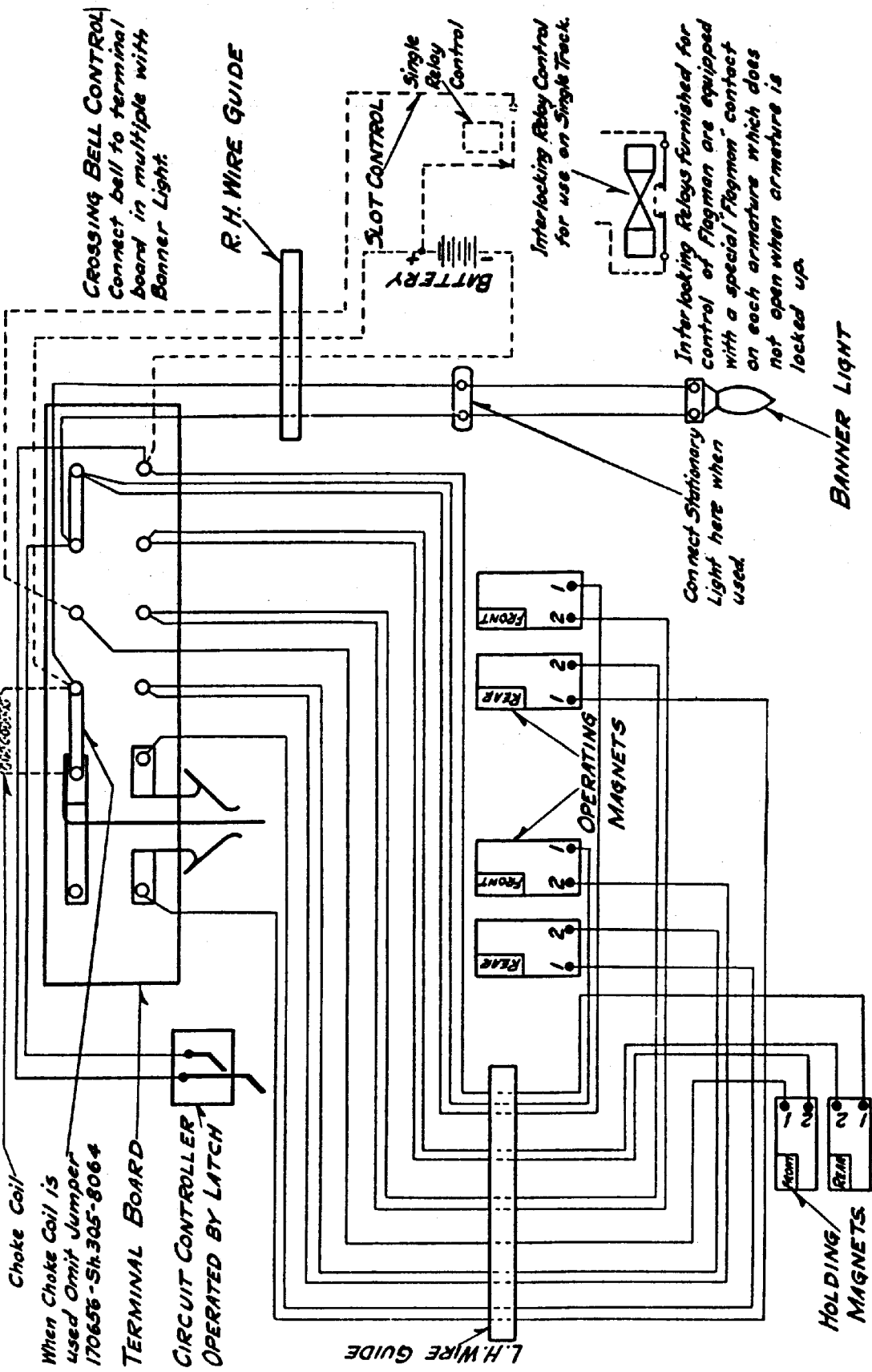
## SLOT MECHANISMS

The screw 2 on armature of latch magnet L should be adjusted so that the latch J will be raised to engage the teeth of operating crank when the latch armature is against its pole faces.

The stop 3 is to be of such a length that the counterweight will bring the armature within 0.1" of the pole face (measured at the bottom of the armature). On early type mechanisms a screw was provided for this purpose and should be given same adjustment.

The core pins in armature of latch magnet L should not be less than 0.012" for signals using the 3" diameter lens housing or ruby globe and 0.008" for signals using the 5" diameter lens housing.

*Note: Unless otherwise specified, Flagman is arranged to operate on 10 Volts; if Crossing Bell is ordered to operate on this Voltage 31 Ohms Resistance should be specified.*



**CROSSING BELL CONTROL**  
Connect bell to terminal board in multiple with Banner Light.

**R.H. WIRE GUIDE**

**L.H. WIRE GUIDE**

**SLOT CONTROL**  
**BATTERY**  
**Single Relay Control**

**Interlocking Relay Control**  
for use on Single Track.

**Interlocking Relays furnished for control of Flagman are equipped with a special Flagman contact on each armature which does not open when armature is locked up.**

**Connect Stationary Light here when used**

**BANNER LIGHT**

**HOLDING MAGNETS**  
**FRONT**  
**REAR**

**OPERATING MAGNETS**  
**FRONT**  
**REAR**

**Choke Coil**

**When Choke Coil is used Omit Jumper 170656-Sh.305-8064**

**TERMINAL BOARD**

**CIRCUIT CONTROLLER OPERATED BY LATCH**

**CIRCUITS FOR AUTOMATIC FLAGMAN. D.C.**  
**U.S.&S.Co. SMYTHVILLE PA.**

## LATCH CIRCUIT CONTROLLER

Controller Spring should clear insulating stud on latch pawl when mechanism is not latched. Contacts should have  $\frac{1}{16}$ " slide when closed and at least  $\frac{1}{8}$ " opening when mechanism is latched.

## BANNER-ARM BUFFER SPRING

The buffer spring tension on the banner should be adjusted so that the knife edge nearest the mechanism will not be backed off its bearing surface when the banner is latched in the first notch, but will just leave its bearing surface with the banner latched in the fifth notch.

