May 21, 1957 J. C. MOCK 2,793,272

CONTROLS FOR SIGNAL CIRCUITS

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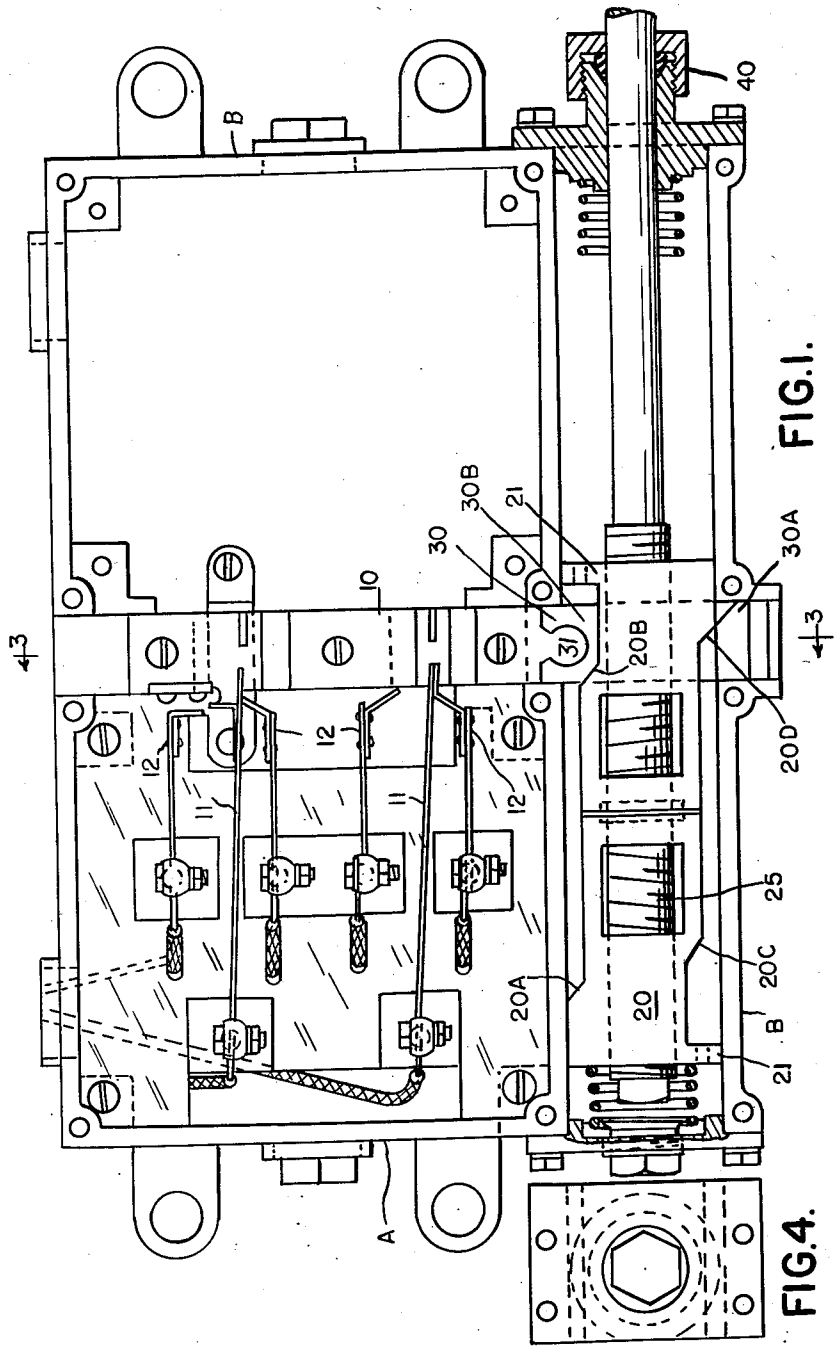


FIG. 1.

FIG. 4.

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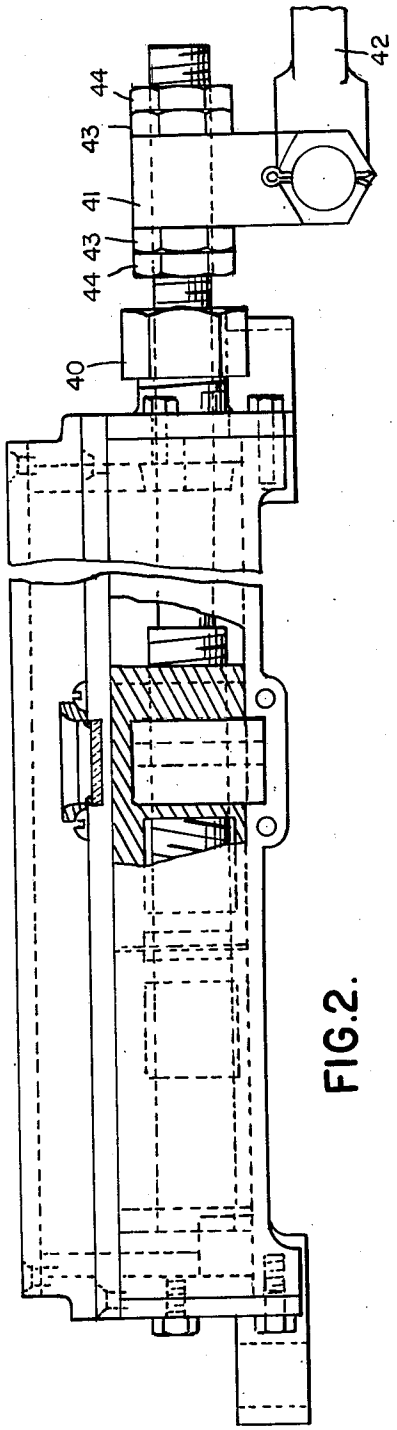


FIG.2.

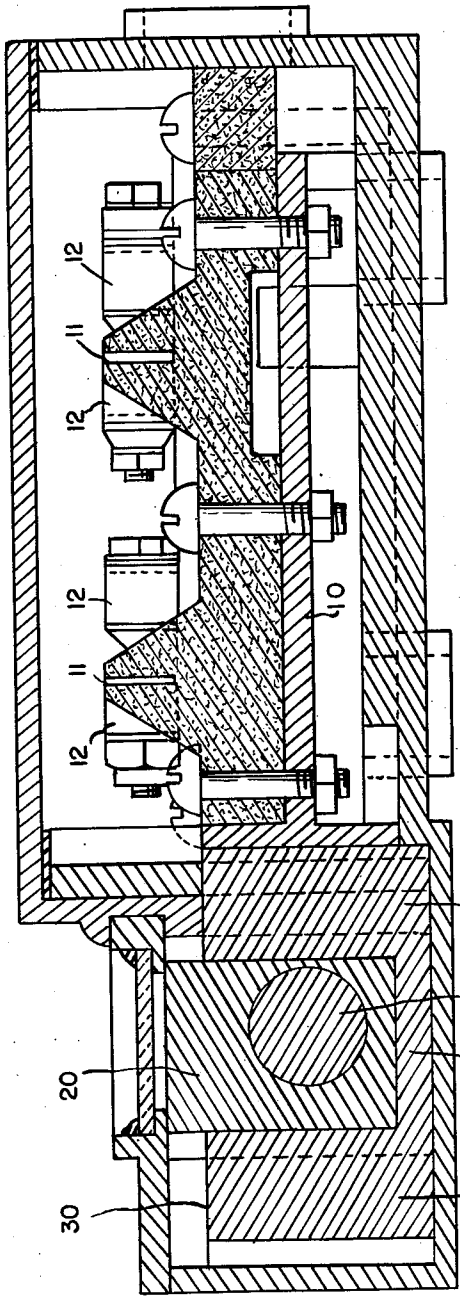


FIG.3.

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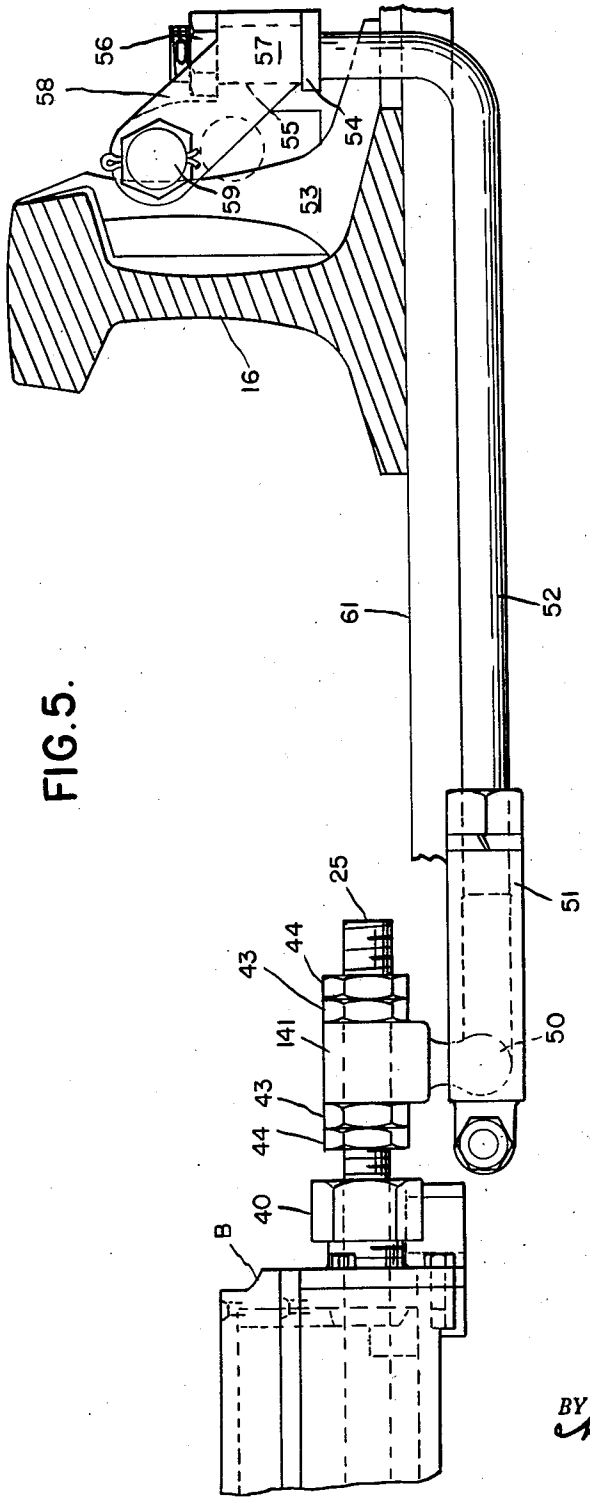


FIG. 5.

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CONTROLS FOR SIGNAL CIRCUITS

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Application April 29, 1955, Serial No. 504,816

1 Claim. (Cl. 200—153)

The present invention relates to control of circuits and more particularly to the circuit making and breaking means actuated by the railway switch points in moving from normal to reverse position and vice versa.

In installations of this kind the switch points are moved through a distance of several inches (the standard is 4¾"), but it is required that the circuits connected to the switch points be actuated by the movement of the switch points during the first and last quarter inch or less of the stroke, so that if for any reason the switch points fail to complete their full movements, the circuits will not only not function as intended, but will also be prevented from giving an unsafe indication.

It is therefore necessary that the circuit make and break be kept adjusted within the tolerances at all times, and this includes the relation of the switch points to the circuit make and break mechanism.

Among the objects of the invention therefore is to provide a device that meets the above requirements and which has adjusting means that is accessible from the outside of the housing enclosing the working parts of the circuit operating means.

Still another object is to provide a single adjusting means for both the above mentioned relationships.

In addition to those already mentioned, the objects of the present invention include the provision of means to provide a straight line movement of the switch actuating elements, and means whereby adjustments may be quickly and easily made in the field.

Other objects and advantages will readily occur to those skilled in the art upon reference to the following description and the accompanying drawings in which:

Fig. 1 is a top plan view of circuit make and break with the cover plates removed.

Fig. 2 is a side elevation with parts in vertical section.

Fig. 3 is a section on line 3—3 of Fig. 1.

Fig. 4 is an end view of housing portion B.

Fig. 5 is a side elevation showing the connection between the signal switch operating means and the railway switch.

In the drawings, in Fig. 1 is shown a two part housing in which the part A constitutes a housing for the signal control switches and the part B a housing for the switch actuator. The part A is also divided centrally of its length and duplicate switches housed therein, only one set being shown. Both sets of switches are actuated by a single transversely reciprocable bar member **10**. The switches consist of spring members **11** and stationary contacts **12** mounted on either side of the members **11**.

These switches are conventional and their operation through the use of a slidable bar is also conventional so no further detailed description is thought necessary.

The present invention is concerned chiefly with the means by which the movable railway switch points transmit their movement to the bar **10**. The bar, indicated as a whole by the numeral **10**, carries a suitable block

or blocks of insulating material contacting the spring members **11**.

The actuating means for bar **10** is, as stated above, housed in the casing part B and consists of an elongated cam member **20** which is rectangular in section, and slidable longitudinally in its casing B which acts as a guide.

This cam member **20** consists of two parts arranged end to end and each is provided at one end with a portion **21** fitting in the housing. With the two parts properly assembled, these portions **21** serve to maintain the cam member laterally. Its vertical position is maintained by coaction of its upper and lower flat surfaces and the top and bottom walls of the housing.

As indicated best in Fig. 1, the two parts of the member **20** are axially bored and tapped to receive a threaded shaft **25**, the parts and the shaft being threaded "right" and "left," so that rotation of the shaft **25** will change the overall length of the member **20**.

Referring to the cam member **20** as a whole, it is provided on its two side walls with oppositely arranged cam surfaces **20A**, **20B**, **20C** and **20D**, surfaces **20A** and **20B** being on one side wall and **20C** and **20D** being on the opposite side wall. Cam surfaces **20A** and **20C** are adjacent one end of the member **20** and **20B** and **20D** adjacent the other end, the spacing between **20A** and **20B** being equal to that between **20C** and **20D** and also when in proper adjustment, equal to the distance of travel of the switch points less the longitudinal length of the cams.

Coacting with the cams on the member **20** is a block or yoke **30** shown in Fig. 3, as consisting of two vertically arranged portions **30A** and **30B** integrally connected by a portion **30C**, there being suitable means by which the yoke is connected to the bar **10**. Any suitable means may be used, but that shown consists of a cylindrical member **31** carried by the bar **10** and slidable in a suitable cylindrical slot in the yoke portion **30B**.

The yoke **30** is mounted for reciprocation in suitable guide portions **32** in the casing portion B, the movement being normal to the movement of member **20**, and is provided with cam faces corresponding to and coacting with the pairs of cam faces **20B**—**20D** and **20A**—**20C**.

As shown in Fig. 1, the housing portion B is sufficiently long to provide for the required movement of the cam member **20** and the shaft **25** extends through a suitable packing or gland **40** at one end of the housing with its projecting end threaded as shown in Fig. 2. Upon the threaded end is carried an eye member **41** to which is secured the link **42** connected to the switch points (not shown).

The relative position of the link **42** and the shaft **25** and thereby the cam member **20** is determined and fixed by means of the nuts and locknuts **43** and **44** respectively, while the relative position of the two pairs of cams carried by the member **20** may be adjusted by rotation of shaft **25**.

In Fig. 5, the eye member **141**, which corresponds to member **41** in Fig. 2, is shown as being provided with a ball **50** cooperating with a suitable socket in the member **51** suitably secured to the link **52** which is connected to the switch point **53**.

In the connection of the link **52** to the switch point, the outer end of the link is bent upwardly at a right angle and provided with a shoulder **54** enough below the upper end to provide a long bearing portion **55** and a threaded end for a nut **56**. Mounted for rotary movement on the portion **55** is the bearing sleeve **57** of an angularly arranged arm **58** which extends to the upper part of the switch point **53** and is connected thereto by a pin **59** which extends horizontally through suitable eyes (not shown) carried by the switch point and is rotatable therein. These two rotatable bearings, one vertical and the other

horizontal eliminate entirely any bending stresses which would otherwise occur in switch operation.

In Fig. 5 the rail **60** is shown as mounted upon a tie **61** with the link **52** extending alongside the tie and under the rail. The switch point **53** is of course connected to and moves with a corresponding switch point at the other rail.

Among the many advantages of the present construction are that field adjustments are relatively easy. For example, the relative position of the mechanism to the switch points or the relative position of the two cam surfaces **20**A and **20**B or **20**C and **20**D may be adjusted by the proper manipulation of the nuts **43** and **44** and shaft **25**, all outside of the housing and easily accessible. Further, the low height of the assembly permits installation between rails if desired.

Another advantage of the present construction is that by the use of separate housings for the electrical and mechanical elements, the problem of waterproofing is greatly simplified. Still another advantage is that by the use of fewer parts and larger wearing surfaces, adjustment for wear is greatly reduced.

I claim:

In electric circuit control means for railway switch signals, a link attached to a switch point and secured at its other end to a lug provided with an eye or sleeve, a threaded shaft passing through said eye and carrying nuts for fixing the position of said eye upon said shaft, a casing into which said shaft extends, the portion of the shaft within the casing being provided with "right" and "left" threads, a divided elongated cam block, having its portions correspondingly threaded on said shaft within the casing, said block having cam surfaces adjacent its ends, a yoke within said casing and embracing said block and provided with cam surfaces adapted to coact with those on the block to produce reciprocation of the yoke upon operation of the railway switch and means connected to said yoke for making and breaking said circuits.

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