

June 19, 1923.

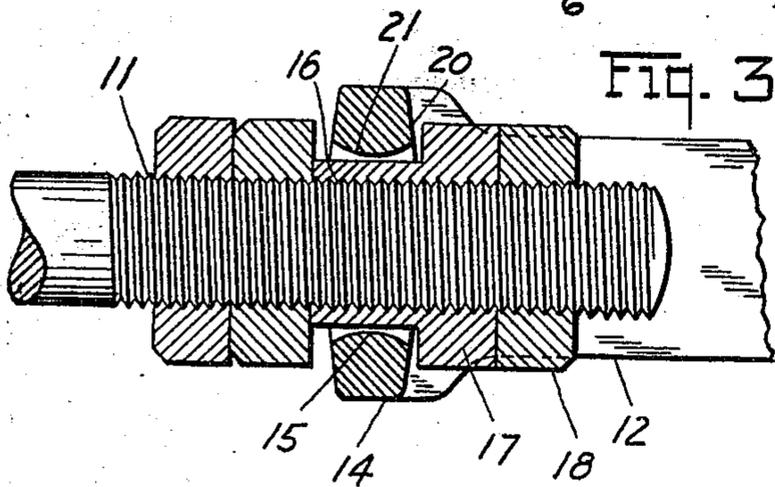
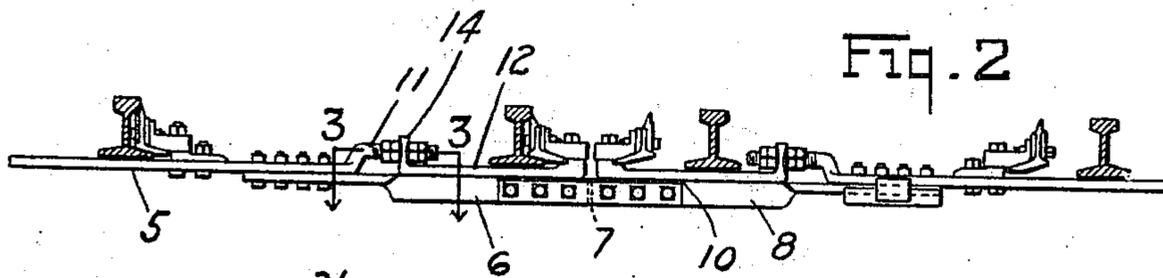
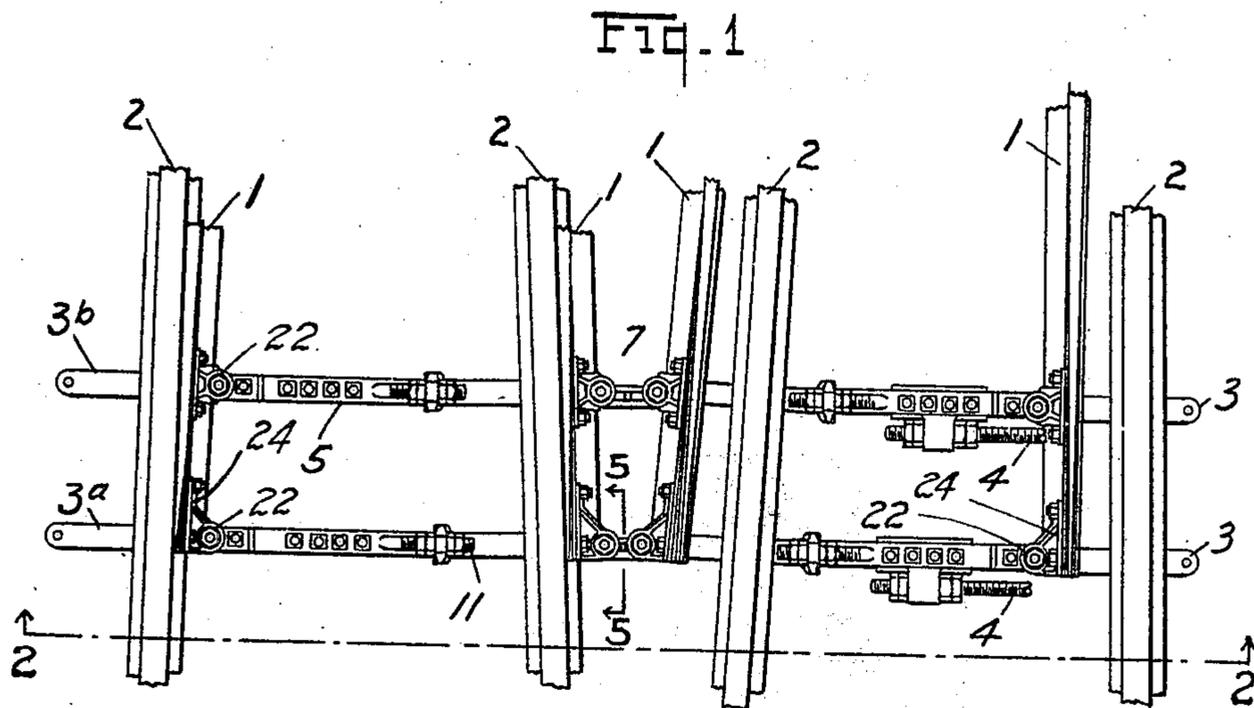
1,459,001

J. B. STRONG

SWITCH ROD FOR SLIP SWITCHES

Filed May 24, 1922

2 Sheets-Sheet 1



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By his Attorney  
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2 Sheets-Sheet 2

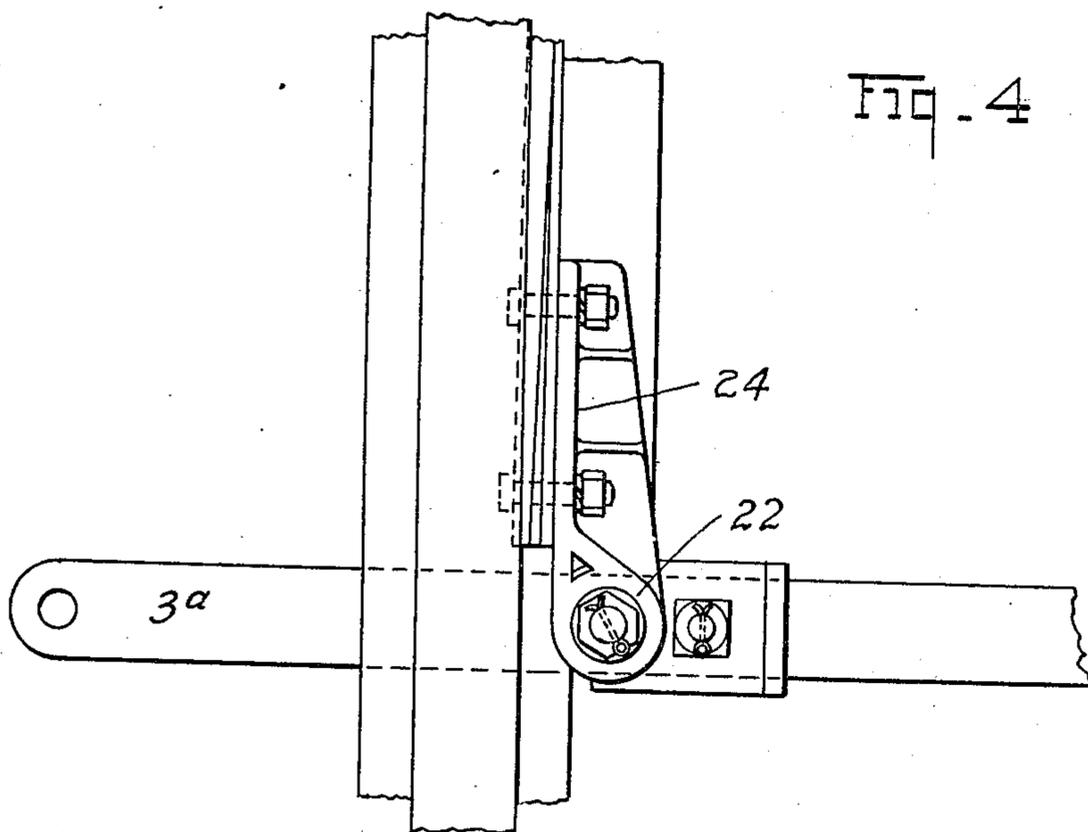


FIG. 4

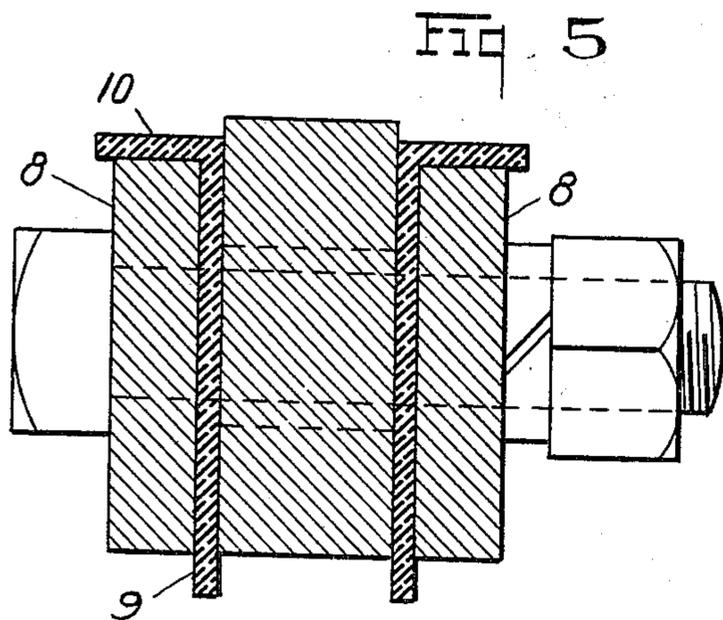


FIG. 5

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# UNITED STATES PATENT OFFICE.

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## SWITCH ROD FOR SLIP SWITCHES.

Application filed May 24, 1922. Serial No. 563,207.

*To all whom it may concern:*

Be it known that I, JAMES B. STRONG, a citizen of the United States, and resident of Hillburn, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Switch Rods for Slip Switches, of which the following is a specification.

This invention relates to improvements in switch rods for slip switches and the operating connections therefor.

A limited freedom of movement is very desirable between the switch points and the switch rods which are operatively connected with the operating mechanism, interlocking and signal indications, whereby movement of the switch is controlled, and this invention relates to improved means for interconnecting the switch points, particularly in double slip switches, to secure certainty of operation, to permit the necessary adjustments to be made quickly and securely, and to prevent binding between the parts.

The invention further relates to improved means for attaching the switch rods to the switch points, so as to reinforce the points and insure proper throw against the main or stock rails.

The invention also relates to the construction of the switch rods and the means for connecting them to the switch rails and for insulating the rods and the switch rails from each other.

In the accompanying drawings, Fig. 1 is a plan view of a double slip switch embodying my invention;

Fig. 2 is a side elevation of the same;

Fig. 3 is a detail view of the connection between the end bars and the swing dogs;

Fig. 4 is an enlarged plan view of the connection between the switch rod and the end of switch point; and

Fig. 5 is a detail sectional view of the insulation of the switch rods.

The switch rails 1 may be of the usual construction, and are movable toward and away from the main or stock rails 2 to open or close the switch by switch rods 3. The four switch points illustrated in the drawings are secured respectively to the inter-

locking switch rod 3<sup>a</sup> and to the throw-switch rod 3<sup>b</sup>. Each of these rods has secured thereto a connecting rod 4, that is operatively connected with the operative mechanism, interlocking and signal indications, not shown, or other means to actuate the switch.

The interlocking rod and the throw-rod are each constructed in substantially the same manner, and the description of one is applicable to the other. Each comprises two end bars 5 and a center bar 6 that is rigidly secured to and connects the end bars.

The center bar is in two parts spaced apart as at 7, secured together by splice plate 8. An insulating member or washer 9 is interposed between the splice plates and the adjacent parts of the center bar, and this insulation is formed with an outwardly extending flange 10, which serves as a protecting cap seating on the top of the splice plate and prevents short circuiting through the accidental dropping of a bolt of any conducting material across the short space that separates the splice plate and the switch rod when the insulation is applied in the usual manner.

The inner end 11 of each end bar is preferably forged and raised above the level of the switch rod, and projects over the center bar and parallel therewith. This projecting end is threaded and is connected with the switch point by a swing dog 12 provided with a lip or flange 14 extending above the level of the threaded projection 11 and having an eye or perforation 15 to interlock therewith.

In order to protect the threads on the end bar and provide a bearing for the swing dog, a sleeve 16 is threaded thereon, said sleeve being integral with a flange or nut 17, the two parts forming in effect a sleeve nut. A jam nut 18 is also mounted on the threaded portion of the end bar, and forms an abutment which cooperates with the nut 17 to hold the swing dog against longitudinal displacement relative to the switch rod. Suitable lock nuts 19 are also provided to retain the sleeve in adjusted position. Preferably

the walls of the eye 15 of the swing dog are beveled as at 20, and the perforation is preferably rounded as at 21, thus permitting a swiveling movement of the swing dog in the socket or groove provided by the bearing sleeve 16 and the jam nut 18.

The opposite end of the swing dog is connected directly to the switch points by a connection which will allow a swinging movement, such, for example, as a cone and socket joint 22. Consequently the swing dog constitutes a link between the switch rod and the switch rail that is swiveled at both ends. The result of this arrangement is complete flexibility of movement within a limited range, permitting the switch rail to fit snugly against the stock rail without strain or binding.

The swing dog is attached to the switch rail by means of a clip plate 24 bolted thereto. This rod 3<sup>a</sup> extends beyond the point of the switch rail, and preferably the swing dog is attached in advance of the clip may terminate with the switch rail, but my preferred construction brings the thrust in a line that practically insures snug seating of the switch point in its operative position, and also reinforces and strengthens the switch point, thus providing an added factor of safety.

By means of my improved construction the number of parts heretofore used in making connections for double slip switches is decreased, lost motion is reduced, and greater certainty of operation is attained. At the same time great flexibility and freedom from binding in case of creeping of one or more of the switch points is provided, also the pivotal flexible bearings allow minimum resistance against throwing of the operating mechanism. The parts are readily assembled and adjusted, and an effective insulation is also obtained.

What I claim as my invention is:

1. In a switch mechanism, the combination of a switch rail, and a switch rod for operating the switch rail, and a swing dog between the rail and rod, the rod being provided with a forged end having an adjustable bearing surface thereon, and the swing dog engaging said bearing and having a limited swinging movement thereon.

2. The combination of a switch rail, an operating rod therefor having a threaded projecting end, a sleeve nut on said rod, and a link provided with an eye interlocking with said sleeve and having limited movement relative thereto, said link being pivotally connected to the switch rail.

3. In a switch mechanism, the combination of a switch rail, a clip rigidly secured thereto and projecting beyond the point of the switch rail, a swing dog pivoted to the

clip beyond the switch point, and a switch rod connected to the swing dog, one of said parts having a bearing for the other part.

4. In a switch mechanism, the combination of a switch rail, a clip secured thereto and projecting beyond the point of the switch rail, a swing dog pivoted to the clip beyond the switch point, and a switch rod for actuating the switch rail, said rod being provided with an integral projecting end engaging through an eye provided in the swing dog.

5. In a switch mechanism, the combination of a switch rail, a switch rod for operating the switch rail, a swing dog between the rail and rod, said swing dog having one end movably secured to the switch rail and the other end adjustably secured to the switch rod, and means mounted on the rod engaging the swing dog to hold the same against longitudinal movement but permitting swinging movement relative thereto.

6. In a switch mechanism, the combination of a switch rail, a switch rod for operating the switch rail, a swing dog between the rail and rod, said rod being provided with a projecting end having an adjustable bearing sleeve thereon adapted to engage through an eye on the swing dog, and means for holding the swing dog against displacement on said bearing.

7. The combination of a plurality of switch points, a clip secured to each of the switch points projecting beyond the end thereof, a switch rod operating the switch points simultaneously, a swing dog between each switch point and the switch rod, one of said parts being provided with an adjustable bearing sleeve adapted to engage through an eye on the other part, and means for insulating the switch points from each other.

8. In a switch mechanism, a plurality of switch points, a switch rod comprising a center bar formed in two parts separated from each other, splice plates connecting the separated ends of the center bar, an insulating washer provided with an outwardly extending flange seating on top of the splice plate, and a swing dog connecting each of said points to the switch rod.

9. In a switch mechanism, a plurality of switch points, a switch rod comprising a center bar formed in two parts separated from each other, splice plates connecting the separated ends of the center bar, and an insulating washer provided with an outwardly extending flange seating on top of the splice plate.

10. The combination of a plurality of switch points, a switch rod comprising an end bar having a threaded projection arranged out of line of the switch rod and a center bar formed in two parts separated

from each other and connected by a splice plate, an insulating washer between the splice plate and the adjacent ends of the center bar formed with a flange extending  
5 over the top of the splice plate, and a swing dog connecting each of the switch points to the switch rod, said connection comprising

a bearing adjustable on said threaded projection and interlocking with the end of the swing dog. 10

Signed at New York, in the county of New York and State of New York, this 12th day of May, 1922.

JAMES B. STRONG.