

B. F. NICKERSON.
SWITCH.

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913,037.

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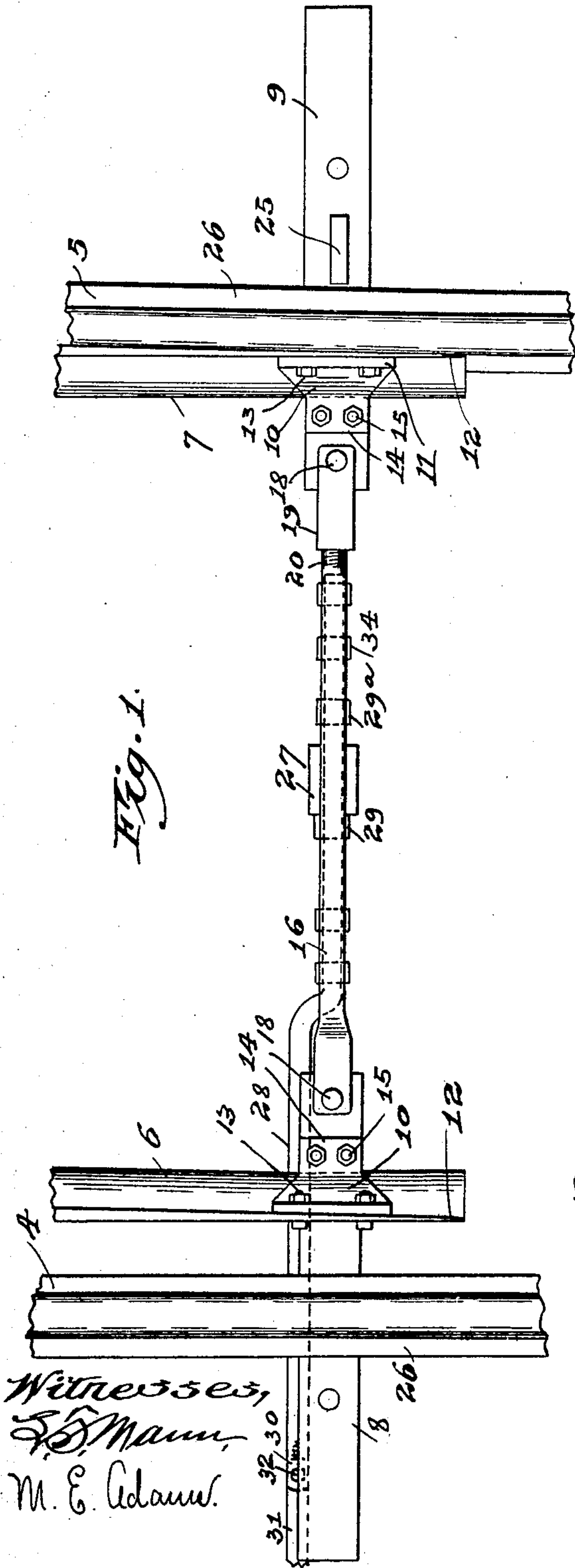


Fig. 1.

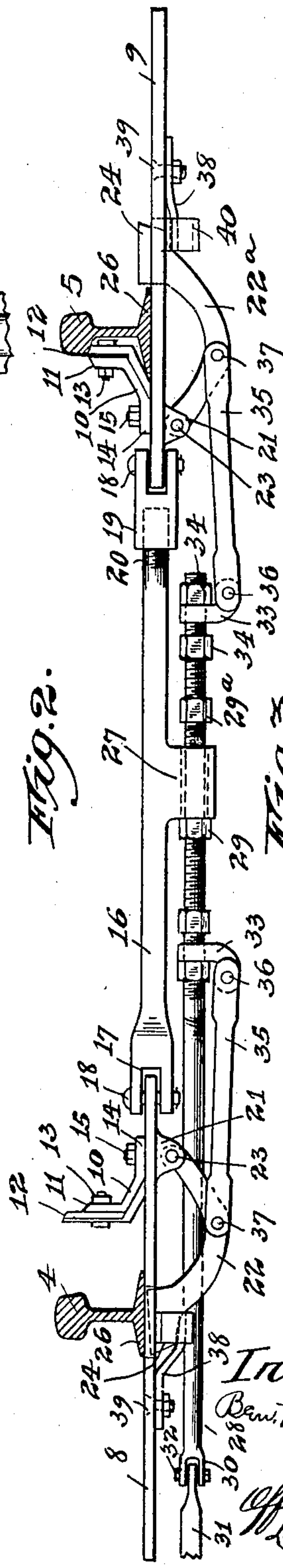


Fig. 2.

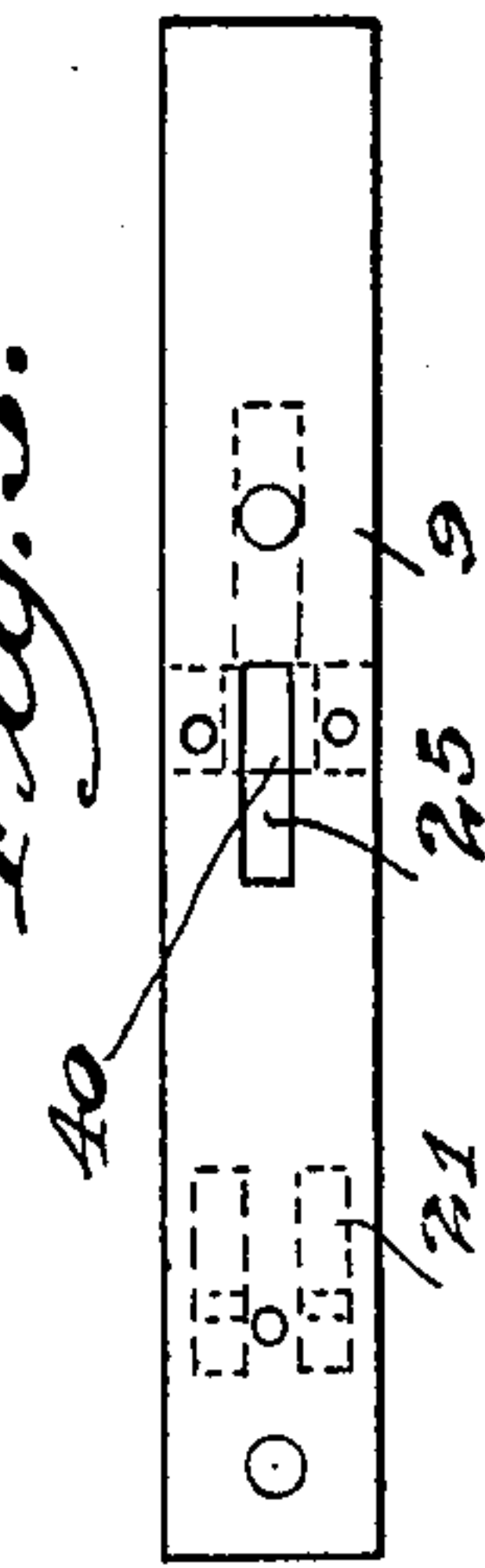


Fig. 3.

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UNITED STATES PATENT OFFICE.

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SWITCH.

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To all whom it may concern:

Be it known that I, BEN F. NICKERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Switches, of which the following is a specification.

The invention relates in general to a switch but pertains more in particular to a switch provided with locking means whereby the switch points are always held in operative position and in firm contact with a rail.

Many accidents on railroads are due to the fact that the switch point does not come into close contact with the side or tread of the rail so that the flange of a car wheel frequently enters between the switch point and the rail resulting in a derailment of the train. If the switch point is not sufficiently close to the rail it frequently occurs that the flange will ride the switch point, which also may result in derailment. A further disadvantage in not having the two members closely together is that the switch point has to be necessarily tapered or sharp and when struck by the wheel flange it frequently breaks, adding great additional expense to the maintaining of the road for the reason that the entire switch point has to be renewed.

It is to overcome the derailment of the trains and the breaking of the switch point that my invention is primarily devised.

The invention consists in locking means in combination with the switch points whereby the switch points are always held in close contact with the rail when in operative position.

Further advantages will appear throughout the specification and are shown in the drawings in which—

Figure 1 is a top plan view of my improved switch applied to rail sections and switch point sections. Fig. 2 is a side elevational view of Fig. 1. Fig. 3 is a top plan view of a plate member.

Referring now more particularly to the drawings, the main rails 4 and 5 cooperate with a pair of switch rails, the switch points 6 and 7 alone being herein shown. Secured to the switch points 6 and 7 are the plate members 8 and 9; the switch points being secured thereto by means of the angle plates 10 that have a vertically projecting web 11 adapted to be secured to the vertical web 12 on the switch points by means of the bolts 13; the lower ends 14 of the angle plates being hori-

zontally disposed and adapted to rest upon the plate members 8 and 9 and secured thereto by means of the bolt 15. The plate members are adapted to slide underneath the rail sections 4 and 5 and are supported by the switch points 6 and 7. The inner ends of the plate members 8 and 9 are secured together by means of the connecting member 16, the ends of which are slotted as shown at 17, into which slots the inner ends of the plate members are adapted to extend and secured thereto by means of the bolts 18. One end 19 of the connecting rod is separate and internally threaded and adapted to have a threaded engagement with the threaded end 20 of the connecting rod. The inner ends of the plate members 8 and 9 are provided with integral downwardly projecting lugs 21 to which are pivoted the locking members 22 and 22^a. In the preferred construction said locking members are preferably bowed and pivoted to the lug at one end by means of the pivot pins 23; the other end of said locking members being provided with enlarged heads 24 adapted to project through suitable slots 25 formed in the plate members 8 and 9; the slots 25 being disposed immediately adjacent the outside flanges 26 of the rail sections 4 and 5. Said locking members are adapted to be moved upon their pivots whereby the heads thereon will project through one of the slots and prevent movement of either of the plate members 8 and 9 in one direction. Movement of the locking members is accomplished in the following manner. Slidably mounted in a boss 27 preferably formed integral with the connecting member 16, is a connecting rod 28, one end of the connecting rod 28 being threaded, but adapted to slide freely through the boss 27 and having nuts 29 threaded thereon and disposed upon both sides of the boss 27. The connecting rod is provided with a slotted end 30 to which operating means 31 may be secured by means of the pivot pin 32; the operating means are adapted to be connected to the desired point for operating the switch, in any well known manner. Slidably mounted on the connecting rod 28 are the toggle members 33, the sliding movement of which on the rod 28 is limited by the nuts 34 which are internally threaded and adapted to engage the threads on the connecting rod 28, a nut being disposed upon both sides of the toggle members 33. To each toggle member 33 a lever 35 is pivoted, by means of the pivot pin 36, which

lever is adapted to be pivotally connected to the locking members 22 and 22^a by means of the pivot pins 37, the pivotal point of attachment of the levers 35 to the locking members being preferably at the bend or elbow thereof.

The operation of the device is substantially as follows. In Fig. 1 the switch points are so set as to allow the train to pass over the rails 4 and 5 and it can be readily seen that the switch point 7 will be held in close contact with the rail 5 and cannot be separated therefrom, for the reason that the head on the locking arm 22^a projects through the slot 25 in the plate member 9 and forms a shoulder behind the flange 26 of the rail 5 thereby preventing any movement of the switch point relative to said rail. When it is desired to move the switch point 7 from the rail 5, so as to bring the switch point 6 into contact with the rail 4 and thereby throw the switch into operative position, the operator pulls on the connecting rod 28 by means of the operating lever 31 which causes the locking member 22^a to move downward and out of the slot 25 as the pivotal point 37 on the locking member 22^a is so arranged that it will not pass dead center when the parts are in locked position. After the head 24 on the locking member 22^a is free from the plate member 9 a further pull on the connecting rod 28 will slide the plates 8 and 9 to the left, as shown in Fig. 2, causing the locking member 22 to be brought into register with the slot 25 in the plate 8, and a continuation of the pull will force said locking member through said slot so as to bring the head 24 thereon behind the flange 26 of the rail 4, this being accomplished by means of the lever 35.

It can be readily seen that there is preferably a slight lost motion in the connection of the parts which is accomplished by mounting the toggle joints 33 loosely between the nuts 34 whereby the initial pull upon the connecting rod 28 will not affect in any way the lever 35, thereby permitting the locking member 22^a to be unseated before the locking member 22 is affected at all. The nuts 29 and 29^a are so arranged relative to the boss 27 that the locking members are not permitted to extend far enough through the slot to cause the pivot points 37 to pass dead center; said nuts being so arranged as to limit the movement of the locking members before this occurs.

It can thus be readily seen from the foregoing description that either switch point may be brought into contact with either rail and locked thereto. If by any reason any of the connecting members should become disarranged so as to cause the switch points to move from their intended position, means are provided for always holding said switch points in their set position, said means comprising the springs 38 that are secured to the

inner sides of the plates 8 and 9 by means of the bolts 39. Each spring is provided with a head 40 adapted to normally press against the heads 24 on the locking members and tending to force them constantly upward so that the locking member 22^a when in locked position will be held in said position even if the lever 36 should become disengaged, and the same would be true in respect to the locking member 22 when in locked position. These springs are of only sufficient tension to hold the locking members in their intended position and may be easily sprung when it is desired to release either of the locking members.

It is of course obvious that there might be various minor changes in the construction herein shown, and, therefore, without confining myself to the particular details shown in the drawing, I claim:

1. In a locking and releasing device for a switch, the combination of a rail member and a switch member, a locking member pivotally connected to said switch member, and means for moving one end of said locking member to the opposite side of said rail from said switch member, substantially as described.

2. In a locking and releasing device for a switch, the combination of a pair of rail members and a pair of switch members, a locking member pivotally connected to each switch member, means for connecting said switch members together, and means for moving one end of either locking member to the opposite side of a rail from which it is attached to the switch member, substantially as described.

3. In a locking and releasing device for a switch, the combination of a rail member, a locking member, a plate member to which said locking member is pivotally secured, means for securing said plate member to the switch member, and means for moving said locking member upon the opposite side of the rail from said switch member, whereby said switch member is held in contact with said rail member, substantially as described.

4. In a switch, the combination of a pair of plate members adapted to be secured to a pair of switch members, means for connecting said plate members together, locking members pivotally secured at one end to each plate member, the other ends being adapted to extend through suitable apertures in said plate members to engage a rail or the like, and means for connecting said locking members together whereby a releasing movement of one will lock the other, substantially as described.

5. In a switch, the combination of a pair of rail members and a pair of switch members, plates adapted to be connected to each switch member, means for connecting said plates together, curved locking members piv-

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otally connected to each plate, the free ends of said locking members adapted to lie beneath the surface of said plates when in locked position, and means for connecting 5 said locking members whereby the free end of either member may be positioned above the surface of the plate member to which it is attached, whereby a locking or releasing of either switch member is procured, substan- 10 tially as described.

6. In a switch, the combination of a pair of rail members and a pair of switch mem- 15 bers, a plate secured to each switch member and disposed beneath said rail members, a curved locking member secured to each plate beneath the same, means for connecting said plates together, and means for causing the free end of either locking member to project 20 above the surface of the plate to which it is attached, comprising levers pivoted to each locking member and a connecting rod to which each lever member is pivotally se- 25 cured, whereby movement of said connecting rod causes one of said locking members to be placed in locked position and the other of said locking members to be released, substantially as described.

7. In a switch, the combination of a pair of rail members and a pair of switch mem- 30 bers, plates to which said switch members are rigidly secured, means for connecting said plate members together, curved locking members pivotally secured to said plate

members beneath the same, apertures in said plate members through which the free ends 35 of said locking members are adapted to pass, a laterally movable connecting rod disposed beneath said plate members, and lever and toggle joint means connecting said locking 40 members to said connecting rod, whereby a movement of the latter will cause one of said locking members to be locked and the other to be released, substantially as described.

8. In a switch, the combination of a pair of rail members and a pair of switch mem- 45 bers, plates to which said switch members are rigidly secured, means for connecting said plate members together, curved locking members pivotally secured to said plate 50 members beneath the same, apertures in said plate members through which the free ends of said locking members are adapted to pass, a laterally movable connecting rod disposed 55 beneath said plate members, lever and toggle joint means connecting said locking members to said connecting rod, whereby a movement of the latter will cause one of said locking members to be locked and the 60 other to be released, and means secured to said plates for holding said locking arms in locked position, substantially as described.

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