

No. 815,887.

PATENTED MAR. 20, 1906.

U. A. WOODBURY.
AUTOMATIC RAILWAY SWITCH.
APPLICATION FILED JUNE 21, 1905.

Fig. 1

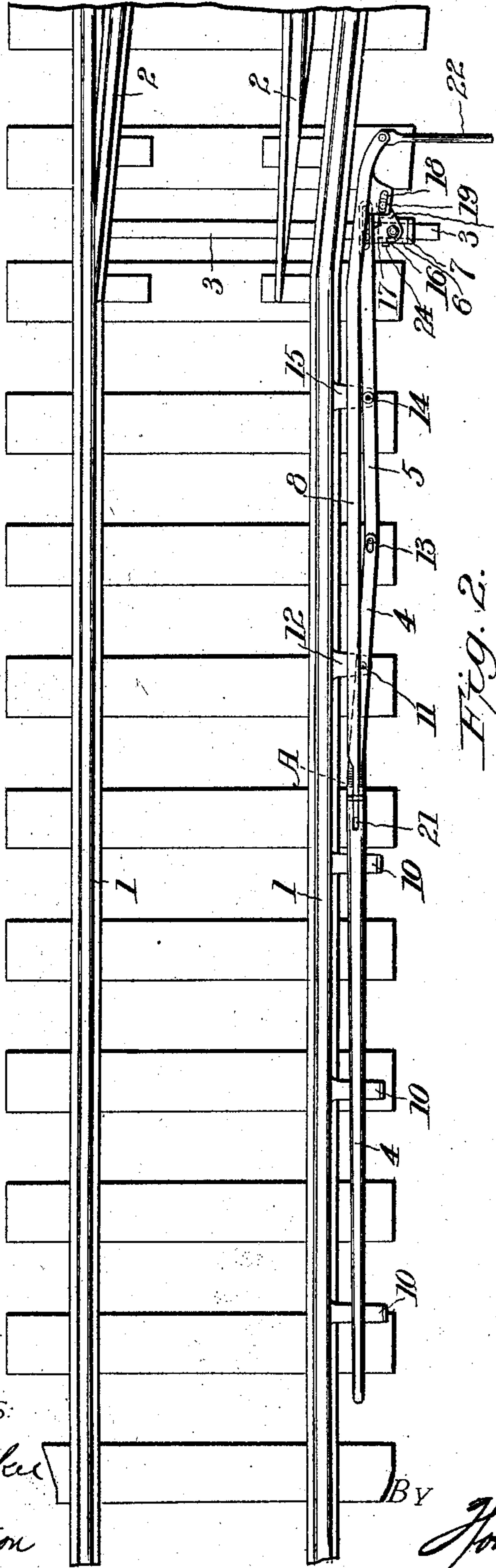


Fig. 2.

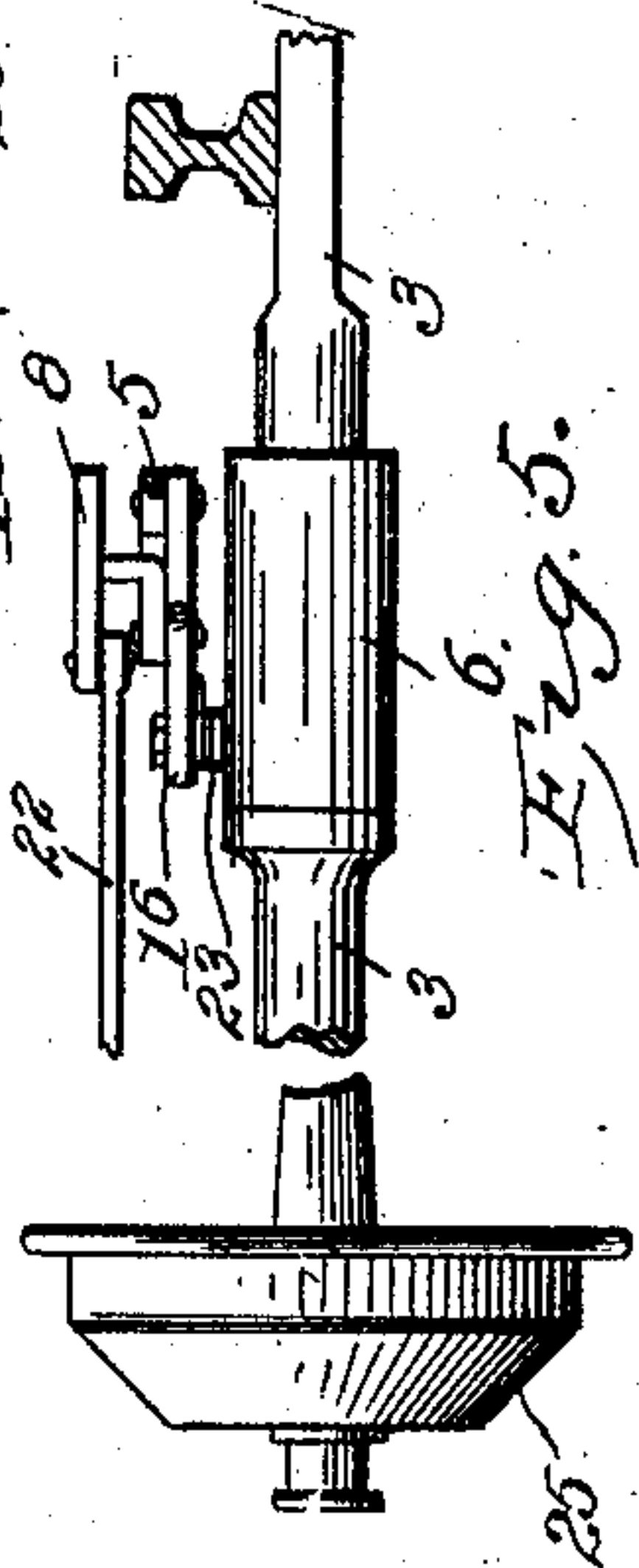
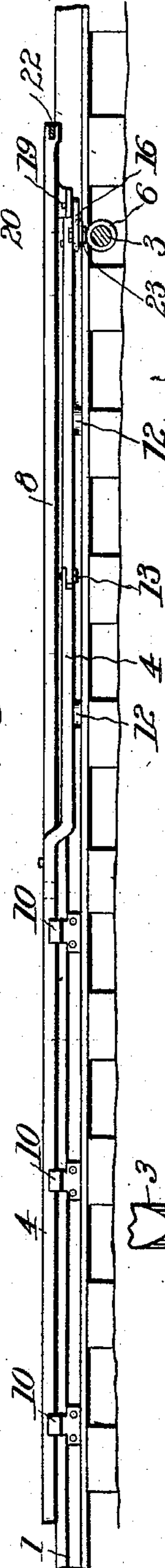


Fig. 3.

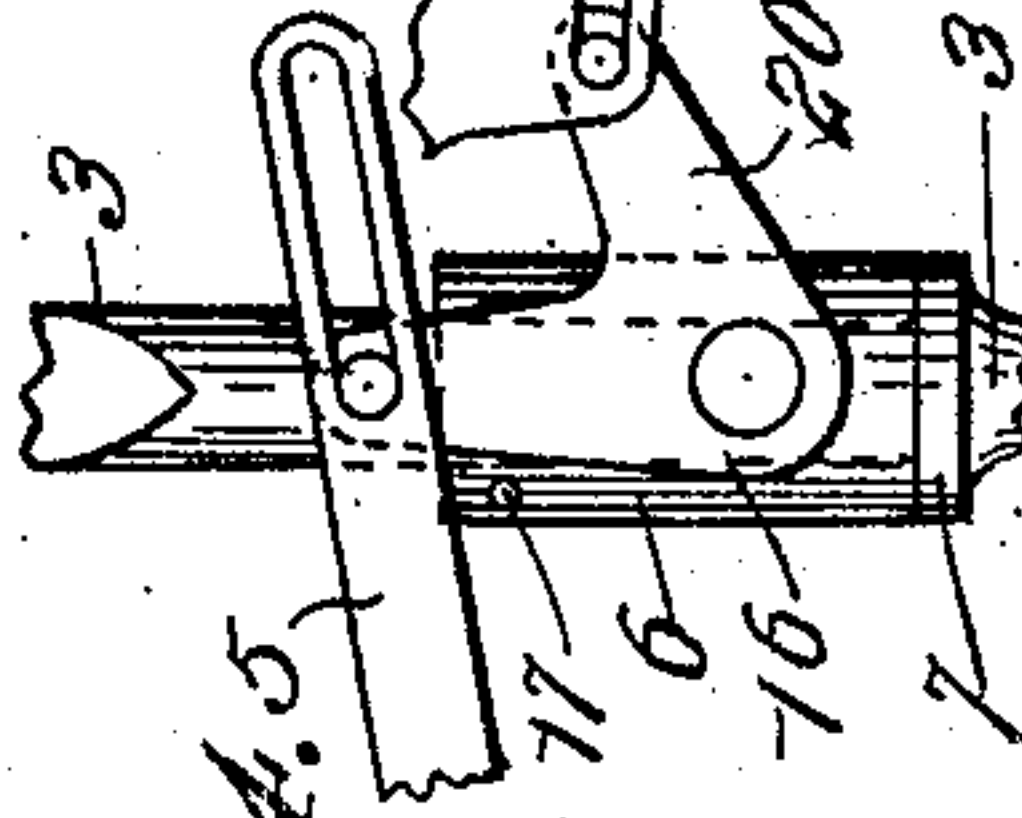


Fig. 4.5

Fig. 5.

WITNESSES:

C. M. Walker
Robert Watson

BY

Urban A. Woodbury

Howard A. Combs
his Attorney

UNITED STATES PATENT OFFICE.

URBAN A. WOODBURY, OF BURLINGTON, VERMONT.

AUTOMATIC RAILWAY-SWITCH.

No. 815,887.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed June 21, 1905. Serial No. 266,348.

To all whom it may concern:

Be it known that I, URBAN A. WOODBURY, a citizen of the United States, residing at Burlington, in the county of Chittenden and State of Vermont, have invented certain new and useful Improvements in Automatic Railway-Switches, of which the following is a specification.

My invention relates to automatic railway-switches; and its object is to simplify and improve existing devices of that class.

More specifically stated, the purpose of my invention is to provide a mechanism which will act to automatically close an open switch when a train which is not intended to enter the siding approaches the same.

Heretofore devices of this nature have been designed to operate under the influence of a spring arranged to be released by an approaching train and which has to be reset each time it is operated.

One of the advantages of my present invention is that the movement of the switch-rod to close the switch is positively caused by the action of the train on the mechanism and does not depend upon spring action.

Another advantage of my invention is that the mechanism is replaced in operative position by the mere action of opening the switch again in the usual way.

Other advantages and improvements comprised in my improved form of automatic switch will be set forth in the following detailed description, reference being had to the accompanying sheet of drawings, in which—

Figure 1 is a plan view of a switch provided with my invention. Fig. 2 is a side elevation of the same. Fig. 3 shows the special truck-wheel on the locomotive. Fig. 4 is an enlarged plan view, and Fig. 5 is an enlarged side elevation of the mechanism on the switch-rod 2.

In Figs. 1 and 2, reference-numeral 1 represents the main-line rails of a railroad, and 2 the movable switch-rail, the latter being, as usual, carried by a switch-rod 3, running to a switch-stand. (Not shown.)

4 is a long bar or lever which is slidably supported on lugs 10 10, attached to the outside of the rail 1 and which is pivoted at 11 on another lug 12. At its outer end the inside edge of this bar lies normally about three and one-half inches from the side of the rail-head, gradually approaching the same until at the point marked A it is only about one and one-half inches distant. From this point to the

pivot 11 its distance from the rail increases. The top of the bar 4 from its outer end to the point where it is nearest the rail is some two and one-half or three inches above the top of the rail; but at that point it is bent downwardly, as shown, and at the pivot 11 is below the top of the rail. The bar terminates at about an equal distance beyond its pivot as that from the point A to the pivot, which distance may be approximately two feet. At its said end it is connected by a pin-and-slot connection 13 to another lever 5, which is pivoted near its center at 14 on a lug 15, projecting from the rail 1.

On the switch-rod 3 is slidably mounted a sleeve 6, the movement of which is limited in the direction toward the switch-stand by a collar 7.

That part of the switch-rod which lies beneath the rails is, as usual, rectangular in cross-section; but that portion on which the sleeve 6 is mounted is preferably made circular in cross-section, as shown. On the said sleeve 6 is pivotally mounted a bell-crank lever 16, to the arm 17 of which the other end of the lever 5 is attached by a pin-and-slot connection.

A bar 8, the top of which is on the same level as the top of the bar 4 from its outer end to the point A, runs from said point alongside the rail 1 to the switch-rod, the forward end thereof extending a short distance beyond said rod and having a slot 18, engaging a pin or roller 19 on the other arm 20 of the bell-crank lever 16. The rear end of the bar 8 is reduced in width and is mounted to slide loosely in a slot 21, formed in the upper side of the bar 4. A rod 22 is connected to the extreme front end of this bar 8 for a purpose to be described.

A spring 23, (see Fig. 4,) which may be conveniently arranged, as shown, around the pivot of the bell-crank lever 16, tends to hold said lever in the position shown in Fig. 1 and to return it to that position when said lever has been swung on its pivot to the right. A stop 24 is provided to limit the movement of said lever to the left.

To operate the mechanism just described, the front truck-wheel of the locomotive is provided with an annular projection 25, (see Fig. 3,) extending around adjacent to the periphery of the wheel and projecting from two and one-half inches to three and one-half inches from the side thereof. When the switch is closed, the special wheel provided

with projection 25 will not touch lever 4, and when switch is open no wheel except special wheel will strike said lever. Therefore the apparatus cannot be brought into action under any conditions except by a locomotive provided with a special wheel.

Instead of the special truck-wheel just described the locomotive may be provided with a wheel or roller normally maintained in operative position, but capable of being removed therefrom by the locomotive-engineer. Such a wheel is shown in my Patent No. 758,401. Where such a wheel is used, bar 8 and bell-crank 16 would be omitted and lever 5 would be directly attached to sleeve 6.

The operation when a locomotive approaches the open switch toward the point is as follows: The projection 25 rides against the bar 4 and crowds the same outwardly, the forward end of said bar thereby causing the rear end of lever 5 to approach the rail and the front end of the latter lever to recede from the rail and through its connection with the switch-rod 3 to move said rod to close the switch. The connection between lever 5 and the switch-rod 3 consists, as will be evident, of the bell-crank lever 16 and sleeve 6, the former constituting at this time a rigid strut between said lever and the switch-rod and the sleeve 6 being prevented from sliding on the switch-rod by the collar or projection 7. When, however, it is desired that the train should enter the siding, it is only necessary for the brakeman to pull the rod 22, which has the effect of swinging the bell-crank 16 to the right, owing to its pin-and-slot connection with the bar 8, to which the rod 22 is attached. Then when the lever 5 is swung, as before, by the approaching train it simply has the effect of swinging the bell-crank lever 16 still farther to the right, since the latter no longer forms a strut between the lever 5 and the sleeve 6. Now when a train equipped with the special truck-wheel described comes off the siding the projection 24 first strikes the end of bar 8, the effect of which is of course the same as that caused by pulling on the rod 22—viz., to swing bell-crank 16 to the right and, in effect, to break the connection between lever 5 and sleeve 6. The consequence is that the switch is not closed by the train, as it would be, owing to the projection 24 on the wheel riding along bar 8 and lever 4 were the connection between lever 5 and sleeve 6 not broken.

One of the advantages of my present invention resides in the fact that the provision of the mechanism for automatically closing the switch interferes in no way at all with the ordinary process of hand switching. When the switch is operated by hand, the switch-rod 3 slides through the sleeve 6 without moving it or any of the related parts. After the switch has been closed by the operation of the automatic mechanism the mere

act of normally opening the switch again resets the mechanism in operative position.

The switch-stand which I prefer to use in combination with my above-described automatic switch mechanism is that known as the "Rampoe Safety Switch Stand with Rigid Throw," the same comprising a spring which acts to complete the throw of the switch in either direction when it has been more than one-half closed.

I may add in conclusion that this apparatus may be used with the mechanism disclosed in Patent No. 788,572 granted to me May 2, 1905. In that case plate 15, slotted switch-rod 1, and all the apparatus would be used instead of sleeve 6 illustrated herein, bell-crank 16 being directly attached to said plate. Furthermore, by reversing the position of the bell-crank 16 from that shown in my present application and connecting it directly to lever 4, omitting lever 5, the switch could be arranged to be automatically closed by a train coming in the opposite direction.

What I consider my invention, and desire to secure by Letters Patent, is expressed in the following claims:

1. In a railway-switch, the combination with the switch-rod thereof, of a bar pivoted to the track and arranged to be actuated by a train, a normally rigid connection between said bar and switch-rod, and means arranged to be actuated by a train coming off the siding to break said connection when it is not desired to have the switch automatically closed.

2. In a railway-switch, the combination with the switch-rod thereof, of a bar pivoted to the track and arranged to be actuated by a train, means connecting said bar and switch-rod so that the actuation of the former by a train will move the latter to close the switch, said means constructed and arranged to permit manual shifting of the switch-rod without moving said bar, and means arranged to be actuated by a train coming off the siding to break said rigid connection when it is not desired to have the switch automatically closed.

3. In a railway-switch, the combination with the switch-rod thereof, of a bar movably mounted adjacent to the track and arranged to be actuated by a train, normally rigid connections between said bar and switch-rod whereby actuation of said bar by a train will move said switch-rod to close the switch, a second bar mounted adjacent to the track and arranged to be actuated by a train coming in the opposite direction and a connection between said second bar and said normally rigid connection whereby the latter is broken by the actuation of said second bar by a train.

4. In a railway-switch, the combination with the switch-rod thereof, of a sleeve slid-

ably mounted upon said switch-rod, means to limit the movement of said sleeve on said switch-rod in one direction, a lever pivotally mounted upon said sleeve, a bar pivoted adjacent to the track and arranged to be actuated by a train, connections between said bar and lever, whereby the actuation of said bar acts through said lever to move the switch-rod to close the switch and means to swing said lever so as to, in effect, break the connection between said bar and switch-rod when it is not desired to have the switch automatically closed.

5. In a railway-switch, the combination with the switch-rod thereof, of a bar movably mounted adjacent to the track and arranged to be actuated by a train approaching the open-switch, a pivoted member which in one position acts as a rigid connection between said bar and switch-rod, means to manually swing said member so that the said rigid connection is broken, a second bar movably mounted adjacent to the track and arranged to be actuated by a train coming off the siding, and a connection between said second bar and said member, whereby actuation of the former by a train running off the siding swings said member on its pivot and breaks the rigid connection between said first-mentioned bar and the switch-rod.

6. In a railway-switch, the combination with the switch-rod thereof, of means mounted adjacent to the track and arranged to be actuated by a train, connections between

said means and switch-rod whereby the latter is automatically moved to close the switch, said means constructed and arranged to permit manual shifting of the switch-rod without moving said means or connections, and means adapted to be actuated by a train running off the siding to render said connections inoperative.

7. In a railway-switch, the combination with the switch-rod thereof, of a sleeve slidably mounted upon said rod, means to limit the movement of said sleeve on said rod in one direction, a bell-crank pivotally mounted upon said sleeve, a spring tending to keep said lever with one arm approximately parallel with said rod, a bar movably mounted adjacent to the track and arranged to be actuated by a train, a lever pivoted adjacent to the track and having pin-and-slot connections at its ends with said bar and bell-crank respectively, a second bar movably mounted adjacent to the track and arranged to be actuated by a train running off the siding, said second bar having a pin-and-slot connection with the other arm of said bell-crank lever, and a rod connected to said second bar for manual actuation of the same.

In testimony whereof I have affixed my signature in presence of two witnesses.

URBAN A. WOODBURY.

Witnesses:

T. P. O'BRIEN,
W. WALLACE DONAHOE.