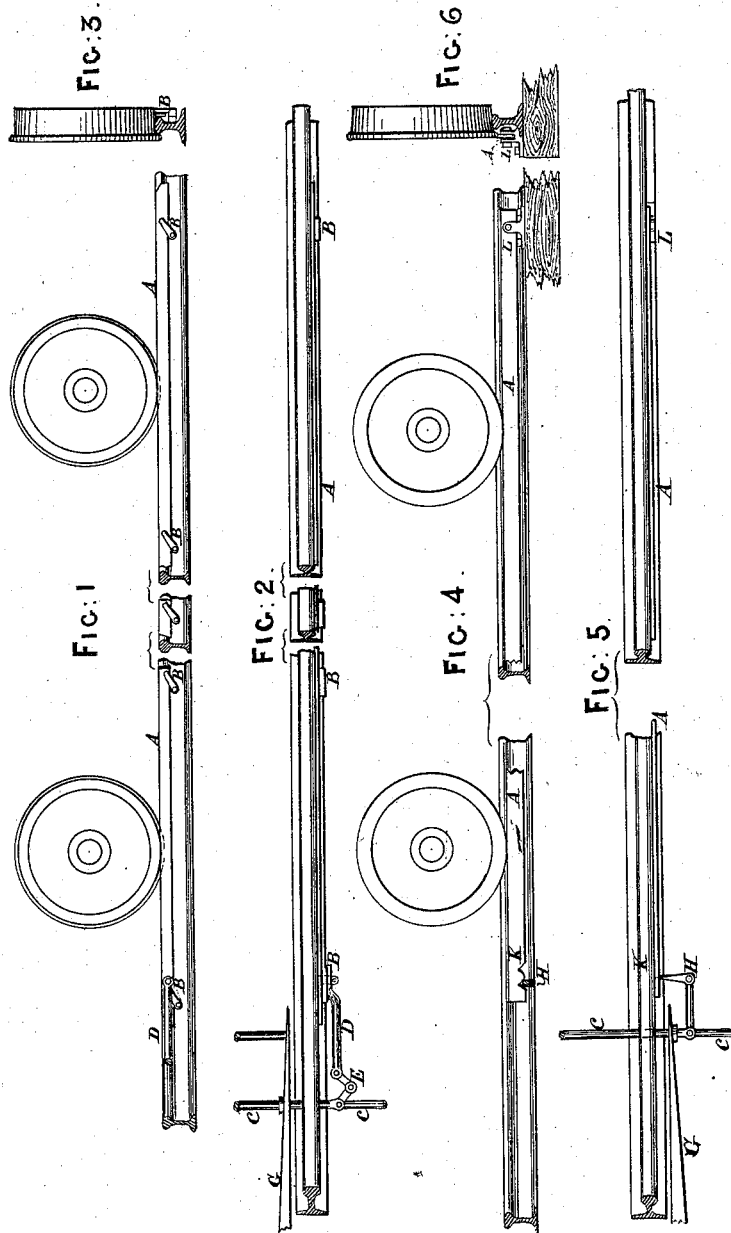


J. LIVESEY, J. EDWARDS, & W. JEFFREYS.  
 APPARATUS FOR LOCKING RAILWAY-SWITCHES.

No. 194,694.

Patented Aug. 28, 1877.



Attest:  
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# UNITED STATES PATENT OFFICE.

JAMES LIVESEY, OF WESTMINSTER, JOHN EDWARDS, OF CASSLAND CRESCENT, SOUTH HACKNEY, AND WILLIAM JEFFREYS, OF 58 MAWBAY ROAD, ASSIGNORS TO JOHN SAXBY AND JOHN STINSON FARMER, OF CANTERBURY ROAD, KILBURN, MIDDLESEX COUNTY, ENGLAND.

## IMPROVEMENT IN APPARATUS FOR LOCKING RAILWAY-SWITCHES.

Specification forming part of Letters Patent No. 194,694, dated August 28, 1877; application filed June 26, 1877.

To all whom it may concern:

Be it known that we, JAMES LIVESEY, of 9 Victoria Chambers, Westminster, JOHN EDWARDS, of Cassland Crescent, South Hackney, and WILLIAM JEFFREYS, of 58 Mawbey Road, all of the county of Middlesex, England, have invented an Improved Apparatus for Locking Railway-Switches; and do hereby declare that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein we have set forth the nature and principles of our said improvement, by which our invention may be distinguished from others of a similar class, together with such parts as we claim and desire to secure by Letters Patent—that is to say:

This invention relates to means of automatically locking the switches or junctions of one line of rails with another, so that while a train is coming up to and passing over the switches they cannot be altered. This locking is effected by means of a long bar mounted by the side of the track at or near a junction or set of switches, the said bar being connected with the switches, and so arranged that while any wheel of a train is passing along the bar it cannot be moved, and the bar being of greater length than the interval between any two wheels of the train, the switches to which the bar is connected are thus retained firmly in position until the last wheel of the train has passed the bar.

The accompanying sheet of drawings shows two ways of mounting the bar so as to operate as described above.

Figure 1 represents a side view, and Fig. 2 a plan, of one of the rails in advance of a set of switches, with the locking-bar applied thereto; and Fig. 3 is a transverse section through the rail and bar, showing a wheel of the train in the act of passing along the bar.

The bar A is mounted on radius-arms B by the side of the rail, so that it is free to be moved longitudinally through a certain stroke in either direction, but in so moving every

point in the bar has to describe a circular arc. At either end of the stroke the upper edge of the bar is level with the running surface of the rail, but in moving from the one extreme of its stroke to the other, the bar must necessarily rise above that level, and as it cannot so rise while any wheel of the train is passing over it, as shown in Fig. 3, it follows that during the passage of a train the bar cannot be moved longitudinally in either direction.

From the bar A a rod, D, extends, and is jointed to the one arm of a bell-crank, E, the other arm of which is jointed to the rod C, which is affixed to and moves the shifting-rails G of the switch.

Owing to this connection, whenever these shifting-rails are moved either way the bar A is caused to make a stroke longitudinally, either from or toward the switch, and if the bar be prevented from making this stroke, as it is by one or more wheels of the train passing over it, then the switch-rails connected to the bar are prevented from moving.

Fig. 4 is a side view; Fig. 5, a plan, and Fig. 6 a transverse section of the rail and bar arranged in a modified form for a like purpose.

In this case the bar A is mounted on a horizontal pin near one end at L, and near its other end at K there are formed on its lower edge two notches with a projecting part between them sloping both ways. A rod, C, connected to the moving switch-rails G, is jointed to the one end of a bell-crank lever, H, the other arm of which projects into one or other of the notches K in the bar.

Whenever the switch-rails G are shifted the end of the lever H has to make a stroke from the one of the notches K to the other, and in passing under the intermediate projecting part raises the bar A, which works on L as a fulcrum. While the arm of H is engaged in either of the notches K, the upper edge of the bar A is sufficiently low to clear the flanges of the passing wheels, but cannot be raised while a wheel is over it. As the switch-rails cannot be shifted without making the arm of H pass from the one notch to the other and

thereby raising the bar A, it follows that they cannot be shifted while any wheel is passing along the bar.

Having thus described the nature of our invention, and two modes in which a bar can be practically applied at a set of switches so as to cause a train to lock the switches and to keep them locked while it is approaching to and passing over them, we would remark that the mode of mounting such a bar and of connecting it to the switch-rails may be varied so long as the bar is of greater length than the interval between any two successive wheels of the train, and is so mounted that passing wheels or their flanges offer an impediment to the motion of the bar, and thereby prevent the possibility of moving the switches till all the wheels of a train have passed the bar.

We claim as our invention—

In combination with the switch-rails of a railroad-track, and the mechanism for shifting the same, a bar mounted horizontally along-

side of one of the main rails, and connected with the switch-rails and their shifting mechanism by means of a lever or system of levers, the said bar being located in such relation to the switch-rails that it will be prevented by the wheels of a passing train from being moved, and will thus hold the switch-rails in a locked position while said train is passing over the same, whereby all possibility of moving said switch-rails is prevented until the train has passed, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses, this 8th day of June, 1877.

JAMES LIVESEY.  
JOHN EDWARDS.  
WILLIAM JEFFREYS.

Witnesses:

JNO. P. M. MILLARD,  
JOHN DEAN.