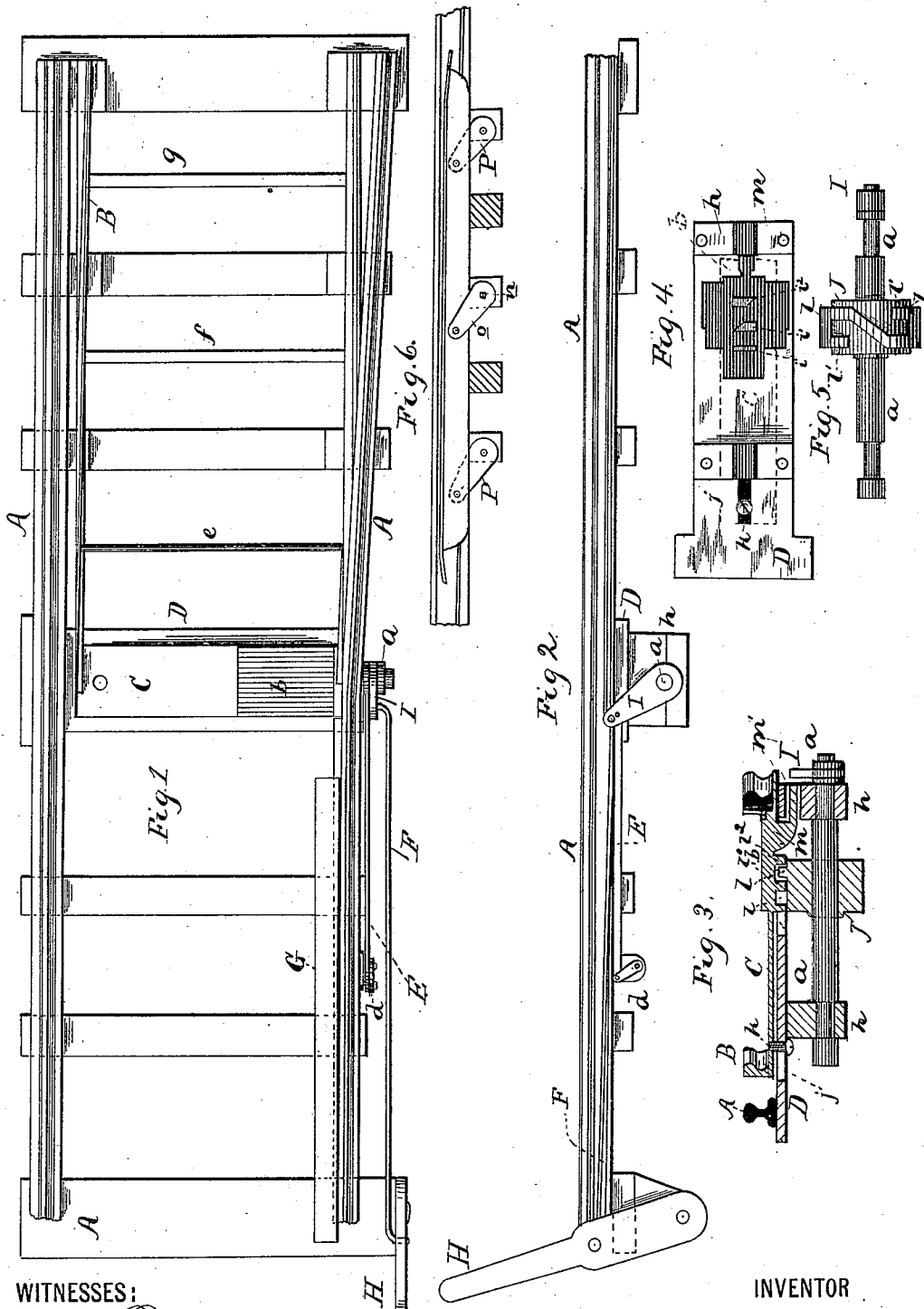


(No Model.)

R. H. ISBELL.  
RAILROAD SWITCH.

No. 291,908.

Patented Jan. 15, 1884.



WITNESSES:

W. T. Robertson  
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# UNITED STATES PATENT OFFICE.

ROBERT H. ISBELL, OF NEW YORK, N. Y.

## RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 291,908, dated January 15, 1884.

Application filed February 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. ISBELL, of the city of New York, in the county of New York and State of New York, have invented a new and useful Improvement in Railroad-Switches, and in the method of shifting and locking the same.

My invention relates to that class of railroad-switches in which a cam is used to move the switch; and the invention consists in the peculiar construction, arrangement, and operation of parts as hereinafter more fully described and claimed.

In order that my invention may be more easily and clearly understood and more readily performed, I will give a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, similar letters indicating similar parts, making a part of this specification, in which—

Figure 1 is a view of said switch, looking from above. Fig. 2 is a side view. Fig. 3 is a vertical sectional view of switch through the lines *c c*. Fig. 4 is a view showing the under side of the plates C and D. Fig. 5 is a view of the shaft, showing the cam thereon. Fig. 6 is a side view of the plate G and its connections.

A A represent the fixed rails, and B B the movable, rails of said switch, which are connected together by the rods *e f g*, and also at their points by the plate C, (as shown in Fig. 3,) having below it a series of depending lugs or projections *i i'*, (see Figs. 3 and 4,) which form grooves, in which works a peculiarly-formed cam, hereinafter described, the plate C being raised at *b*, as shown in Figs. 1 and 3, to make room for the working of said cam. On the under side of the plate C is formed a downwardly and outwardly projecting arm, *m*, which works in a guide, *m'*, in one of the bearing-blocks *h*, as shown in Fig. 3. This plate C is also guided in its lateral movement by means of the screw *k* on the under side of the plate C, working in a slot, *j*, in the plate D. D represents a plate, to which the fixed rails A are secured, and having bearing-blocks *h h*, in which the shaft *a* is journaled, which shaft carries a collar, J, securely keyed thereto, on which is formed a peculiarly-shaped cam-rib, *l*, (clearly shown in Fig. 5,) which cam works

in the grooves formed by the projections *i i'* on the plate C. The shaft *a* projects at one side beyond the rails, and has secured thereto the arm I, which is connected to the hand-lever II by the link or rod F. At E is another link, one end of which is also secured to the arm I, and its other end is pivoted to the arm *d*, which is made fast to a short rock-shaft *u*, carrying another arm, *o*, whose other arm is connected to the bar G, which bar is carried by links *p p*, pivoted in hangers fixed below the rails A. When it is desired to change the switch, the operator moves the lever H, and thus (through the link F and arm I) moves the shaft *a* and cam J, thus causing the diagonal portion of the rib *l* to move the plate C, and thus change the position of the switch-rails. After the diagonal or inclined part of the rib has moved the switch-rails, the straight portion thereof, next to the diagonal part, enters the groove between *i'* and *i''*, and the returned end *l'* comes into play, passing on the outside of the projection *i'* or *i''*, as the case may be, and thus holding the switch-rails fast in the desired position. These ends *l'* are very important because, owing to the necessity of the groove between the projections *i'* and *i''* being wider than the rib, to allow of the diagonal part of the rib passing through the groove, there will necessarily be some "lost motion" between the projections and the straight portion of the cam-rib; but by the use of the returned ends *l'* the projections *i'* and *i''* can be closely embraced on each side, and the switch securely locked in place thereby. For the usual operation of the switch the projection *i* is not actually necessary; but in case the central of the three projections should accidentally become broken, the third projection would then come into play and assist in locking the switch in position, as both the end *l'* and the opposite straight portions of the cam-rib would then be between the outer projections.

The plate G is placed close to the inner side of either of the rails, and may be extended to any desired length. As the movement of the lever which opens or closes the switch also moves the said plate, and as the movement of said plate is upward as well as backward or forward, the wheel-flanges will, while the train is passing over said plate G, prevent the up-

ward movement of the same, and thus securely lock the switch until the train passes beyond said plate, which does not occur until after the last car of the train has entered the switch. This is a safeguard against the switch-tenders changing the switch until the entire train has passed it.

The lever E may, if desired, be placed on the inner side of the rails, and there fastened to a projection on the shaft *a*, and also either directly to the said plate G or to an arm thereon similar to those above described.

I consider the use and combination to the plate G above described to be advantageous, but it is not necessary to the operating of my said invention for shifting switches and locking or unlocking the same.

I am aware that it is not new to use a cam to move a switch, and I am also aware that bars or plates have been used which would prevent the moving of the switch when the weight of the cars were on said bars or plates, and I therefore make no claim, broadly, to either of these features.

What I claim as new is—

1. The combination, in a switch, of the movable switch-rails and the plate C, provided with projections *i' i''*, with the rocking cam-rib *l*, having a return end, *l'*, adapted to hold a projection on said plate between the rib *l* and its return end *l'*, substantially as described. 25 30
2. The combination, in a switch, of the rails B B, plate D, connected with the fixed rails, and carrying the bearing-block *h*, the plate C, connected with the movable rails, the shaft *a*, carrying a cam working in a groove formed in said plate C, and means for rocking said shaft and cam, substantially as described. 35
3. The combination, with the shaft *a*, and means, substantially as described, for moving the switch-rails, of the plate G, supported on the links *p p*, the arm *o*, connected to said plate, the rock-shaft *n*, link E, and arm I, attached to the shaft *a*, as and for the purposes set forth. 40

ROBERT H. ISBELL.

Witnesses:

THOS. ALEXANDER, Jr.,  
JAMES A. PATRICK.