

(No Model.)

F. EGGE & H. SCHAFFER.
RAILWAY SWITCH.

No. 581,229.

Patented Apr. 20, 1897.

Fig. 1.

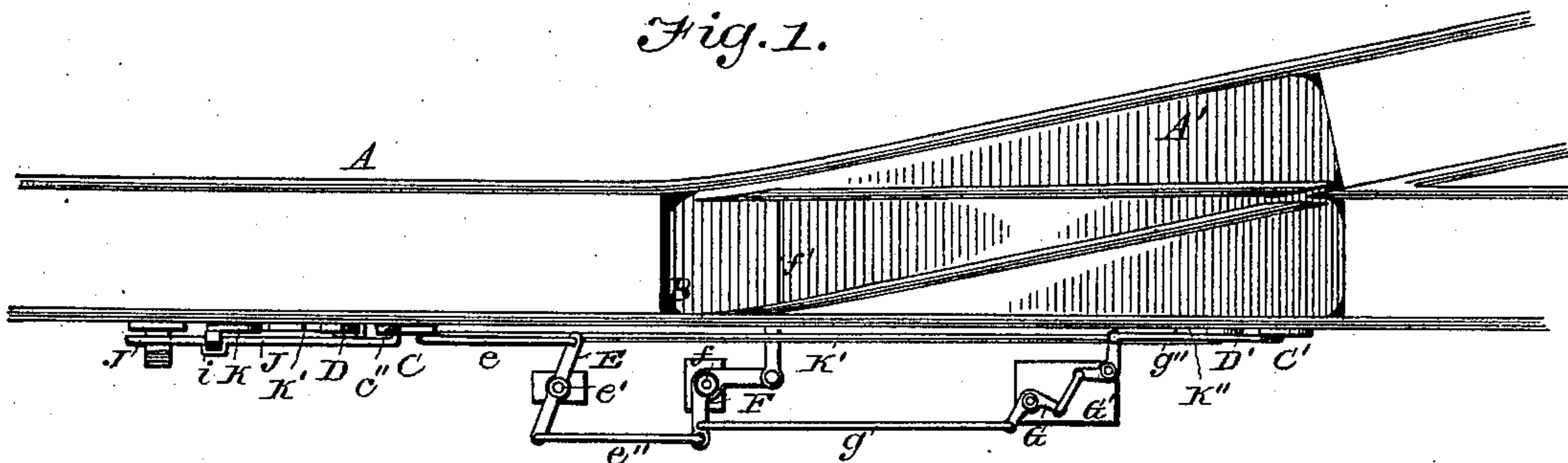


Fig. 2.

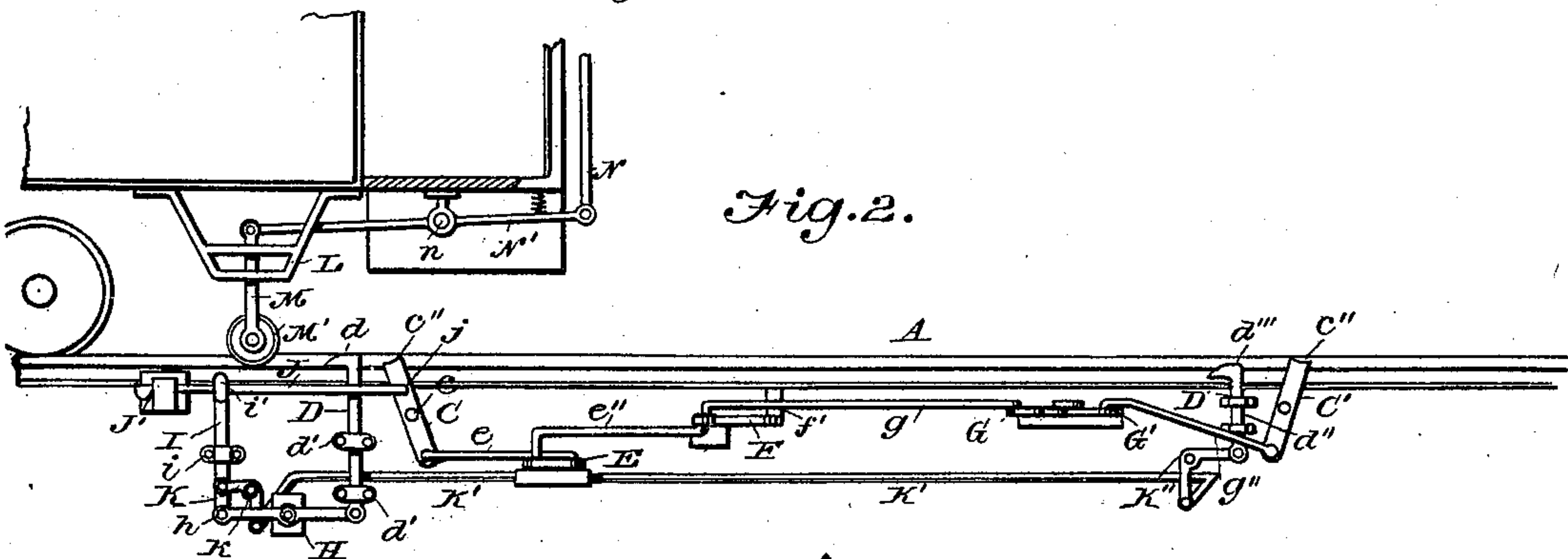
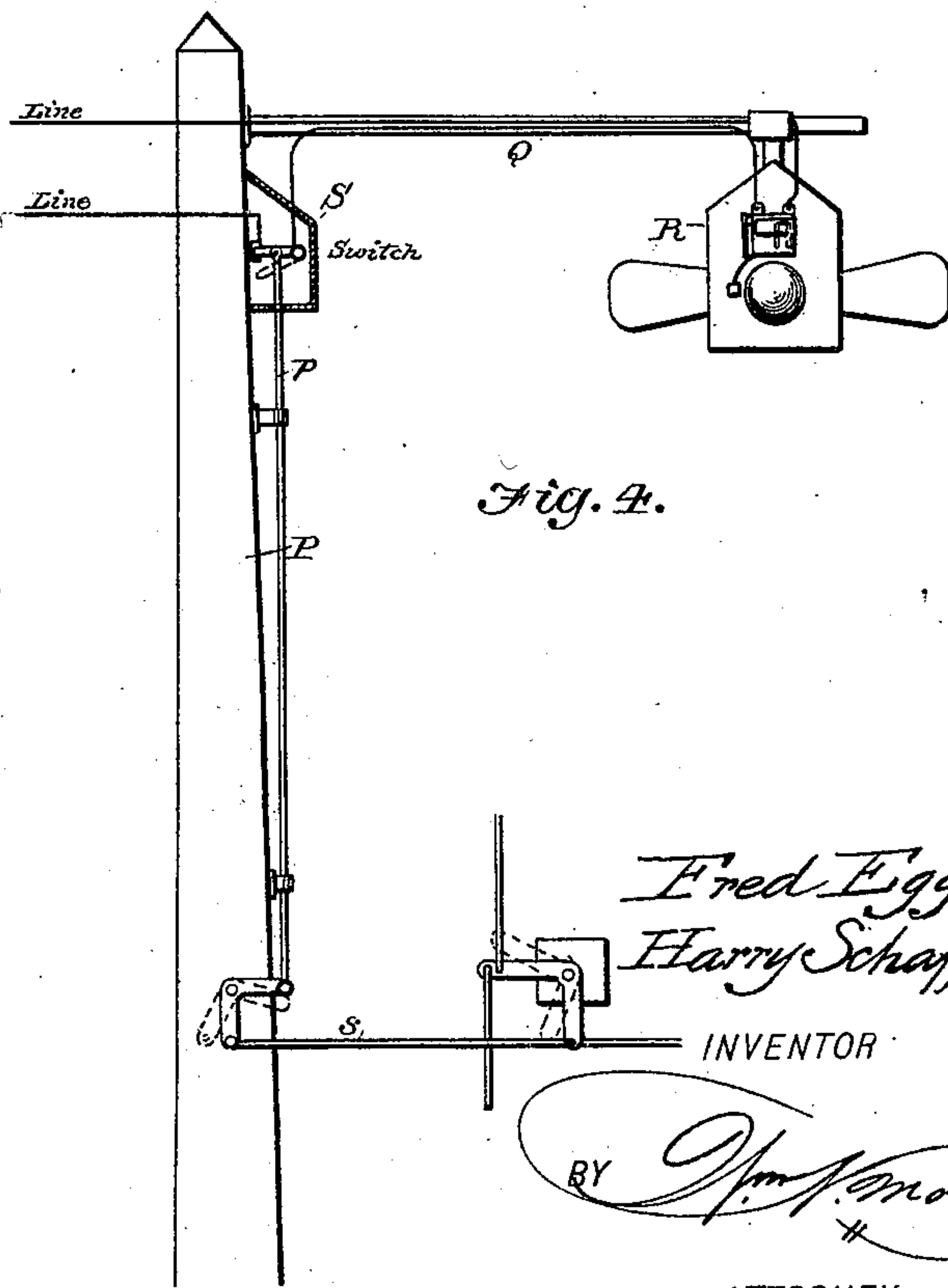
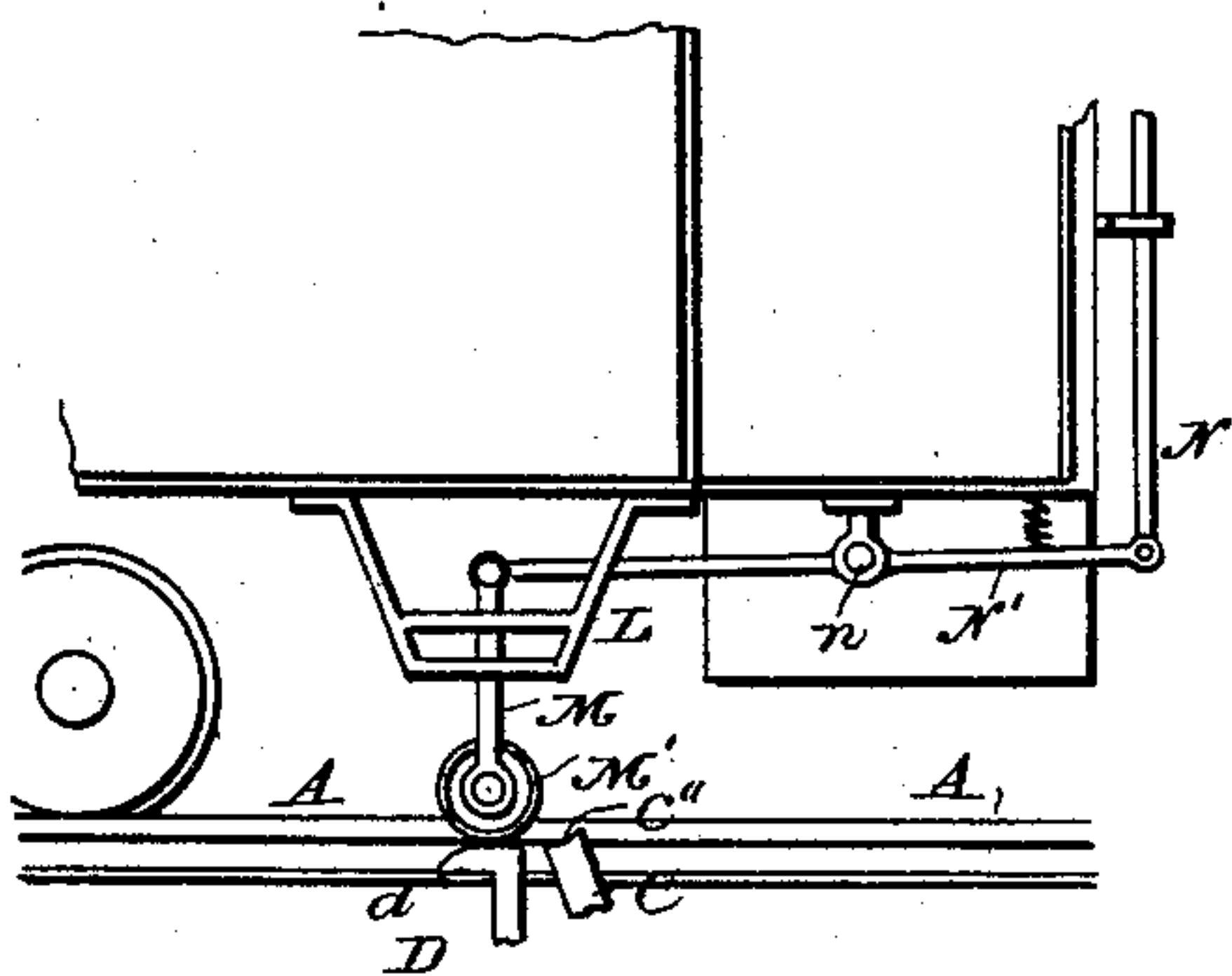


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRED EGGE AND HARRY SCHAFFER, OF ALLENTOWN, PENNSYLVANIA,
ASSIGNORS OF ONE-THIRD TO JOHN F. P. BIRKENSTOCK, OF SAME
PLACE.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 581,229, dated April 20, 1897.

Application filed January 18, 1897. Serial No. 619,537. (No model.)

To all whom it may concern:

Be it known that we, FRED EGGE and HARRY SCHAFFER, citizens of the United States, residing at Allentown, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to improvements in railway-switches which are more especially designed for use in connection with street-railways; and the objects of our invention are, first, to provide a simple and efficient mechanism which may be operated automatically by the motorman or other attendant in the car lowering into position a tripping device which serves to automatically throw the switch when the car approaches the same and which may be used to restore the switch-rail to its normal position; secondly, to provide improved means for locking in place the movable switch-rail or the point-rail, so as to prevent the same from being accidentally thrown, which locking mechanism is designed to be released prior to the movement of the switch-rail, and, thirdly, to an automatic electric signal mechanism which may be set by a passing car to display a danger signal at the next crossing, thus giving notice to pedestrians, teams, and the public of the approach of the car.

To the accomplishment of these ends our invention consists in the novel combination of devices and in the construction and arrangement of parts, as will be hereinafter fully described and claimed.

To enable others to understand our invention, we have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of our switch with the means for operating the same automatically. Fig. 2 is an elevation showing the mechanism, in connection with the tripper on the car, by which the switch may be thrown. Fig. 3 is a detail view of the tripper on the car. Fig. 4 is a view illustrating the danger and safety signal operating mechanism for use in connection with the switch.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which—

A designates an ordinary single-track railway, and A' is a branch leading therefrom. At this branch is situated the usual shifting point or switch rail B, which normally lies to direct a car from the main track to the branch siding, but we have provided mechanism by which the point-rail may be shifted by an approaching car without requiring the conductor or motorman to dismount for the purpose of adjusting the switch.

On one side of the point-rail B lies the switch-lever C and the locking-detent D, and on the other side of the point or switch rail is the other switch-lever C' and the locking-detent D', which are connected with each other and with the point-rail B by the means which we will now proceed to describe. The switch-lever C is fulcrumed at a point intermediate of its length, as at *c*, and to one end of this lever is pivoted a rod *e*, which connects to a lever E, fulcrumed centrally at *e'* and having another rod *e''* attached to its other end. This rod *e''* pivots to a bell-crank lever F, fulcrumed at *f* and having a rod *f'* connected to the point or switch rail B. To the same arm of the bell-crank switch-lever F to which the rod *e''* is attached is connected another rod *g*, which connects to a system of transmitting-levers G G', from which extends a rod *g''*, that is attached to the heel of the other switch-lever C', whereby the two switch-levers are operatively connected together to insure their simultaneous movement. These switch-levers C C' are fulcrumed adjacent to one of the rails of the track A, and the ends of said levers adjacent to the track-rail are rounded or beveled to form the seats *c''* for the purpose of having the tripper on the car properly engage with said switch-levers to actuate the same.

The locking-detent D has a head *d*, which lies adjacent to the track-rail in advance of the switch-lever C, and this detent D is fitted in vertical guides *d'* to insure proper play to the detent. To the lower end of this detent D is attached one end of a centrally-fulcrumed lever H, the other end of which is pivoted at *h* to a lifting-rod I, which passes through a

vertical guide *i*. The upper end of this vertical lifting-rod has an eye or loop *i'*, through which passes the locking-rod J, one end of which is pivoted at *j* to the switch-lever C and the other end of which locking-rod is formed with a hook or beak that is adapted to engage with the fixed keeper J', arranged in a position for the hooked end of the locking-rod to engage therewith, so as to lock the rod J and the switch-lever connected therewith. It is obvious that when the detent D is depressed by the wheel striking the head *d* thereof the lever H is moved to raise the rod I, which lifts the locking-rod J so its hooked end is raised free from the keeper J', and as the car-tripper immediately thereafter strikes the lever C the latter is turned on its fulcrum to pull the rod J endwise away from the keeper J'. To the lifting-rod I is attached one arm of a bell-crank lever K, fulcrumed at *k* and having attached to its other arm a locking-rod K', which extends along the middle of the track A, past the switch-point rail B, down to the other detent D', to which detent said rod K' is connected through the bell-crank lever K''. This detent D' is also fitted in a guide *d''* to have its head *d'''* adjacent to the track-rail to lie in the path of the car-tripper. It will thus be seen that the two detents D D' are connected through a system of rods and levers to insure their simultaneous operation, and said detents serve to control the lifting-rod I, which adjusts the locking-bar into and out of position to engage with the keeper.

The tripper mechanism on the car for operating the detents and the switch-lever is shown by Figs. 2 and 3 of the drawings, in which it is represented as consisting of the hanger L, the vertically-movable arm M, carrying the flanged friction-wheel M', the hand-lever N, and the connecting-lever N'. The hand-lever is hung on the car so as to be within convenient reach of the driver or motorman, and its lower end is attached to the lever N', which is fulcrumed centrally, as at *n*. The rear end of this lever N' is pivoted to the upper end of the arm M, which is guided in aligned bearings on the hanger L, that is fastened to the car in a suitable position for the arm M to have its wheel or roller strike the detents and switch-levers. This arm may be raised by operating the hand-lever to raise its wheel or roller high enough to clear the heads of the detents and switch-levers, and thus permit the car to pass from the main track to the siding without changing the position of the switch or point rail. When, however, it is desired to have the car continue to travel along the main track, the motorman operates the hand-lever N to lower the arm M and the wheel M' thereon just before the car reaches the switch point-rail B. The flanged wheel M' first strikes the detent D, which operates to lift the rod I, and in turn raises the locking-bar J free from the keeper before the wheel M' strikes the end

of the switch-lever C. This lever C is thus released from the locking action of the rod J and its keeper J', and the lever C is turned by the wheel to actuate the point-controlling lever F to throw the point-rail B and allow the car to continue to travel along the main track. As the detent D is depressed it acts, through the rod K' and levers K K'', to raise the other detent D' into operative position, and the switch-lever C also acts, through the connecting mechanism, to set the other lever C' into operative position. After the car passes the switch or point rail and as its wheel M' strikes the detent D' the latter actuates the levers and rod K K' K'' to lower the rod J into position to engage with the keeper J', while the wheel M', when it strikes the lever C', throws the latter to actuate the connecting mechanism, so as to restore the point-rail B and move the lever C to its former position, which lever C impels the rod J into engagement with the keeper J', thereby locking the switch.

It will thus be seen that the switch is locked securely in place and that the mechanism is automatically controlled to first unlock the switch, then to set or adjust it, and finally to restore the switch to its locked condition.

In connection with our improved switch mechanism we employ an automatic signal mechanism to display a danger-signal at the next preceding crossing in order to warn the public of the approach of the car. At a suitable place adjacent to the crossing we erect a post or standard P, having an arm Q, which carries a signal, (indicated at R.) On this post is attached a box S, containing an electric switch mechanism which is included in an electric circuit with the signal R. With this switch is connected a rod *p*, which works in suitable guides attached to the post P, and the lower end of this rod has an arm which is pivoted to a rod *s*. When the car passes the switch mechanism and operates the switch-rail B in the manner described, the switch-lever in turn actuates the rod *p*, which in turn shifts the switch to close the electric circuit and cause the danger-signal to be displayed at the signal R.

The rod K', which connects the detents D D', is to be housed within a suitable trunk or casing similar to the method adopted for protecting the transmitting-rods in interlocking switch systems, and the operating parts of our improved switch are to be protected by cast-metal boxings or casings which will exclude dirt, snow, &c., from the working parts.

We are aware that changes in the form and proportion of parts and in the details of construction herein shown and described as the preferred embodiment of our invention may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of our invention, and we therefore reserve the right to make such alterations as fairly fall within the scope of our invention.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of a slidable detent, a lifting-rod connected therewith, a switch-lever actuating through suitable mechanism a switch point-rail, a keeper, and a locking-rod connected to the switch-lever and engaging with the lifting-rod, for the purposes described, substantially as set forth.

2. The combination with a movable point-rail of a railway-switch, of a pair of detents situated on opposite sides of said point-rail and connected through intermediate mechanism for joint operation, a pair of switch-levers also situated on opposite sides of said point-rail and also connected with each other and with said point-rail, a keeper, a locking-rod arranged to engage with said keeper and connected to one of the switch-levers, and a lifting-finger operatively connected with the detents and with the locking-rod to raise the latter and free the switch-lever before a car-tripper engages with said switch-lever, as and for the purposes described.

3. The combination with a movable point-rail, of the detents D, D' fitted in suitable guides on opposite sides of said point-rail and having their headed ends adjacent to one of

the track-rails, mechanism connecting the two detents for joint operation, the switch-levers C, C' having their curved ends adjacent to a track-rail, connecting mechanism which joins the two levers C, C' together and connects them operatively with the point-rail, a keeper, a locking-rod J pivoted to one switch-lever and arranged to engage with the keeper, a lifting-rod connected with said locking-rod, and means for connecting the lifting-rod with one of the detents, as and for the purpose described.

4. The combination with a switch-actuating mechanism consisting of the pair of detents, the switch-rails, the switch-lever for actuating the switch-rails, the keeper and locking-rod, of a signal mechanism in an electric circuit, an electric switch also included in said electric circuit, and a rod mechanically connected with said switch and with the switch-actuating mechanism to open and close the circuit, as and for the purposes described.

In testimony whereof we affix our signatures in presence of two witnesses.

FRED EGGE.

HARRY SCHAFFER.

Witnesses:

JOSEPH S. COLE,

BENJAMIN C. ROTH.