

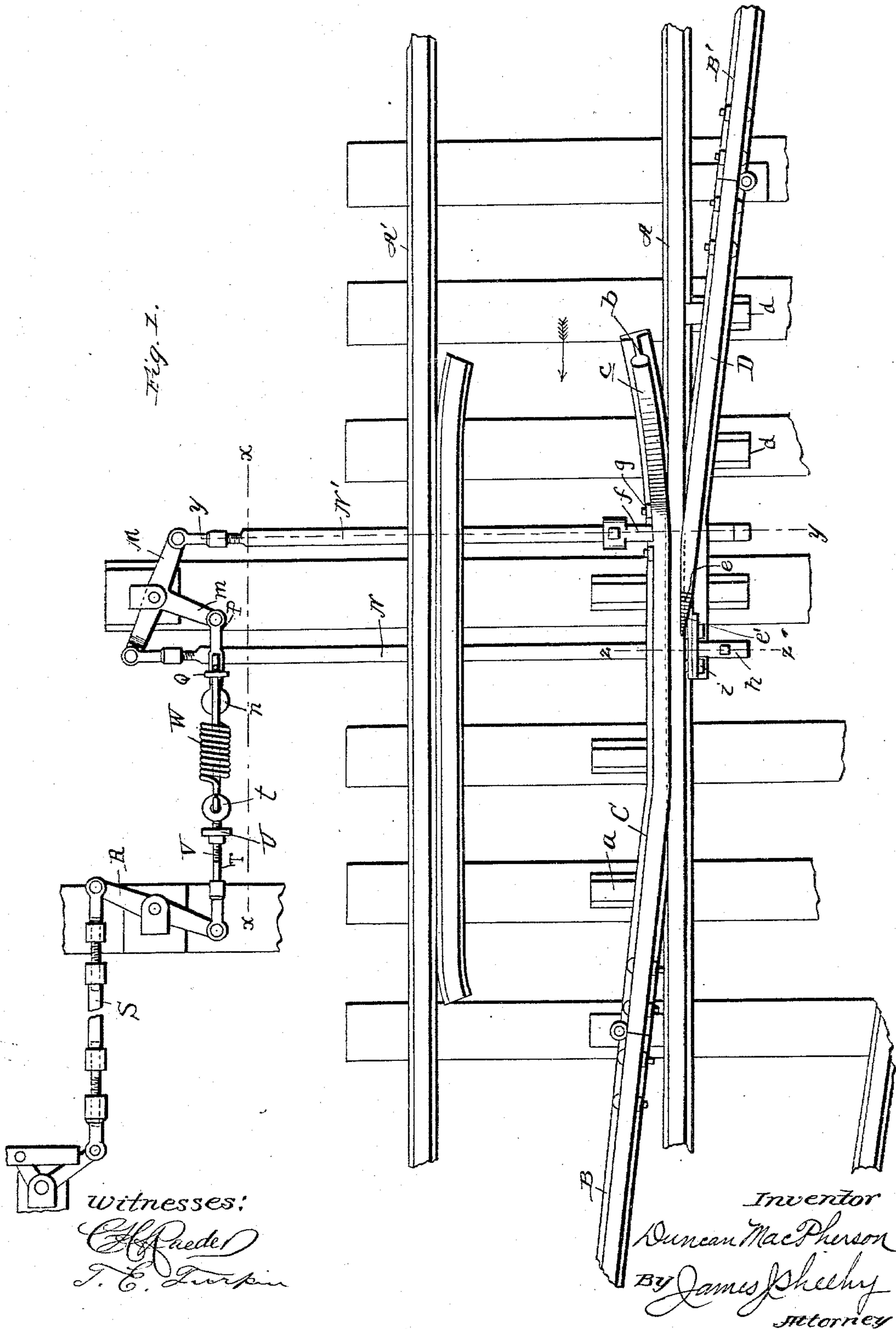
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3 Sheets—Sheet 1.

D. MACPHERSON.  
RAILWAY FROG.

No. 552,916.

Patented Jan. 14, 1896.



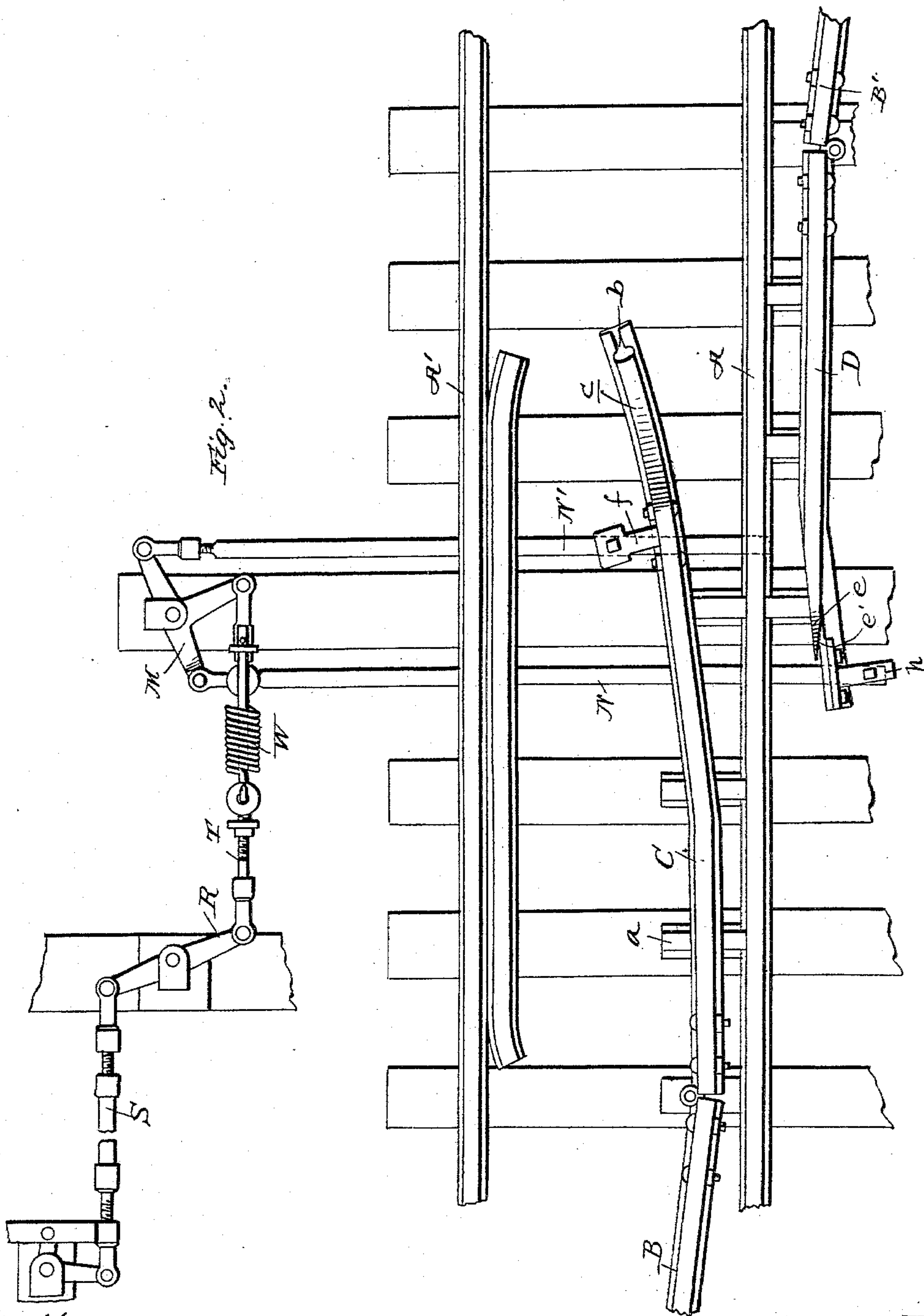
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RAILWAY FROG.

No. 552,916.

Patented Jan. 14, 1896.



witnesses:

Chas. F. Rader  
T. C. Lippman

*Inventor*

Duncan MacPherson  
By James J. Sheehy  
Attorney

(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

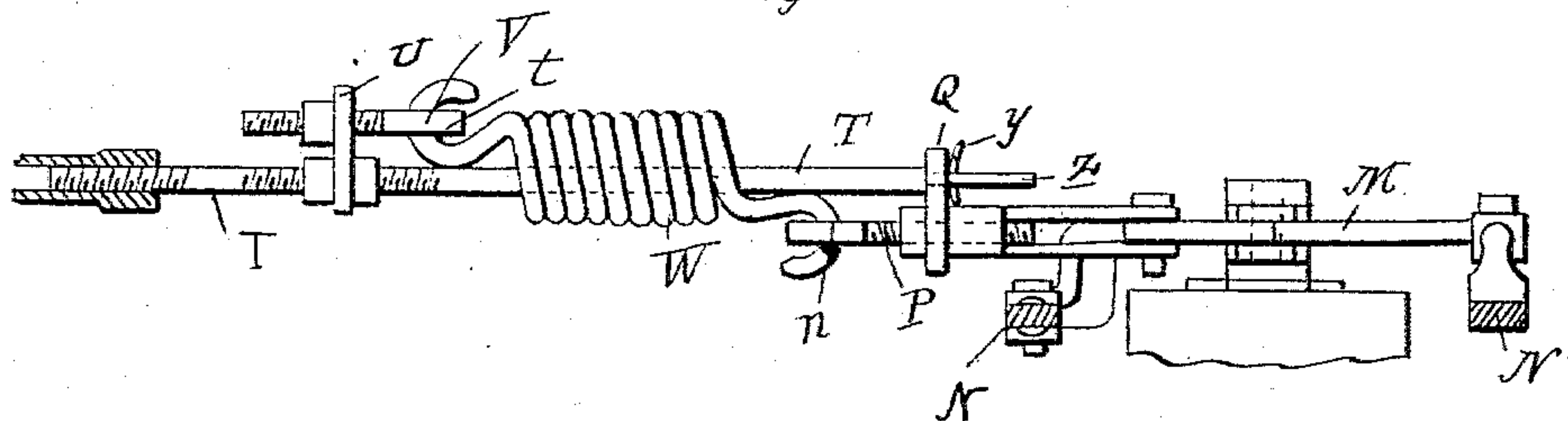


Fig. 4.

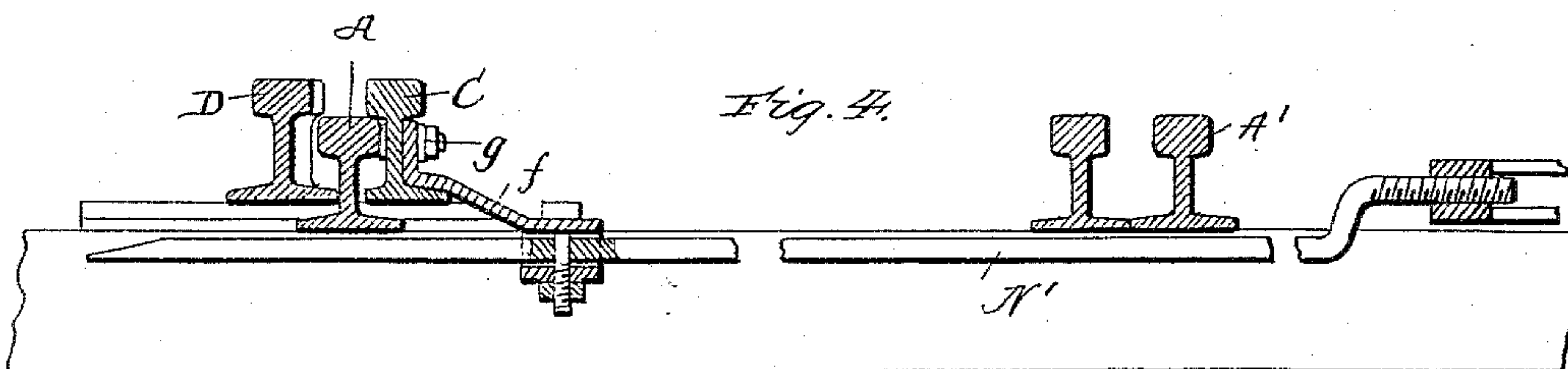


Fig. 5.

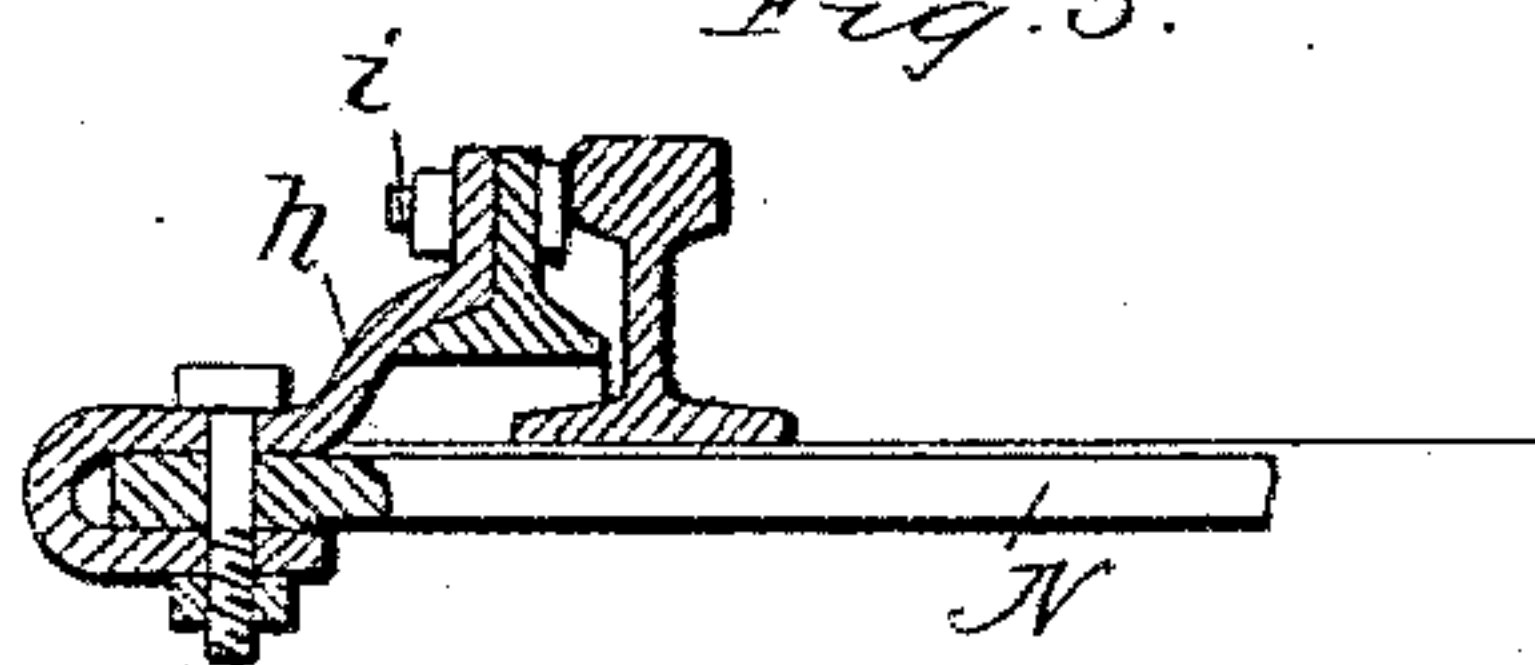
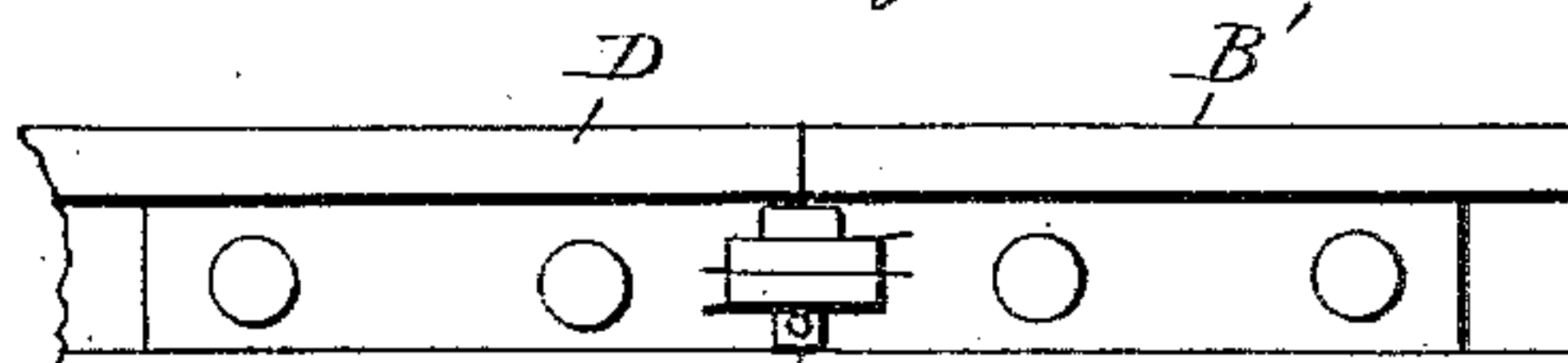


Fig. 6.



witnesses:

*C. H. Rader*  
*J. E. Turpin*

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*Duncan MacPherson*

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Attorney



# UNITED STATES PATENT OFFICE.

DUNCAN MACPHERSON, OF MONTREAL, CANADA.

## RAILWAY-FROG.

SPECIFICATION forming part of Letters Patent No. 552,916, dated January 14, 1896.

Application filed July 31, 1895. Serial No. 557,725. (No model.)

*To all whom it may concern:*

Be it known that I, DUNCAN MACPHERSON, a citizen of Canada, residing at Montreal, in the county of Hochelaga and Province of Quebec, Canada, have invented certain new and useful Improvements in Railway-Frogs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in that class of railway-frogs which are designed for use in conjunction with an unbroken main-line rail, and it has for its general object to provide a simple and cheap movable frog of the character mentioned which may be made out of two pieces of ordinary steel rail and equally as strong as a fixed frog, and one whose parts will rest away from the main-line rail when the switch is set for a clear main track, so as not to be damaged by fast trains passing over said track, and which when inadvertently set for a siding will permit a train coming from the direction opposite to the switch to pass through without being raised or jolted, and this without in any manner injuring the frog or parts connected therewith or the rolling-stock.

Other objects and advantages of the invention will be fully understood from the following description and claims, when taken in connection with the annexed drawings, in which—

Figure 1 is a plan view of a portion of a railway, illustrating my improved frog as set for a siding, together with the mechanism through the medium of which the frog is adjusted. Fig. 2 is a similar view with the frog set for a clear main track. Figs. 3, 4, and 5 are enlarged sections taken in the planes indicated by the lines *xx*, *yy*, and *zz*, respectively, of Fig. 1; and Fig. 6 is a detail elevation.

Referring by letter to said drawings, A A' indicate unbroken main-track rails.

B indicates that portion of an inner broken turn-out rail which rests between the main rails, and is fully spiked, so as to securely hold it in position.

B' indicates that portion of the inner broken turn-out rail which rests on the outside of the

main-track rails, and is also fully spiked, and C indicates the inner member of my improved frog, which is suitably connected in a hinged manner with the heel of rail B, and is mounted upon plates *a*, spiked to the sleepers or ties, so that it will rest sufficiently high to enable the flanges of wheels passing it to clear the main rail A. This frog member C may be and preferably is, for the sake of economy, formed of a piece of ordinary steel rail, and by reason of its being mounted upon the plates *a* it is adapted to overlap the rail A, as better shown in Fig. 4, and conduct the wheels of a train across the same. The said member C is bent so that its free end, when it is in the position shown in Fig. 1, will rest away from the rail A, and not offer an obstruction to the passage of the wheels of a train traveling in the direction indicated by arrow in Fig. 1, and the said end is beveled, as indicated by *b*, so that it will not be caught by anything hanging from a passing train, while the upper side of the forward portion of the member is inclined, as indicated by *c*, for a purpose presently described.

D indicates the outer frog member, which is connected in a hinged manner to the end of the turn-out rail B', and is mounted upon plates *d*, spiked to the ties, so as to enable it also to overlap the main rail A, as better shown in Fig. 4. This member D, like the inner member C, may be and preferably is formed of a piece of steel rail, and it preferably has its upper side beveled at its free end, as indicated by *e*, so as to permit the treads of wheels to pass from the member C onto it without knocking against or damaging it and without jolting, and also has the outer side of its head beveled at its free end, as indicated by *e'*, so as to enable the flanges of the wheels to better engage it as they pass off of the member C, and furthermore has its inner side beveled at its free end.

When my improved frog is in the position shown in Fig. 2, or out of operation, it will be observed that both members C D rest at such a distance from the main rail A that they will not be touched and consequently will not be damaged by the wheels of fast trains passing over the main-track rails, which are the chief factors in damaging and destroying frogs; and it will also be observed that



by virtue of the main rail being unbroken and continuous and the frog members resting at a considerable distance from the same there can be no possibility of loose or wide-gage wheels taking the wrong side of the frog-point. It will also be observed that when the frog is in the position shown in Fig. 1, or set for a siding, it is just as strong as a fixed frog and is just as reliable, if not more so. Indeed, when set for a siding my improved frog will permit the wheels of a train moving on main track in the direction indicated by arrow in Fig. 1 to pass through without any rise or jolt, and as the flanges of the wheels press against the frog member C, while the outer sides of the wheels press against the member D, it will be seen that the strain on the parts of the frog is equally distributed, and consequently neither the members C D nor any of the parts connected therewith will be strained out of shape or otherwise damaged.

My improved frog may be used to advantage in conjunction with various kinds of switches and may be operated through the medium of any suitable mechanism. I prefer, however, to use the frog in conjunction with the switch disclosed in my Letters Patent No. 465,531, and operate it through the medium of the improved mechanism illustrated, which is designed to be connected with the switch-operating mechanism (not illustrated) so that both switch and frog may be operated in concert in the ordinary manner from a single switch-stand.

The frog-operating mechanism, as better illustrated in Figs. 1 and 2, comprises the plate *f*, which is connected with the frog member C by bolts *g*, the heads of which are designed to bear against the head of main rail A when the frog is in the position shown in Fig. 4; the plate *h*, which is connected with the frog member D by bolts *i*, the heads of which are also designed to bear against the head of rail A when the parts are in the position shown in Fig. 4; the T-lever M, mounted opposite the frog members and preferably at the side of the track, and the rods N N', which are pivotally connected to opposite ends of the lever M and are pivotally connected at their opposite ends to the plates *f* and *h*, respectively. By virtue of this construction it will be seen that when the lever M is rocked the frog members C and D will be moved synchronously in opposite directions toward or from the main rail A, according to the direction in which the lever M is rocked.

P indicates a rod which is connected to the branch *m* of lever M at one end and is provided at its opposite end with an eye *n*.

Q indicates a plate which is mounted, preferably in an adjustable manner, as shown, upon the rod P.

R indicates what I term a "compensating lever," which has one end connected to a rod S, designed to be connected in a suitable

manner with switch-operating mechanism (not illustrated) and its opposite end connected with a rod T, which has a reduced portion *g* passed loosely through the aperture in plate Q.

U indicates a plate mounted, preferably in an adjustable manner, upon rod T.

V indicates a rod connected to the plate U and having an eye *t*, and W indicates a coiled spring which surrounds the rod T and has its opposite ends connected to the eyes *n t* of the rods P V, respectively. This spring W is of such a tension as to allow the frog members to be readily adjusted through the medium of the connecting-rod T, and also to give sufficiently to allow wheels traveling on rail A in the direction indicated by arrow in Fig. 1 to push the frog members away from said rail A, as before described. By reason of the wheels engaging both members of the frog, as just stated, they exert a firm steady pressure in two directions, and thereby obviate any tendency to twist or disturb any of the parts connected with the frog members.

If desirable the spring W can be locked through the medium of a light pin *y*, passed through the connecting-rod T, as better shown in Fig. 3. This affords all the advantages of a rigid connection with the switch-operating mechanism and yet allows the spring W to act in case the frog is set for a siding when a train passes over the main track in the direction indicated by arrow, for it will be observed that the engagement of the first wheel with the frog members C D will break the pin *y*.

I have termed the lever R, before described, a "compensating lever" for the reason that it will compensate the expansion and contraction of the parts, so that the mechanism will work freely at all times, which is a desideratum.

When desirable a guard-rail may be employed opposite frog on the turn-out side.

Having described my invention, what I claim is—

1. In combination with an unbroken main rail and portions of a broken turnout rail arranged upon opposite sides of the main rail, a frog comprising a member connected in a hinged manner with the end of the inner turnout rail portion and having its free portion bent so that its end will rest away from the main rail when it is adjusted against said rail, and a member connected in a hinged manner with the end of the outer turnout rail portion and adapted to be adjusted against the opposite side of the main rail with respect to the first named member, a lever M, having an angular arm *m*, rods connecting the opposite ends of said lever and the frog members, a rod T, for connection with a switch operating mechanism and having a reduced end *z*, a plate adjustably fixed on said rod, a rod connected to said plate and having an eye, a rod P, connected with the arm or branch *m*, of the lever M, and having an eye, a coiled spring having its ends connected to the eyes of rods



V, P, and surrounding the rod T, a plate Q, mounted on and secured to the rod P, and having an aperture receiving the reduced end of the rod T, and a weak device for holding  
5 the rod T, against movement with respect to said plate Q, substantially as specified.

2. The combination of two movable frog-members arranged on opposite sides of a main rail and adapted to be thrown in opposite di-  
10 rections on and off the same, a lever, rods connecting the opposite ends of the lever and the frog-members, a rod for connection with

a switch operating mechanism, a connection easily changed from rigid to flexible between said rod and the lever, and a coiled spring con- 15 nected with said rod and the lever, substantially as specified.

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

DUNCAN MACPHERSON.

Witnesses:

FRANK TAYLOR,  
HUGH R. COLLINS.