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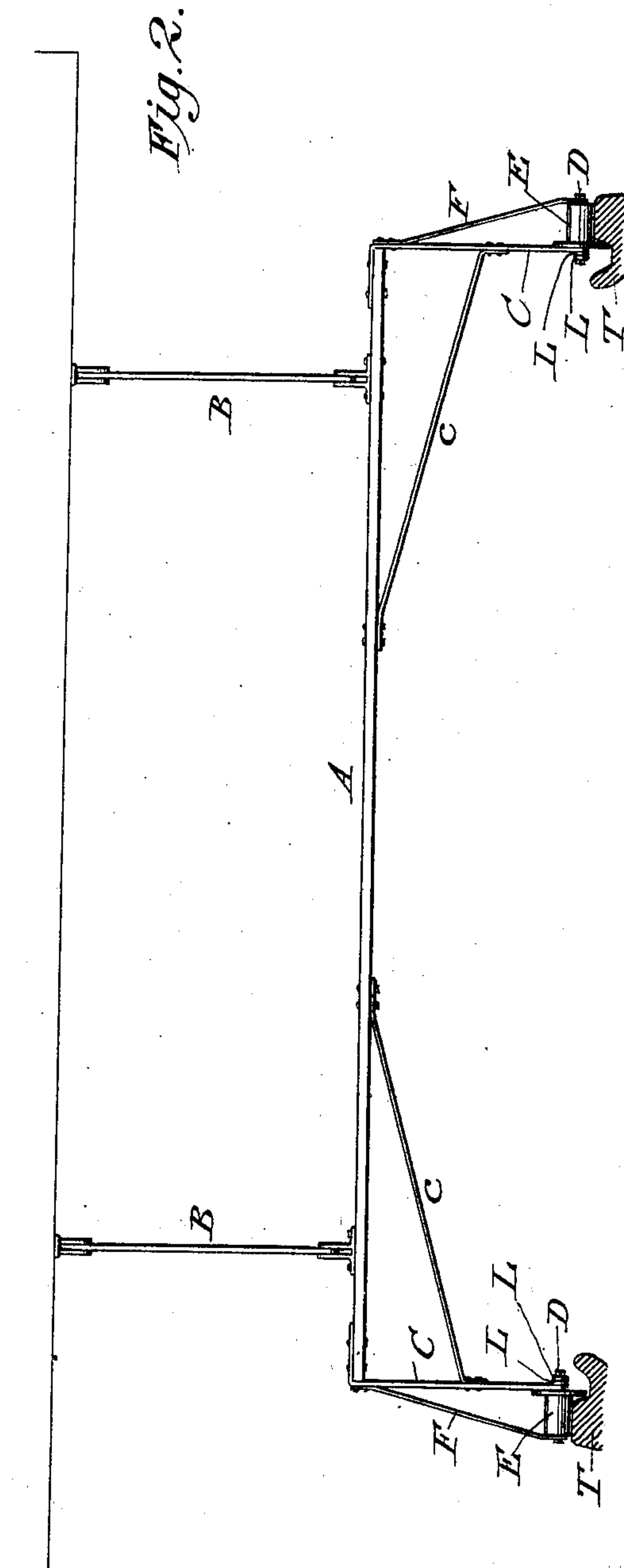
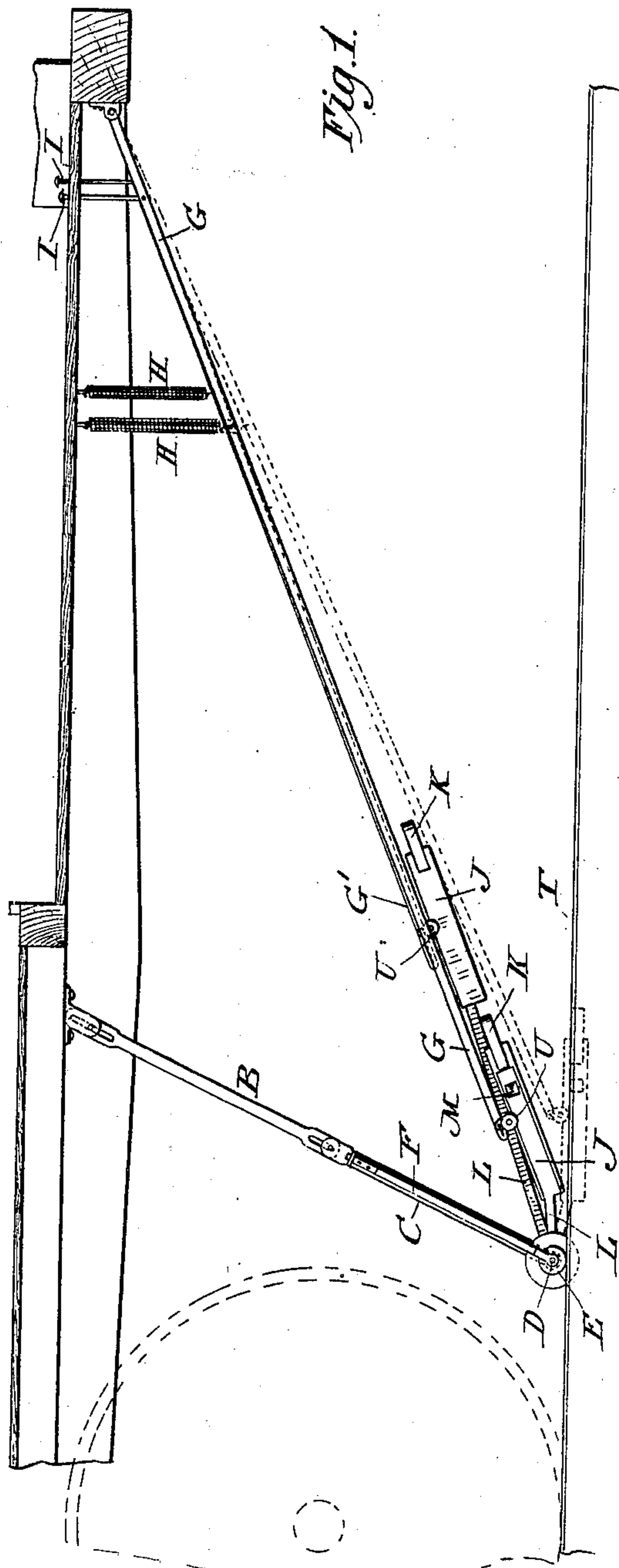
W. D. SIMPSON.

DEVICE FOR THE OPENING OR SHIFTING OF TRACK SWITCHES.

APPLICATION FILED JULY 23, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses;

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Inventor;

William D. Simpson,

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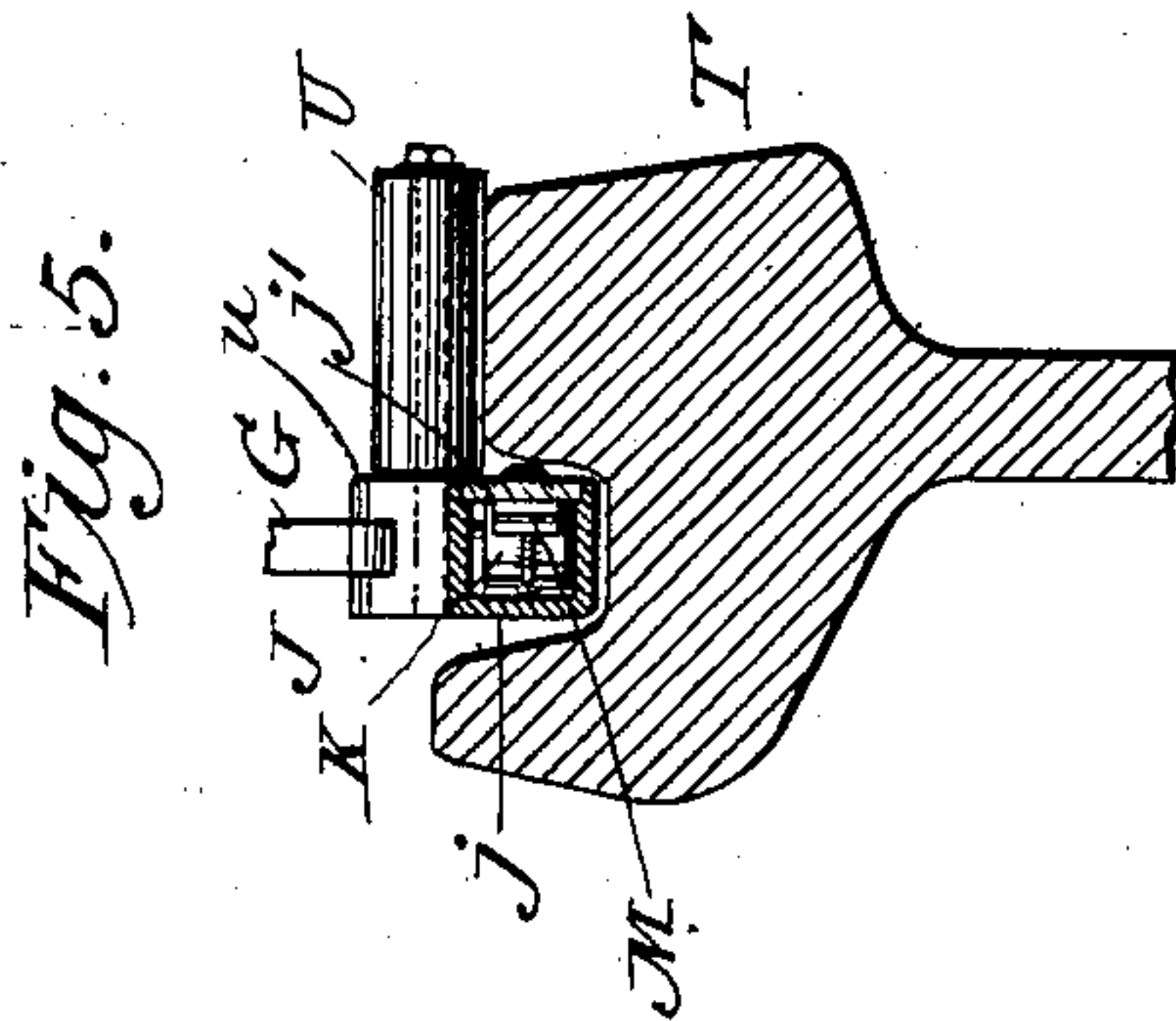
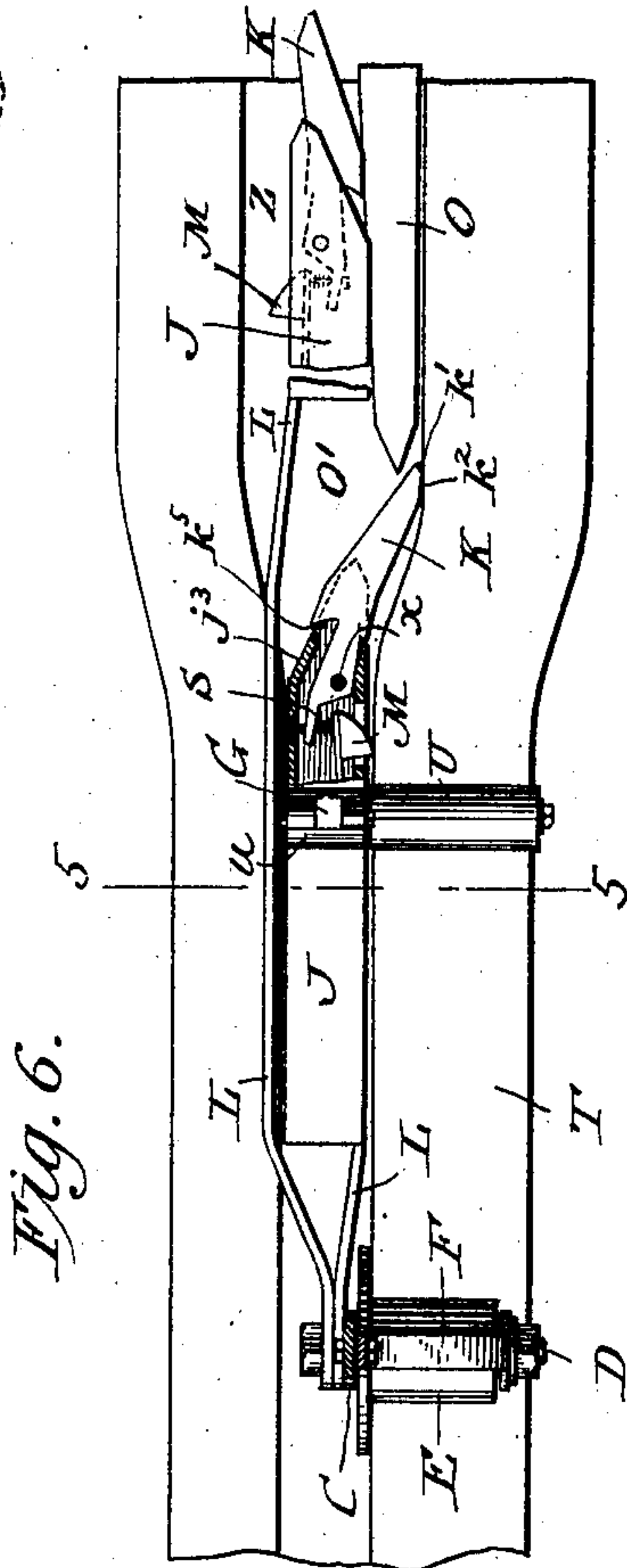
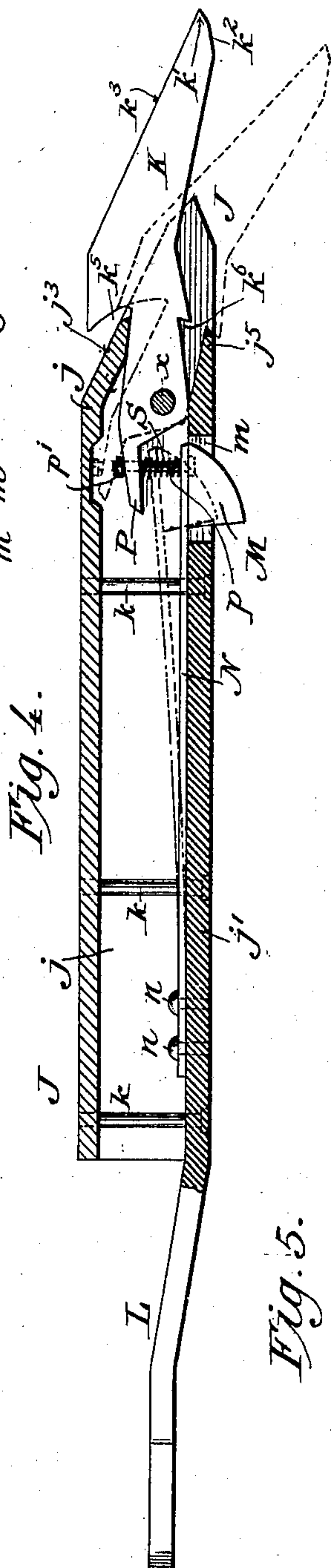
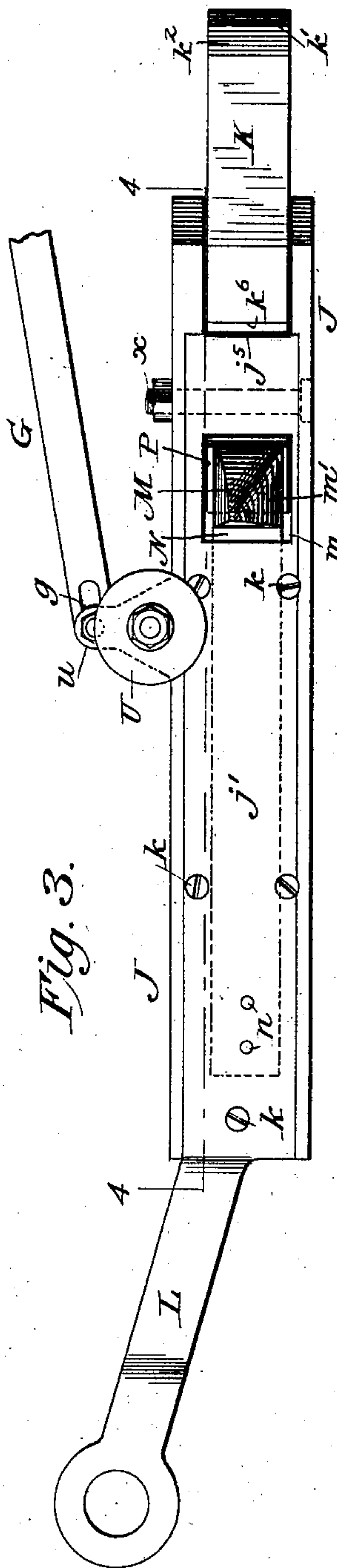
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses;

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UNITED STATES PATENT OFFICE.

WILLIAM DUNLAP SIMPSON, OF COLUMBIA, SOUTH CAROLINA.

DEVICE FOR THE OPENING OR SHIFTING OF TRACK-SWITCHES.

SPECIFICATION forming part of Letters Patent No. 754,169, dated March 8, 1904.

Application filed July 23, 1903. Serial No. 166,778. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DUNLAP SIMPSON, a citizen of the United States, residing in Columbia, in the county of Richland and State of South Carolina, have invented certain new and useful Improvements in Automatic Switches, of which the following is a specification.

My invention relates particularly to devices for operating the switches of street-railways; and the object of my invention is to provide improved means whereby the ordinary pivoted switch-points now generally used in street-railways may be automatically operated by devices carried by a moving car.

My invention contemplates the use of devices which may be readily applied to any street-car and which are adapted to operate ordinary switch-points without material modification thereof.

In carrying out my invention I make no change in the switch-points except that I preferably give to these points a triangular end which will enable the switch-operating device which I employ to engage the point, although in some switch-points no change of this kind need be made. The switch-operating device comprises a shoe or wedge-piece pivotally connected with a box or frame, which latter is in turn suspended from the car and which may be provided with wheels or rollers for supporting it when the switch-operating device is lowered and when in position to operate the switch-rail. The wedge-piece is normally disposed in a direction parallel to that of the tracks. It is in this position when raised away from the tracks, and it is also in this position when it is first lowered into the groove of the track. The tail end of the wedge-piece is connected with a block carried by a spring and which projects laterally outward from the box or frame to which the wedge-piece is pivoted. A spring is interposed between said block and the tail of the wedge-piece, and ordinarily this spring is not under tension; but when the wedge-carrying frame is lowered to its full extent the block is moved laterally inward and places the spring referred to under compression, tending to move the wedge-piece or shoe on its pivot; but such movement is prevented

while the wedge-piece is moving in the straight groove of a rail. As soon, however, as the wedge-piece reaches the wider part of the rail where the switch-point is located its forward end is moved laterally by the expansion of the spring at the tail end of the wedge and the forward end springs in behind the switch-point. As the wedge-piece advances with the car the switch-point is moved on its pivot to the proper extent to close the switch.

The details of construction of my improved switch-operating mechanism will be hereinafter more fully described, and the subject-matter deemed novel will be pointed out in the claims.

In the accompanying drawings, Figure 1 shows a side elevation of my improved switch-operating mechanism applied to the front end of a street-car. Fig. 2 shows a rear elevation thereof. The remaining figures are on an enlarged scale. Fig. 3 shows a side elevation of the lower or principal portion of my improved switch mechanism. Fig. 4 shows a section thereof on the line 4 4 of Fig. 3. Fig. 5 shows a transverse section on the line 5 5 of Fig. 6. Fig. 6 is a diagram showing the manner in which the mechanism operates at the time that it engages a switch-point.

As it is desirable to be able to turn a switch-point in either direction or on either side of the track, I have shown devices for this purpose. As indicated in Fig. 2, there is a cross-bar A suspended from the under side of the car-body by pivoted links B. This cross-bar carries at each end a downwardly-projecting bar C, which is braced by diagonals c. To the lower end of each bar C is connected a bolt D, on which is mounted a roller E, preferably flanged, as shown, in order to keep the roller on the track T. The roller E is interposed between the bar C and a diagonally-arranged brace-bar F. Near the front end of the platform of the car are pivoted rods G G'. There are two rods G G' on each side of the car, only two, however—namely, those on one side—being illustrated in Fig. 1. The two bars G G' on each side extend downwardly and preferably rearwardly, as shown, and carry the switch-operating devices hereinafter referred to.

The bars are supported by springs H, which tend to hold the bars in the elevated position shown in full lines in Fig. 1. Each of the bars is connected with a push-rod I, whereby they may be lowered to the position shown by dotted lines when desired. The motor-man by simply placing his foot on one of the push-rods I may lower the rod G or G' to the desired extent and cause the switch-operating mechanism to assume the proper position for operating the switch-point. Each bar G or G' is connected at its lower end to a box or casing J, carrying the switch-operating shoe or wedge K. The box or casing J is shown as consisting of a three-sided metal casting *j*. The open side of the three-sided casting *j* is closed by a plate *j'*, (see Figs. 4 and 5,) the plate being secured in place by cross-bolts *k*, or it may be secured in any other suitable way. These plates *j'* each have a rearwardly-projecting arm L pivotally connected with the bolt D, before referred to. An opening *m* is formed in one side of each plate *j'*, and through this opening projects a wedge-shaped block M. This block is inclined at its front end and also on its under side, as indicated at *m'*. It is carried on the end of a spring-bar N, attached at *n* to the plate *j'* near the rear end of the latter, the arrangement being such that the block M may move into or through and out of the opening *m* in the manner indicated in Fig. 4. The wedge-piece or shoe K is preferably made of the shape shown most clearly in Fig. 4. It is quite narrow, being adapted to run in the groove of an ordinary grooved rail. It has a pointed end *k'*, adapted to enter behind the end of a switch-point O, which latter is of the ordinary pivoted variety. It is also formed near its front end with an inclined surface *k''*, adapted to bear against the side of the groove of the rail either in the narrow or widened portion thereof. The wedge-piece also has an inclined surface *k'''*, which engages the pointed end of the switch-point, and the switch-point rides along this surface when it is being shifted. Preferably the casting is formed with an inclined front end *j''*, and the wedge K has a recess *k''*, into which the flange *j''* projects when the wedge is in the position shown in Fig. 4. The wedge-piece also preferably has a notch *k''*, adapted to receive the end *j''* of the plate. This exact formation for the wedge is not essential, but it is preferred. The wedge-piece is pivoted near its rear end at *x* to the box or casing J. It has a small rearwardly-projecting tailpiece P, through which extends a bolt or rod *p*, secured to the block M. Surrounding this pin and interposed between the block M and the tailpiece P is a coiled spring S, which when the parts are in the position shown in Fig. 4 is relaxed; but the arrangement is such that the head *p'* of the pin prevents the wedge-piece from moving in one direction, while the spring S holds it from moving in the

opposite direction. Therefore the wedge-piece is held properly in line with the groove of the rail. This is the condition of the parts before the device is lowered into engagement with the rail. As soon as the device is thus lowered the wedge-block M is caused to move laterally inward to the position shown by dotted lines in Fig. 4. This movement puts the spring S under tension; but as the front end of the wedge-piece is braced at *k''* against the straight groove of the rail the wedge-piece is held straight or in the position shown in full lines in Fig. 4 until it arrives at the widened portion O' of the groove, where the switch-point O is located. When it arrives at this point, the wedge-piece moves laterally from the position shown in full lines in Fig. 4 to that shown in dotted lines in the same figure or in full lines in Fig. 6, and therefore is in position to engage the switch-point O. As the car moves forward the switch-point will be shifted to the proper extent.

I preferably employ a roller U on each box J, which is so mounted as to rest on the top of the rail T in the manner indicated in Fig. 5. This roller may be carried by a lug or boss *u* on the top of the box, and the connection between the rod G and the box may be made with this lug or boss in the manner indicated at *g* in Fig. 3.

The precise manner of supporting the switch-operating devices is not so essential as the manner described of operating the wedge-pieces. It will be understood that one characteristic feature of my invention is an organization in which the switch-operating wedge is under the control of a spring placed under tension, which when the wedge arrives at the switch-point automatically expands and causes the wedge to assume the proper position to engage the switch-point and shift it.

In Fig. 6 I have shown both switch-operating devices; but it will be understood that only one of them is lowered, the other one (indicated at Z) being elevated above the plane of the rails. If the switch-point O had been in the opposite position to that shown in Fig. 6, the device indicated at Z would have been the proper one to lower, while the other one would remain elevated.

I claim as my invention—

1. A device for operating a switch, comprising a wedge-piece normally held in line with the groove of a track, and a spring under tension engaging the wedge-piece and which is relaxed and causes the wedge-piece to be moved laterally when the latter, enters the widened portion of the groove, containing the switch-point.

2. The combination of a pivoted wedge-piece and a spring engaging the wedge-piece and tending to move the latter about its pivot when the wedge-piece is in engagement with the main track and which does so move said wedge-piece when the latter enters the switch.

3. The combination of a supporting-frame, a wedge-piece carried thereby and a spring placed under compression and tending to shift the wedge-piece when the latter is in engagement with the main track and which does so move the wedge-piece when the latter enters the switch.

4. The combination of a supporting-frame, a wedge-piece carried thereby and adapted to engage a switch-point, a wedge-block carried by the frame and adapted to move laterally in the frame and a spring interposed between the wedge-block and the wedge-piece.

5. The combination of a supporting-frame, a wedge-piece carried thereby and adapted to engage a switch-point, a wedge-block carried by the frame and adapted to move laterally relative thereto, a pin connecting the wedge-piece with the wedge-block and a spring interposed between the wedge-piece and wedge-block.

6. The combination of a supporting-frame, a wedge-piece pivoted thereto and having an inclined front portion adapted to engage a switch-point, a wedge-block carried by the

frame and having an inclined portion adapted to engage a rail whereby the wedge-block is moved laterally into the frame when the switch-operating device is lowered on to the track, a pin connecting the wedge-block with the rear end of the wedge-piece and a spring interposed between the wedge-piece and wedge-block.

7. The combination of a rear frame having supporting-rollers which rest on the track, the boxes having arms pivotally connected with the rear frame, rollers carried by said boxes and adapted to run on the tracks, wedge-pieces pivotally connected with the boxes and adapted to engage switch-points, laterally-moving wedge-blocks carried by the boxes and springs interposed between the wedge-pieces and wedge-blocks.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM DUNLAP SIMPSON.

Witnesses:

WILLIAM SHANNON NELSON,
GEORGE PRENTICE LOGAN.