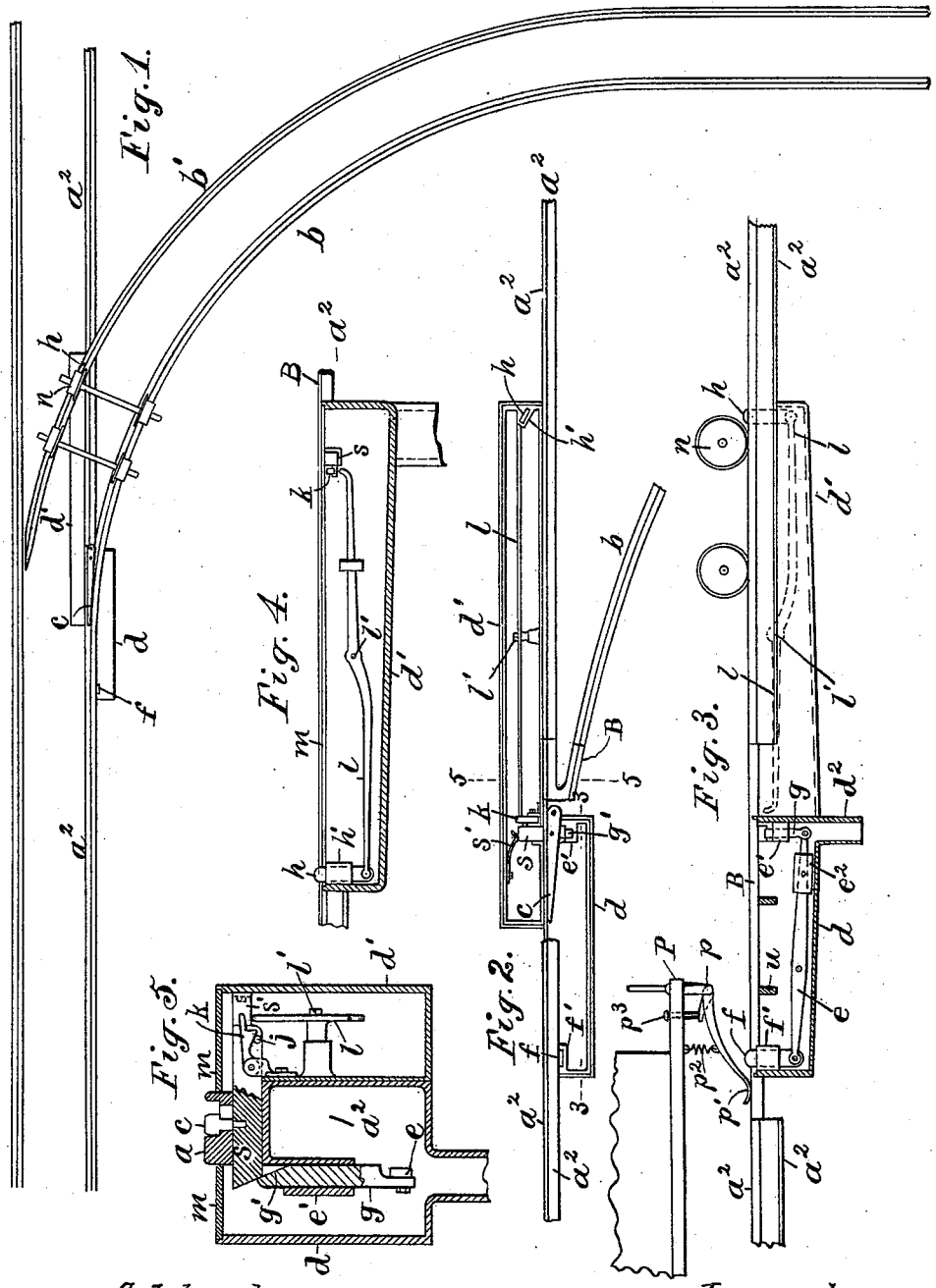
(No Model.) 2 Sheets—Sheet 1.

T. THOMPSON.

SWITCH SHIFTER FOR STREET RAILWAYS.

No. 538,052. Patented Apr. 23, 1895.



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L. Lee.
Edw. F. Kinsey.

Inventor.
Thomas Thompson,
per Thomas S. Crane, Atty

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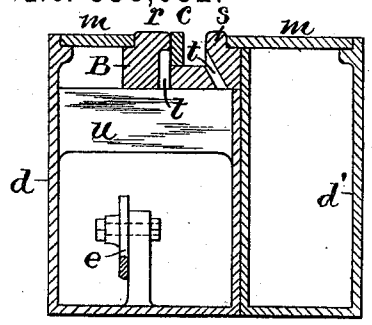
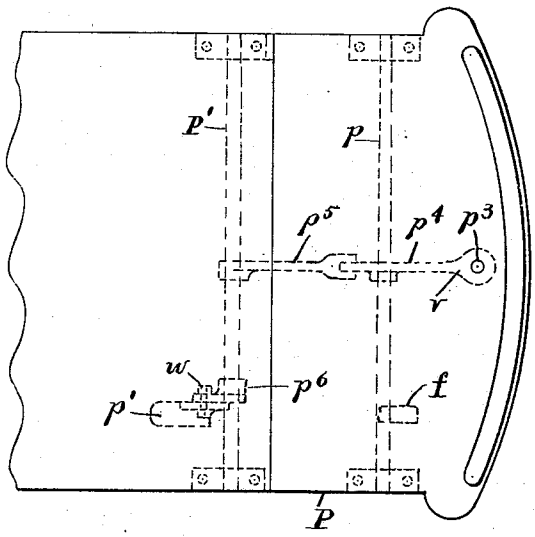


Fig. 9.

Fig. 6.



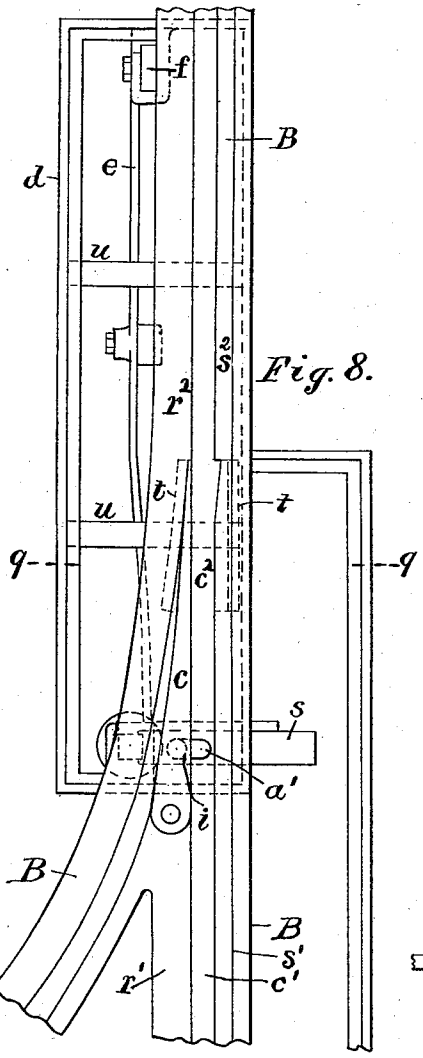
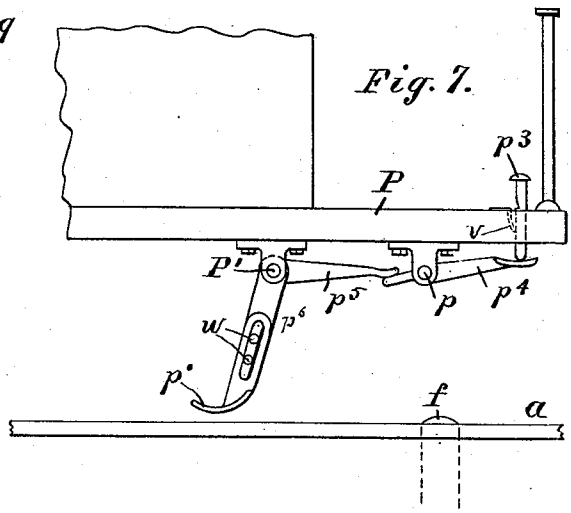


Fig. 8.

Fig. 7.



Attest:
L. Lee,
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Inventor.
Thomas Thompson, per
Thomas S. Crane, atty.

UNITED STATES PATENT OFFICE.

THOMAS THOMPSON, OF NEWARK, NEW JERSEY.

SWITCH-SHIFTER FOR STREET-RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 538,052, dated April 23, 1895.

Application filed October 5, 1894. Serial No. 525,006. (No model.)

To all whom it may concern:

Be it known that I, THOMAS THOMPSON, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Switch-Shifters for Street-Railways, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention is adapted to open the point of a street railway switch through the agency of an operator upon a moving car, and after such point is opened and the car has passed over the same, the invention is adapted to close the point and to thus leave the main line unopened after the passage of each car.

The construction is wholly mechanical and dispenses entirely with the use of electrical appliances, or of any switchman to operate the switch.

In the annexed drawings, Figure 1 is a plan of a railroad curve with the adjacent portion of the main line. Fig. 2 is a plan of the rail upon the main line adjacent to the switch point, with the boxes containing the switch shifting devices, the adjacent curved rail being broken away above the outer box. Fig. 3 is a side elevation of the same viewing the outer box in section on line 3, 3, in Fig. 2. Fig. 4 is a side elevation of the inner box with the inner side broken away, the parts being necessarily reversed from those shown in Fig. 3, as they are viewed from the opposite side. Fig. 5 is a cross section on line 5, 5, in Fig. 2 with the end of the outer box cut away to expose the contents. Fig. 6 is a plan, and Fig. 7 a side view of the fixtures for an adjustable shoe. Fig. 8 is a plan of the switch bed casting with part of the boxes beneath it. Fig. 9 is a section of the bed and box taken on line 9, 9, in Fig. 8.

Many details of construction are omitted in Figs. 1 to 4 inclusive, owing to the smallness of the scale, but such details are shown in the preferred form in the other figures, which are drawn upon a larger scale.

The switch bed is designed to be made of a steel casting, and is shown in Figs. 8 and 9 of suitable shape to match the flat top tram rails used for street railways. Such casting would extend beyond the switch point at both ends, but is not shown in Fig. 1, as the scale is too small; only double lines showing the location of the rails being employed, to indicate the relation of such rails to the switch mechanism.

In Figs. 1 to 4 a^2 designates an ordinary girder-rail.

a represents the rail of the main line joining the inner rail b of the curve, and c is the point of the switch at their junction. A box d is fixed outside the rail a opposite the switch point c, and a lever e is pivoted therein and provided at one end with a stud or tread bar f which is held at the outer side of the rail a by a guide f' within the box. A box d' is fitted along the inner side of the main line rail from the switch point c to the intersection with the outer curved rail b', and a stud or tread bar h is supported adjacent to the outer side of the curved rail by a guide h' within the box. This stud is projected upward through the tread of the rail b'. A slide s extends through the walls of the boxes beneath the rail a adjacent to the pivot of the switch point c, and is jointed to the point c by a pin i working through a slot a' in the rail. The slide s is beveled downwardly at one end, and a vertical push bar g having an incline g' at its upper end is fitted to the beveled end of the slide, and is guided vertically by a socket e' in the box d. Pressure upon the stud f forces the push bar g upward and thrusts the slide s transversely to the rail, thus opening the switch point c, as shown in Fig. 2. The lever e is provided with a spring or weight e^2, or is otherwise formed to retract the push bar when the pressure upon the tread bar f is removed; and means are provided for locking the slide s with the switch point opened, until the car has passed over the same. A pin j is projected from the slide s within the box d', and a latch k is provided to catch the same.

A portion of a car platform P is shown in Fig. 3 with a fulcrum or rock shaft p beneath the same, having at its outer end a shoe p' to depress the tread bar f when desired, and a spring p^2 is provided to hold the same normally raised. A foot stud p^3 serves to depress the shoe when required. A lever l is pivoted at l' within the box d' and has one end extended upwardly beneath the latch k, the other end being attached to the stud h, so

that the depression of the latter serves to lift the latch. When thus released the spring s' pushes the slide automatically to close the switch point, as shown in Fig. 1.

The axles of a street car are shown in Figs. 1 and 3, with the tread of one weeel n adjacent to the stud h, as when the car has passed over the switch point and is about to unlatch the same to close the main line. As the stud projects upward through the tread of the rail, the tread of the wheel depresses it in moving over the same. By arranging the stud h near the intersection of the main line with the outer curved rail b', I am enabled to extend the lever l along the side of the rail a. I thus secure a direct connection from the stud to the latch, and avoid a connection from a remote point which would require a more complex mechanism. In like manner, the arrangement of the slide s in the adjacent ends of the boxes d, d', renders it readily accessible from either end, by raising the covers m of the boxes, which would be made of metal to support the ordinary traffic.

It is obviously not essential to the operation of the lever l that it should extend by the side of the rail a, as it would form a direct connection between the stud h and the latch k when extended in any direction. Where the switch curve is of short radius, and double truck cars are used, it would obviously be necessary to carry the stud h farther around upon the rail b' than where it intersects the rail a, to permit the passage of the rear car wheels over the switch point c before the stud h is actuated. In such case, the lever l may be extended obliquely beneath the rail a in a direct line between the latch and the stud h wherever the stud is located; but such construction is not specifically claimed herein as it is covered by my generic claims. All the connections for working the switch point are thus made readily accessible in one or other of the boxes, and as the studs are in both instances arranged upon the outer sides of the rails, they are less liable to be operated by accident, as the wheels of street wagons commonly fall within the tread of the rail, and seldom ride upon the top for any considerable distance.

In Figs. 5 to 9 inclusive, part of the details are shown upon a larger scale, showing constructive features of practical importance. Among these is the formation of the switch bed B with recesses having slots extending through the bed into the box below, near the end of the switch point c, to prevent the obstruction of the point by dirt which falls into the adjacent groove.

In Fig. 9, the bed casting B carrying the switch point, is shown with wheel tread r^2 and guide flange s^2, as is common in street railways, with the switch point c fitted to move between the same. I form the walls of the tread and the guide flange with recesses t extending half way upward upon the inner side of the same, and connecting with slots through the bottom of the bed. Any dirt which may fall into the groove c^2 in which the switch point plays may thus be swept by the point into one or the other of the recesses, and be discharged downward into the box beneath. The boxes are in practice provided with sewer connections d^2, and the dirt is thus discharged from the box. The obstruction to the switch point commonly occurs for a space of eighteen or twenty inches near its free extremity, and the recesses and slots t are shown in Fig. 8 extended along the sides of the point a suitable distance to discharge the dirt as described. The box d is shown with bridges u cast therein to support the switch bed B, and the lever e and its bearing are located in the box below the bridges u.

In practice it is desirable to load the lever e by a spring or weight e^3 so as to require a strong downward pressure, as six or eight hundred pounds, to depress the stud f, thus avoiding the accidental shifting of the switch point by light wagons or the weight of pedestrians. The stud h may, upon the contrary, be weighted very lightly or provided with a spring, as it is intended to be pushed readily downward by the car wheel as it passes around the curve. To depress the shoe p' with suitable force to shift the stud f, I prefer to employ compound levers, as shown in Figs. 6 and 7, and to also make the shoe adjustable to and from its support so as to avoid any excessive movement; as the switch point by properly proportioning the arms of lever e, may be readily shifted by depressing the stud f about three eighths of an inch. The adjustability of the shoe also adapts it to compensate for variations of height in different parts to which it may be applied.

In Figs. 6 and 7, two rock shafts or fulcra p and p' are shown with the foot stud p^3 applied to the long arm of a lever p^4. The short arm of the lever is applied to an arm p^5 upon the rock shaft or pin forming the fulcrum P' which carries the adjustable shoe. The shoe is shown attached to the rock shaft by a downwardly projecting arm p^6, with which it is connected adjustably. The shoe is made flat upon its under side and of considerably greater width than the stud, to compensate suitably for any lateral displacement of the shoe which may be caused by the lurching of the car upon the track as it passes over the stud. The under side of the shoe is sloped upwardly upon the forward side, thus forming a flat sloping face adapted to depress the stud as the shoe passes over the same. The shoe is formed upon the upper side with a foot piece which is connected by slots and bolts w with the arm p^6, to hold it adjustably at any desired height.

By the use of the unequal armed lever p^4, the operator secures a much greater leverage and is thus enabled to hold the shoe more firmly, the foot stud p^3 being depressed a much greater distance than the shoe is required to move.

A spring v is applied to a notch in one side of the stud p^3 to hold it depressed, and thus relieve the driver from the strain when the shoe operates the stud. The stud p is made to fit loosely in its guide so that it may be released from the spring by pushing it laterally by the foot.

My improvements furnish a very cheap and effective mechanism for automatically shifting the switch point, and thus obviate the necessity of employing a pointsman to attend upon the switch.

Having thus set forth the nature of the invention, what is claimed herein is—

1. In a device for actuating a switch point, the combination, with the slide s pivoted transversely to the switch point c, of the stud f connected with the push bar g' having an inclined end, a latch to hold the switch point open, and the tread bar h with lever adapted to release the latch, substantially as herein set forth.

2. In a device for actuating a switch point, the combination, with the slide s pivoted transversely to the point c, of the boxes d, d', arranged at opposite sides of the rail with the ends of the slide in their adjacent ends, the studs f and h fitted to guides in the opposite ends of such boxes, a latch to hold the switch point open, and levers pivoted to the tread bars with means for actuating the slide and the latch, substantially as herein set forth.

3. In a device for actuating a switch point, the combination with the slide s pivoted transversely to the point c, of the stud f arranged in guides upon the outer side of the rail near such switch point, the stud h arranged in guides upon the outer side of the curved rail inside its intersection with the main line, a latch for holding the switch point open, and the levers e and l pivoted to the tread bars, and located respectively upon the outer and inner sides of the main line rail, and provided with means for actuating the slide and the latch, substantially as herein set forth.

4. The combination, with a switch bed having the wheel tread r^2 and guide flange s^2, and the switch point c pivoted to vibrate between the same, and having adjacent to the switch point the recesses t in the walls of the wheel tread and guide flange, and connected with slots through the bottom of the bed, of the box d formed with the bridges u, guide f' for stud f, guide e' for push bar g, and sewer connection d', substantially as set forth.

5. In a device for actuating a switch point, the combination, with the switch point, the stud f, and intermediate mechanism for shifting the point by the movement of the stud, of the car body carrying the fulcrum shaft P', having the shoe p' connected adjustably thereto and provided with the arm p^5, and the fulcrum shaft p carrying the unequal armed lever p^4 operating upon the arm p^5, and having the foot stud p^3 provided with the spring latch to hold it depressed, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THOMAS THOMPSON.

Witnesses:
THOMAS S. CRANE,
HENRY VAN NESS.