J. G. AKERS.

SWITCH MECHANISM.

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1,068,555.

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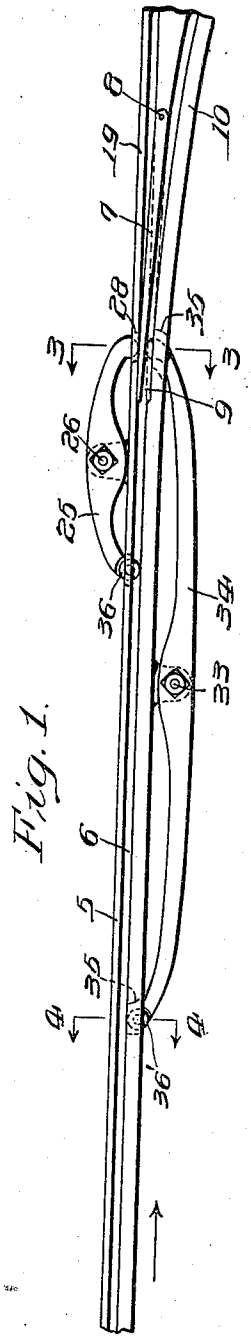

Fig. 1.

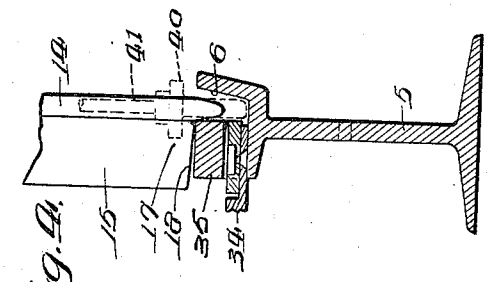

Fig. 4.

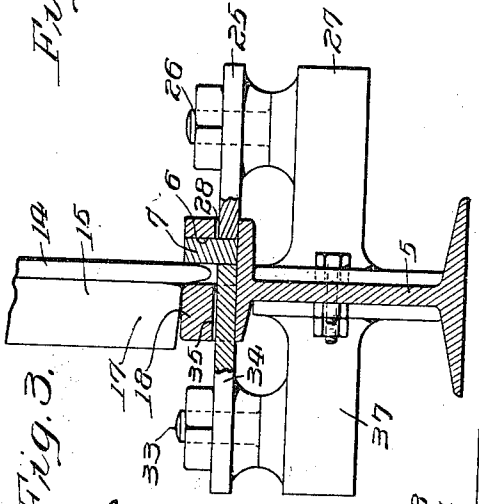

Fig. 3.

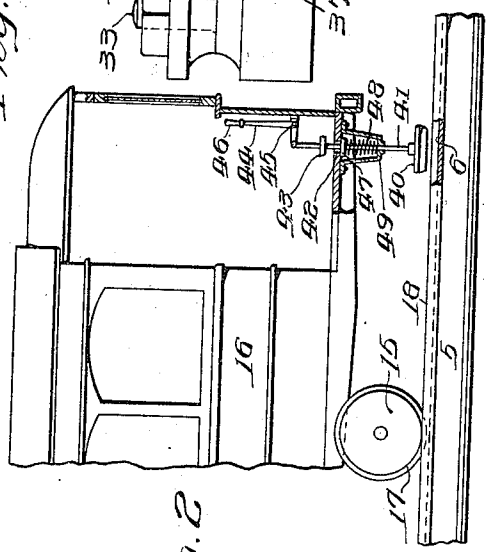

Fig. 2.

WITNESSES

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SWITCH MECHANISM.

1,068,555. Specification of Letters Patent. Patented July 29, 1913.

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To all whom it may concern:

Be it known that I, JOSEPH G. AKERS, a citizen of the United States, and a resident of the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Switch Mechanisms, of which the following is a specification.

The present invention relates to switches, and particularly to that class employed in street railway construction, wherein it is desired to throw said switch from the front platform of the vehicle engaging the track and without the necessity of alighting from said vehicle.

One of the objects of the invention is to provide a switch mechanism comprising a plurality of tracks, a movable member or switch point, pivotally mounted levers arranged to coöperate with said switch point and manually operative means carried by a vehicle and arranged to actuate one of said levers to shift said movable member.

A further object of the invention is to provide a switch mechanism which is simple and efficient in operation, inexpensive to manufacture, and comprising the least possible number of parts liable to become disarranged.

Further objects of the invention are brought out in the following specification and appended claims, and the device as a whole is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a single track including a switch and embodying the preferred form of this invention; Fig. 2 is a side elevation of one end of a vehicle, showing a fragmentary section of the mechanism carried thereby for shifting the switch mechanism; Fig. 3 is a section on the line 3—3 of Fig. 1 in the direction of the arrows; and Fig. 4 is a section on the line 4—4 of Fig. 1 in the direction of the arrows.

Referring to the drawings, and particularly to Fig. 1 thereof, the rail 5 may be of any desired construction, but in the present case is shown as having a groove 6, and interrupted adjacent to one end of said figure by a movable member or switch point 7, pivoted at 8 and arranged to oscillate in the widened portion 9 of the groove 6, while, coincident with the point of said movable member, a branch track 10 starts.

It is evident with the construction thus far described that the flange 14 of the wheel 15 of any desired vehicle 16 will revolve in the groove 6, while the face of the wheel 17 bears upon the tread 18 of the rail 5. As the wheel progresses upon or along said rail, it will continue to traverse the main track 19, when the movable member of the switch point 7 is in the position shown by dotted lines in Fig. 1. However, if said movable member is shifted to the position shown in said figure, the flange 14 of the wheel 15 engaging against said member will tend to direct said wheel into the branch track 10.

In the present invention there is disclosed a simple and efficient mechanism by which the throwing of the hereinbefore mentioned movable member or switch point is accomplished, which mechanism consists primarily of a relatively short lever or rocker 25, centrally pivotally mounted at 26 upon a bracket 27, secured in any suitable manner to the shank of the rail 5, and having each of its ends arranged to enter apertures 28 in the head 18 of said rail, and thence extending alternately into the groove 6. However, if such is desired, instead of making apertures by any suitable method in the head 18 of the rail 5 where desired, the head 18 may be simply cut out for a short space approximately from one to two inches in extent and the ends of the lever or rocker 25 made to enter said cut out portions. This construction might be found particularly useful in the case of applying the improved device to a track system already in use, and comprising any of the common forms of rails.

On the side of the rail 5 opposite to the lever 25 is pivotally mounted at 33 a relatively long lever or rocker 34, one end of which is arranged in the preferred form to enter an aperture 35 in the head 18 of the rail and to normally bear against the movable member or switch point 7 at a point substantially opposite to that point at which the corresponding end of the lever 25 engages said movable member. The opposite end of the longer lever or rocker 34 is arranged to enter a similar aperture 35 in the head of the rail 5, and from thence to extend into the groove 6, when the mechanism is in the opposite position to that shown in Fig. 1.

For the purpose of reducing the wear upon the ends of the levers 25 and 34, roll-

ers 36 and 36′ are pivotally mounted thereon and said ends of said levers are reduced vertically in such manner as to permit said rollers and the respective reduced end portions to enter the apertures in the head of said rail 5. However, the rail 5 may be cut out to receive the ends of the lever 34 in a way similar to that described in connection with the lever 25, while the lever 34 is mounted upon a bracket 37, which is in turn secured to the shank of the rail 5 in a manner similar to the bracket 27.

For automatically throwing the switch point 7 without necessitating the dismounting of the operator from said vehicle, there is provided any suitable means, such as that shown in Fig. 2. This mechanism comprises a shoe 40, carried upon the lowermost end of a rod 41, which extends through the slot 42 of the vehicle 16, and carries adjacent to its upper end a pedal 43, while its upper end is pivotally secured to one arm of the bell crank lever 44, which in turn is pivoted at 45, and carries on its other arm a suitable handle 46. The rod 41 has also secured thereto a plate 47, a short distance below the slot 42 of the vehicle, and normally pressing upwardly against said plate is a compression spring 48 supported at its lower end by a bracket 49, secured in any suitable manner to the base 42 of said vehicle. Normally the spring 48 of this mechanism, pressing upwardly on the plate 47, maintains the rod 41 in its uppermost position, thus suspending the shoe 40 at a suitable distance, approximately three inches, above the rail 5.

As the vehicle 16 is traversing the rail 5 in the direction of the arrow shown in Fig. 1, the switch point being in the position also shown in said figure, and it is desired that said vehicle shall be switched from the main track 19 into the branch track 10, the operator of said vehicle continues the movement thereof without in any manner manipulating the mechanism carried thereby. If, however, it is desired to proceed along the main track 19, said operator needs only to pull the lever 44 by the handle 46 outwardly, or to press downwardly with his foot upon the pedal 43, either of which actions depresses the shoe 40 into the groove 6 of the rail 5. The shoe 40, as it comes into contact with the roller 36 of the lever 25, also extending into the groove 6, shifts said lever about its pivotal support, and thus, by the coöperation of the opposite end of said lever with the switch point 7, shifts said switch point into the position shown by dotted lines, as a result, permitting the wheel of the vehicle to traverse the main track 19 as desired. If from this position with the main track open the operator on a second vehicle equipped similarly to that just described, desires to proceed by the branch track 10, it will be noted that the lever 34, having assumed a position in which the roller 36′ projects into the slot 6, while the roller 36 has been removed therefrom, all that it is necessary for said operator to do is to depress the shoe 40 into the groove 6 before reaching the roller 36′. Then, as said shoe comes into contact with the roller 36′, the lever 34 is forced into the position shown in Fig. 1. Continuing past said roller, the operator releases the shoe 40, which immediately rising by virtue of the upward pressure of the spring 48, rides safely over the roller 36, thus, allowing the branch track 10 to remain open. The releasing of the shoe by the operator in this second instance is necessary before reaching the roller 36, for the fact that, if such action is not taken, said shoe, coming into contact with said roller, will shift the switch point 7 into the position from which it has just been moved by the coöperation of the shoe with the roller 36′.

By the foregoing description and accompanying drawings, the applicant has shown and described one embodiment of this invention, which he believes to be the preferred form, but he desires to state that he does not wish the appended claims to be interpreted as anticipating only this specific construction, but to also anticipate any modifications which may be made therein which still remain within the spirit of the invention.

Having thus described my invention, what I claim and desire to protect by Letters Patent of the United States is:

1. The combination of a switch comprising two tracks, a movable member operative to guide the wheel of a vehicle into either of said tracks, with a pair of oppositely positioned levers unequal in length, one of the ends of each of said levers coöperating with said member upon the opposite sides thereof, and the opposite end of one of said levers projecting into an extension of one of said tracks.

2. The combination of a switch comprising two tracks, a movable member operative to guide the wheel of a vehicle into either of said tracks, with a pair of oppositely positioned levers unequal in length, one of the ends of each of said levers cooperating with said member upon the opposite sides thereof, and the opposite end of one of said levers projecting into an extension in one of said tracks, while the corresponding end of the other of said levers is positioned in spaced relation with said track extension.

3. The combination of a switch comprising two tracks, a movable member operative to guide the wheel of a vehicle into either of said tracks, with a pair of oppositely positioned levers unequal in length, one of the ends of each of said levers coöperating

with said member upon opposite sides thereof, and the opposite end of one of said levers projecting into an extension of one of said tracks, while the corresponding end of the other of said levers, is positioned in spaced relation with said track extension and at a point a greater distance from said member than the corresponding end of said first-named lever, and means carried by said vehicle to shift said first-named lever to operate said member.

4. The combination of a switch comprising two tracks, a movable member operative to guide the wheel of a vehicle into either of said tracks, with a pair of oppositely positioned levers, one end of each of which coöperates with said member, while the opposite ends of said levers project alternately into an extension of one of said tracks as said member is shifted from one extreme position to the other, and means carried by said vehicle and manually operative to enter said track and coöperate with the end of said lever projecting thereinto.

5. The combination of a switch comprising two tracks, a movable member operative to guide the wheel of a vehicle into either of said tracks, with a pair of oppositely positioned levers unequal in length, one of the ends of each of said levers coöperating with said member upon the opposite sides thereof, and the opposite end of one of said levers projecting into an extension of one of said tracks, while the corresponding end of the other of said levers is positioned in spaced relation with said track extension and at a point a greater distance from said member than the corresponding end of said first-named lever.

6. The combination of a switch comprising two tracks, a movable member operative to guide the wheel of a vehicle into either of said tracks, with a pair of oppositely positioned levers unequal in length, one of the ends of each of said levers coöperating with said member upon opposite sides thereof, and the opposite end of one of said levers projecting into an extension of one of said tracks, while the corresponding end of the other of said levers is positioned in spaced relation with said track extension and at a point a greater distance from said member than the corresponding end of said first-named lever, and means carried by said vehicle to shift said first-named lever to operate said member, the shifting of said member operating to shift one end of said second-named lever into said track extension.

7. The combination of a switch comprising two tracks, a movable member operative to guide the wheel of a vehicle into either of said tracks, with a pair of oppositely positioned levers, adjacent ends of which normally coöperate with said member upon opposite sides thereof, while the opposite ends of said levers project alternately into an extension of one of said tracks as said member is shifted from one extreme position to the other.

8. The combination of a switch comprising two tracks, a movable member operative to guide the wheel of a vehicle into either of said tracks, with a pair of oppositely positioned levers, one end of each of which coöperates with said member, while the opposite ends of said levers project alternately into an extension of one of said tracks as said member is shifted from one extreme position to the other, and means carried by said vehicle and manually operative to enter said track and coöperate with the end of said lever projecting thereinto, to shift said member into its opposite extreme position.

9. A switch mechanism comprising a plurality of tracks, a movable member arranged to guide the wheel of a vehicle into any one of said tracks, pivotally mounted levers of unequal length arranged to coöperate with said member, and manually actuated means carried by said vehicle and operative to actuate one of said levers to shift said member.

In witness whereof I have hereunto set my hand this 8th day of July, A. D., 1912.

JOSEPH G. AKERS.

Witnesses:
C. WAITT BRADLEY,
EUGENE M. JEANNISSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."