

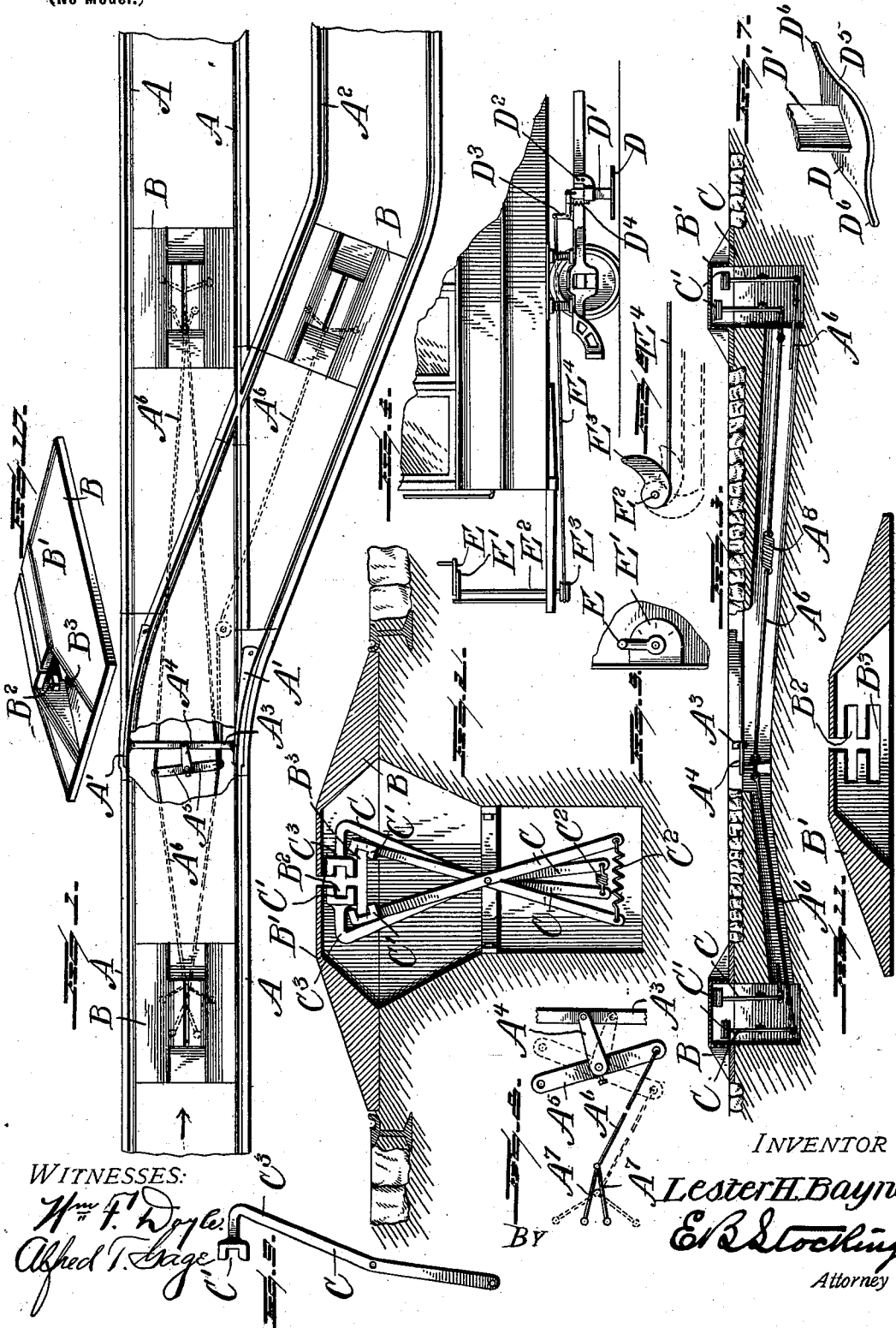
No. 692,759.

Patented Feb. 4, 1902.

L. H. BAYNE.
TRAMWAY SWITCH.

(Application filed Aug. 29, 1901.)

(No Model.)



WITNESSES:

Wm F. Doyle
Alfred T. Large

INVENTOR

Lester H. Bayne

E. R. Stocking
Attorney

UNITED STATES PATENT OFFICE.

LESTER H. BAYNE, OF WASHINGTON, PENNSYLVANIA, ASSIGNOR OF ONE-FOURTH TO THOMAS B. CROUCH, OF BOWER HILL, PENNSYLVANIA.

TRAMWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 692,759, dated February 4, 1902.

Application filed August 29, 1901. Serial No. 73,681. (No model.)

To all whom it may concern:

Be it known that I, LESTER H. BAYNE, a citizen of the United States, residing at Washington, in the county of Washington, State of Pennsylvania, have invented certain new and useful Improvements in Tramway-Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to tramway-switches, and particularly to a construction adapted to be operated from a moving car or vehicle.

The invention has for an object to provide a construction whereby the shifting mechanism 15 will be completely concealed beneath the road-bed and in such position as not to be interfered with by the traffic upon the street wherein the tracks are located.

Another and further object of the invention is to provide mechanisms in a single casing 20 whereby a switch may be operated in either direction or one or more switches controlled from a single point.

A further object of the invention is to provide an improved construction of switch-shifting mechanism in which the contact ends of the levers are located in different horizontal 25 planes, so that either may be operated at will by the depression of a plow carried by a moving car into the plane of the lever.

Another object of the invention is to provide an improved form of switch-box having independent tracks or ways therein through 30 which the plow for operating the levers is adapted to pass.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the appended claims.

35 In the drawings, Figure 1 is a plan with parts broken away showing the invention applied to a tramway-switch. Fig. 2 is an enlarged vertical section through the switch-box. Fig. 3 is a central vertical longitudinal 45 section through Fig. 1. Fig. 4 is an elevation showing the plow-operating mechanism applied to a car. Fig. 5 is a plan of the controlling-lever for the plow. Fig. 6 is a similar view of the operating-cam for said plow. 50 Fig. 7 is a detail perspective of the plow.

Fig. 8 is an enlarged detail of the shifting-arm for the switch-points. Fig. 9 is a detail elevation of one of the operating-levers within the switch-box. Fig. 10 is a detail perspective of the cover for the switch-box, and 55 Fig. 11 is a vertical cross-section through the same.

Like letters of reference indicate like parts throughout the several figures of the drawings. 60

In the accompanying illustration the invention is shown as applied to a tramway comprising the opposite rails A and switch-points A' to be shifted in order to direct the car 65 onto the switch-track A², although the invention is capable of application to any form of road-bed or railway. The movable points A' of the switch are connected together by a cross-bar A³, which is pivotally secured to an oscillating arm A⁴ for moving the same, which 70 arm is pivotally mounted, as shown in Fig. 3, and provided with crank-arms A⁵ at opposite sides having connectors A⁶, extending to the switch-box B, located between the rails. These connectors may be either rigid rods or 75 of a flexible character, as found most convenient to the position where they must be applied. It will also be obvious that one of the movable points A' may be shifted to throw the switch, although it has been found 80 desirable to move both points simultaneously, as herein illustrated.

For the purpose of operating the connectors A⁶ to shift the parts hereinbefore described shifting-levers C have been pivotally 85 mounted within the switch-box B or a suitable space beneath the same and are provided at their upper ends with contact-faces C', lying in different horizontal planes, and opposite slots or ways B² and B³, respectively, 90 formed in the upper portion B' of the switch-box. The levers C are pivoted at substantially midway of their length, and the lower ends thereof are normally drawn together by means of springs C², connecting the same, 95 while the upper ends of one set of the levers are provided with laterally or horizontally disposed portions C³ in order to permit the free operation of the lower set of levers when the plow D passes through the switch-box. This 100

structure of parts is more clearly shown in Figs. 2 and 9. Each of these switch-levers is similar in construction and operation, and they are disposed in parallel vertical planes, with the upper end C' of each lever in a different horizontal plane. The lower ends of the levers are provided with connectors A⁷, extending from each lever to the end of the connector A⁶, so that when the ends of the levers are separated the connectors A⁷ are drawn toward the levers and a reciprocating movement imparted to the connector A⁶ to perform the shifting operation. (See Fig. 8.) These connectors, as before stated, may be of any desired material, and in many cases it has been found desirable to provide the same with a coiled spring, as shown at A⁸ in Fig. 3, to prevent a shock to the parts when the contact of a plow therewith occurs and to retain the several connections under the proper tension.

The plow D is carried by a car or any suitable moving vehicle and is provided with a vertical shank D', slidably mounted in a keeper D² and connected at its upper end to a bell-crank lever D³ and normally held in the position shown in Fig. 4 by means of a tension-spring D⁴ or other suitable device. The plow is provided with a curved face D⁵ upon opposite sides, which at each end terminates in points D⁶, so as to effect a gradual separation of the switch-levers and to permit the closing of the same as the plow leaves the switch-box without danger of injury to the parts. As before stated, this plow is adapted to be lowered into one or more predetermined planes for the purpose of actuating either of the shifting-levers, and any mechanism may be used for effecting this movement of the plow. As illustrating one form thereof, a controlling-lever E is shown in Figs. 4 and 5 adapted to rotate above an indicating-plate E' and provided with a shaft E², carrying at its lower end a cam E³, as shown in Fig. 6. The movement of this cam causes a greater or less reciprocation of the connector E⁴, extending to the crank-arm D³, as will be seen by dotted lines in Fig. 6, and the desired extent of movement can be governed by the operator through the medium of the indications upon the plate E', so as to positively assure the contact of the plow with the proper switch-lever as the car approaches the switch-box B. The plow and operating parts thereof are supported upon the trucks of the car, so as to avoid all vibration or motion of the body upon the springs which would render the operation of the parts inaccurate under other conditions.

In the operation of the invention it will be seen that the plow upon the car is depressed to the proper plane for operating the lever to shift the switch in the desired direction. For instance, if a car were approaching in the direction of the arrow upon Fig. 1 and desired to continue upon the main tracks A the switch A' would need to be shifted for that purpose. The plow would consequently be adjusted to

engage the lower lever C, Fig. 3, and shift the arm A⁵ to the left, thus throwing the switch-points into position to leave the main line open. If the next car desired to enter the switch, the plow thereon would be adjusted to engage the upper lever, and by shifting the same through the connecting mechanism shown the switch-points would be restored to the position shown in Fig. 1. As shown in said figure, the switch-boxes B have been duplicated upon the main line at the right of the switch, so as to either open or close the same, and also upon the switch-track A², so as to control the switch from that direction, and it will be seen that the several connectors may be extended to a single shifting-arm A⁴ or connected to shift the points in any desired manner. By reference to Fig. 2 it will be seen that the upper switch-levers C are necessarily provided with lateral portions C³ in order to allow the plow to pass into contact with the lower levers without touching or affecting the contacts of the upper levers. It will be seen from the construction herein disclosed that all the parts for operating the switch are concealed beneath the tracks, and the single slot for the plow, being the only exposed part, is not liable to injury by the ordinary traffic upon the street, nor is the switch liable to be misplaced by the contact of any vehicle therewith. It will also be obvious that the curved faces of the operating-plate of the plow are adapted to permit an operation of the levers under any desired speed at which the car may be approaching the switch-box without danger of injury to any of the parts, as the contact is a gradual one in both opening and closing the levers.

It will be obvious that changes may be made in the details of construction and configuration of the several parts without departing from the spirit of the invention as defined by the appended claims.

Having described my invention, what is claimed is—

1. In a tramway-switch, a movable switch-point, vertically-disposed pair of levers connected therewith to shift said point, and means for separating the ends of the pair of said levers; substantially as specified.
2. In a tramway-switch, a movable switch-point, a plurality of operating-levers having their operative ends in different horizontal planes, and connections between said levers and the switch-point for operating the same independently by each lever; substantially as specified.
3. In a tramway-switch, a movable switch-point, a plurality of operating-levers having their operative ends in different horizontal planes, connections between said levers and the switch-point for operating the same independently by each lever, and a cover-plate for said levers provided with slots or ways in alignment with the operative end of each lever; substantially as specified.
4. In a tramway-switch, a movable switch-

point, a plurality of operating-levers having their operative ends in different horizontal planes, connections between said levers and the switch-point for operating the same independently by each lever, a cover-plate for said levers provided with slots or ways in alinement with the operative ends of each lever, and means for normally drawing the operative ends of said levers toward the center of each slot or way; substantially as specified.

5. In a tramway-switch, a movable switch-point, a plurality of operating-levers having their operative ends in different horizontal planes, connections between said levers and the switch-point for operating the same independently by each lever, a cover-plate for said levers provided with slots or ways in alinement with the operative ends of each lever, means for normally drawing the operative ends of said levers toward the center of each slot or way, and branched connectors extending from the ends of said levers to the connector for controlling the switch-point; substantially as specified.

6. In a tramway-switch, a movable switch-point, a plurality of operating-levers having their operative ends in different horizontal planes, connections between said levers and the switch-point for operating the same independently by each lever, a cover-plate for said levers provided with slots or ways in alinement with the operative ends of each lever, means for normally drawing the operative ends of said levers toward the center of each slot or way, branched connectors extending from the ends of said levers to the connector for controlling the switch-point, and a plow having curved faces for operating either of said levers having curved faces; substantially as specified.

7. In a tramway-switch, a movable switch-point, a plurality of operating-levers having their operative ends in different horizontal planes, connections between said levers and the switch-point for operating the same independently by each lever, a cover-plate for said levers provided with slots or ways in alinement with the operative ends of each lever, means for normally drawing the operative ends of said levers toward the center of each slot or way, branched connectors extending from the ends of said levers to the connector for controlling the switch-point, a plow having curved faces for operating either of said levers having curved faces, and means carried by a moving part for depressing the plow into different horizontal planes; substantially as specified.

8. In a tramway-switch, an operating-plow for the same vertically adjustable upon a moving member, a pivoted shaft and cam for adjusting said plow, and an indicating handle

and dial for governing said adjustment; substantially as specified.

9. In a tramway-switch, an operating-plow for the same vertically adjustable upon a moving member, a pivoted shaft and cam for adjusting said plow, an indicating handle and dial for governing said adjustment, a bell-crank lever connected to the upper end of said plow, and a connection extending from said lever to said cam; substantially as specified.

10. In a tramway-switch, opposite movable switch-points connected by a bar, an oscillating arm connected to said bar, a crank-arm movable with said oscillating arm, switch-box, a connector running from said arm to said switch-box, and means located within said box for reciprocating said connector; substantially as specified.

11. In a tramway-switch, a switch-box having at its upper portion a casing provided with slots in different horizontal planes, a pair of switch-operating levers disposed within said box and having contact-faces disposed at opposite sides of each of said slots, a spring connecting the lower ends of said pair of levers, and a connector extending from said levers to a movable switch-point; substantially as specified.

12. A cover for a tramway switch-box comprising a casing having a longitudinal slot in its upper face, and slots or openings in different horizontal planes at one end of said cover; substantially as specified.

13. In a tramway-switch, the combination with a movable switch-point, of independent operating mechanisms for moving said point in opposite directions having their contact portions disposed in different planes, and a contact-face carried by a moving member and adapted to be thrown into the plane of either of said switch-operating mechanisms; substantially as specified.

14. In a tramway-switch, the combination with vertically-disposed switch-operating levers having their contact ends in different horizontal planes, a plow adapted to engage said ends to shift either of the levers, and means for adjusting said plow into the plane of either of said operating-levers.

15. A switch-operating mechanism comprising a vertically-adjustable plow mounted upon a truck of a moving member, and means carried by said member for adjusting said plow in a vertical plane; substantially as specified.

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

LESTER H. BAYNE.

Witnesses:

ALFRED T. GAGE,
WM. D. SHOEMAKER.