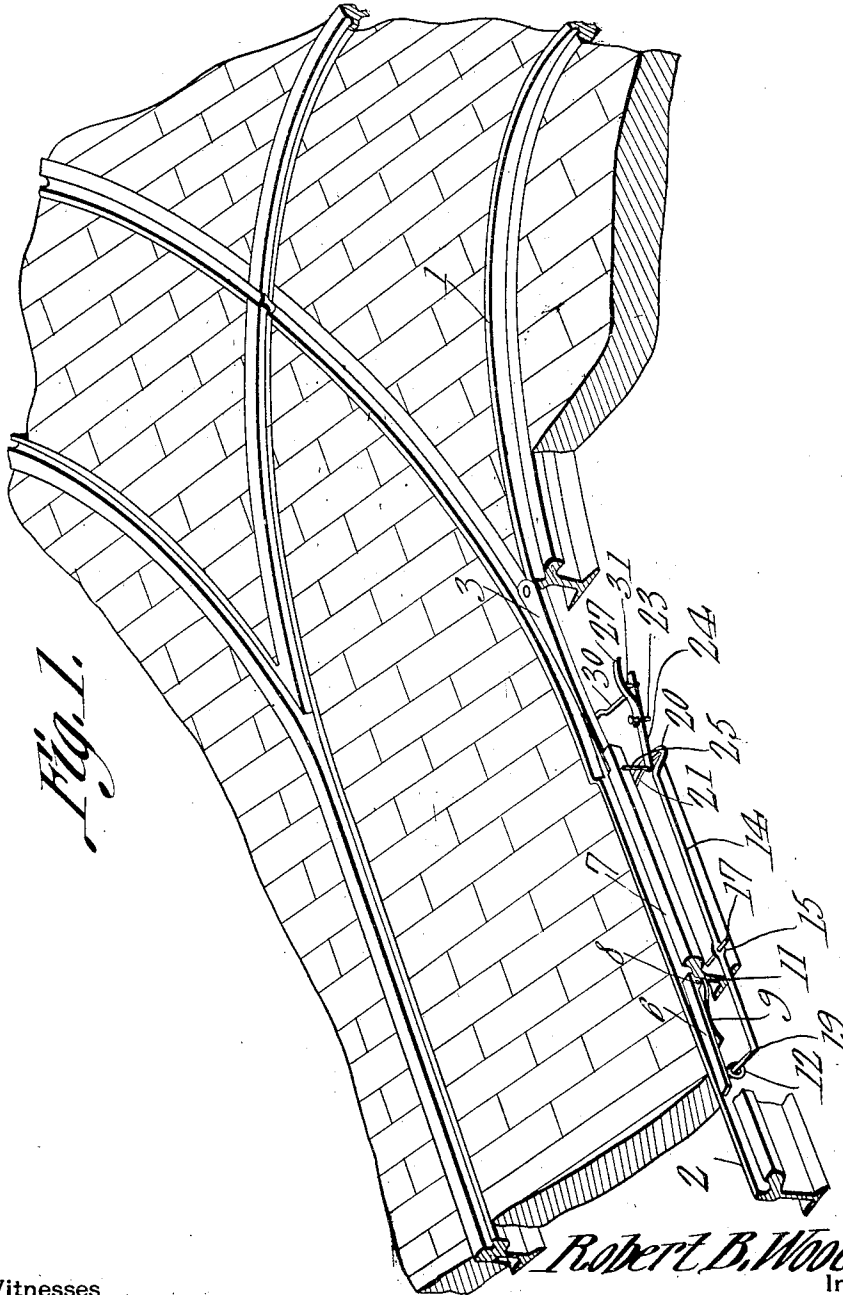


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STREET RAILWAY SWITCH.  
APPLICATION FILED APR. 18, 1912.

1,056,245.

Patented Mar. 18, 1913.

2 SHEETS—SHEET 1.



Witnesses

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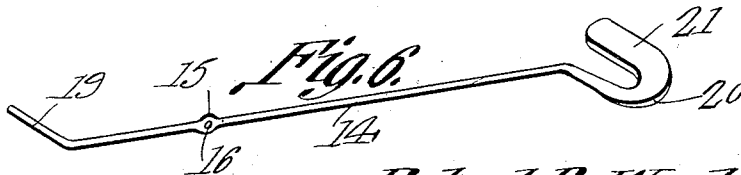
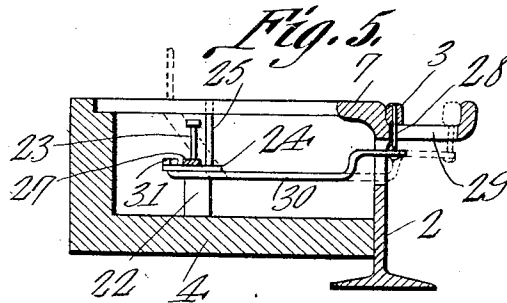
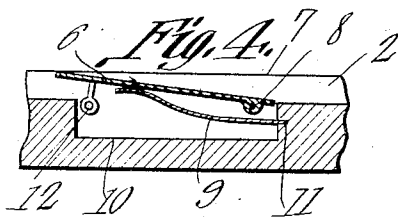
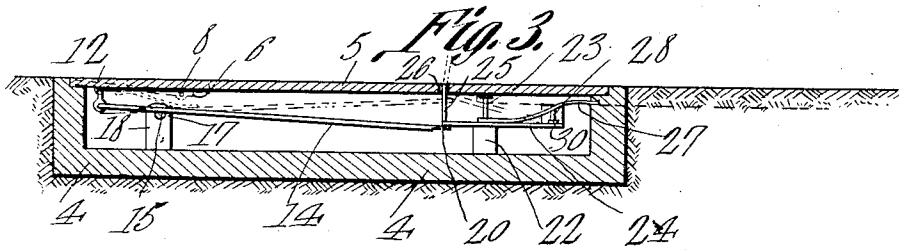
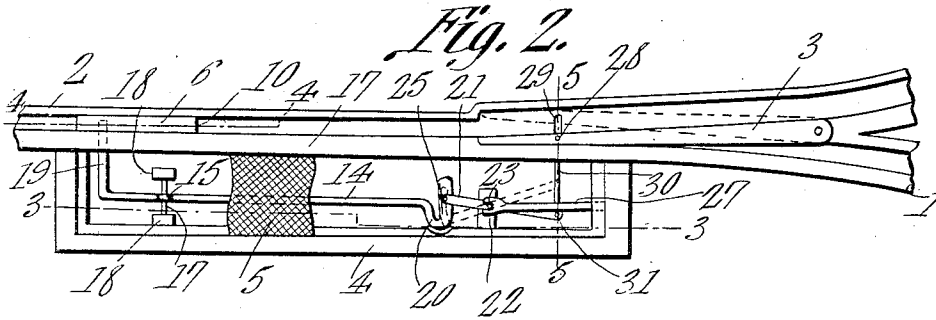
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2 SHEETS—SHEET 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

ROBERT B. WOODALL, OF TRASKWOOD, ARKANSAS.

## STREET-RAILWAY SWITCH.

1,056,245.

Specification of Letters Patent.

Patented Nov. 12, 1919.

Application filed April 13, 1919. Serial No. 321,326.

*To all whom it may concern:*

Be it known that I, ROBERT B. WOODALL, a citizen of the United States, residing at Traskwood, in the county of Saline and State of Arkansas, have invented a new and useful Street-Railway Switch, of which the following is a specification.

The device constituting the subject-matter of the present invention is a mechanism engageable by a passing car, to throw a switch point automatically. All portions of this mechanism are housed below the plane of the right of way, saving alone a movable member which is engaged by the wheel of a passing car. This movable member, when actuated by the car wheel, does not throw the switch, its function being to elevate another element which may be engaged by suitable mechanism upon the car, to move the switch point from one position to another. Novel means is provided for connecting the element which is engaged by the wheel of the car, with the element which is engaged by the car-carried mechanism to throw the switch point.

The invention aims, further, to provide novel means whereby all portions of the mechanism will be maintained normally below the plane of the right of way, excepting only the member which the wheel of the car engages.

A further object of the invention is to provide novel means for operatively assembling the parts of a switch throw of the type herein disclosed, and to strengthen and to improve generally, structures adapted to exercise the functions of a device of this sort.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings,—Figure 1 shows the structure in perspective, parts being broken away, and certain of the supporting elements being omitted, in order that the more important parts of the device may not be obscured; Fig. 2 is a top plan, parts being broken away; Fig. 3 is a vertical longitudinal section upon the line 2—3 of

Fig. 2; Fig. 4 is a vertical longitudinal section upon the line 4—4 of Fig. 2; Fig. 5 is a vertical transverse section upon the line 5—5 of Fig. 2; and Fig. 6 is a detail perspective of the connecting member which forms an important link between the wheel-engaging portion of the structure, and that portion of the structure which is engageable by the car-carried mechanism to throw the switch point.

In the accompanying drawings, the numeral 1 indicates the siding rail, the numeral 2 indicating one of the main line rails, and the numeral 3 indicating the switch point, the same being pivotally supported for lateral swinging movement, in the common and well known manner.

Disposed below the plane of the right of way, and in close relation to the main line rail 2, upon the outside of the track, is a case 4, recessed in its upper face to receive a closure 5. A movably mounted, wheel-engaging element 6, taking the form of a lever, extends longitudinally of the main line rail 1, and is located inside of the ball 7 of the main line rail, the lever 6 being pivotally supported upon the main line rail 2, adjacent one end, as shown at 8. The free end of the lever 6 is maintained in normally uplifted position, so as to be engaged by the flange of the car wheel, by means of a spring which may be of any form. In the present instance, the spring 9 takes the form of a resilient plate, located in a recess 10 in the main line rail 2, one end of the spring 9 being secured in the rail as denoted by the numeral 11, and as shown to best advantage in Fig. 4. Secured to the under surface of the wheel-engaging lever 6 and movable within the recess 10 is an eye 12. The recess 10 communicates with the interior of the case 4.

There is provided a connecting member, forming an important link between the wheel-engaging lever 6 and the means which the passing car engages directly, to throw the switch point 3. This connecting member appears in detail in Fig. 6, and preferably takes the form of a bar 13, provided intermediate its ends with an enlarged bearing 14, having an opening 15 adapted to receive the pivot pin 17 carried by posts 18, notwithstanding from the bottom of the case 4, although any other suitable means for securing the connecting member 13 may be provided. The connecting member 13 is

upheld for swinging movement in a vertical plane, upon the outside of the main line rail 2, and within the case 4. At one end, the connecting member is equipped with an angularly disposed, horizontally extended finger 17, adapted to register in the eye 12 which is carried by the wheel-engaging lever 6, this operative connection between the connecting member 14 and the wheel-engaging lever 6 appearing most clearly in Fig. 1. The opposite end of the connecting member 14 terminates in a horizontally disposed, hooked-shaped head 20, the bill of which is widened and flattened, as shown at 21.

Fixed to and rising from the bottom of the case 4 is a supporting member 22, the upper end face of which is of considerable extent. Upstanding from the upper end face of the supporting member 22 is a fulcrum pin 23, upon which is mounted, intermediately at ends, an actuating element 24, the same being in the form of a lever of the first order. The actuating element 24 is loosely connected upon the fulcrum pin 23, so that the actuating element may swing both vertically and horizontally. One end of the actuating element 24 rests upon the flattened bill 21 of the connecting member 14, the construction being such that when the connecting member 14 is swung vertically, the actuating element 24 will also be swung vertically, one end of the actuating element 24 sliding horizontally upon the flattened bill 21, under circumstances which will be described hereinafter. That end of the actuating element 24 which rests upon the bill 21 of the connecting member 14 is provided with an upstanding finger 25, adapted to move transversely of the track, in a slot 26 in the closure 5 of the case 4. The upper end of the finger 25 normally lies below the upper face of the closure 5, and to maintain the finger 25 thus disposed, a spring 27, preferably taking the form of a flat bar, bears at one end upon the actuating element 24, adjacent the fulcrum pin 23, the spring 27 acting to thrust the element 24 against the upper end face of the supporting member 22, and to maintain the actuating element horizontally disposed, with its finger 25 retracted below the plane of the upper face of the closure 5. The spring 27 may be mounted in any desired manner. In the present instance, as is shown most clearly in Fig. 2, the fixed end of the spring is united with one end of the case 4.

Fixed to and depending from the switch point 3 is a pin 28, most clearly disclosed in Fig. 5, the pin 28 being adapted to move in a slot 29 in the main line rail 2, the slot extending transversely of the rail. The lower end of the pin 28 is loosely connected with a link 30, positioned transversely of the track, one end of the link 30 being equipped with an outstanding finger 31 which is

loosely engaged with the actuating element 24, the finger 31 and the finger 25 lying upon opposite sides of the fulcrum pin 23 upon which the actuating element 24 is pivoted.

In practical operation, the spring 27 will thrust the actuating element 24 downwardly upon the upper end face of the supporting member 22, the finger 25 being thus retracted below the upper face of the closure 5. The spring 27 will serve to elevate the free end of the wheel-engaging lever 6, and this free end of the wheel-engaging element is the only portion of the switch throwing mechanism which upstands above the plane of the right of way, under normal conditions. When a car or a train approaches the switch point, the flange of one of the wheels of the car will ride upon the wheel-engaging lever 6 and depress the free end of the same. This movement of the wheel-engaging element 6 will effect a tilting of the connecting member 14, elevating the flattened bill 21 of the connecting member. The actuating element 24 will be tilted upon its pivotal mounting 23, the finger 25 being elevated so that its upper, free end will be positioned well above the upper face of the closure 5 of the case 4. The operation as thus far described, it will be noted, has not effected a throwing of the switch point 3.

The car may be equipped with any suitable mechanism for engaging the finger 25 to throw the switch point. Such mechanism constitutes no part of the present invention, and may be of any desired form. One car-carried structure adapted for this end, is shown in my prior Patent Number 991,403, issued to me upon the second day of May 1911. When the finger 25, which has been advanced to protrude above the plane of the right of way, is engaged by suitable car-carried mechanism, the actuating element 24 will be swung horizontally upon its pivotal mounting 23, one end of the actuating element sliding upon the flat bill 21 of the connecting member 14. This swinging movement of the actuating element 24 will operate the link 30, the link 30 moving the switch point 33 in one direction or the other, depending upon the direction in which the finger 25 has been thrust by the action of the car-carried mechanism above-referred to. The switch point 3, will, therefore, be thrown automatically, in advance of the approaching car. When the actuating element 24 is moved vertically, by the action of the connecting member 14, the spring 27 will be put under slight tension, and so soon as the wheel of the car is free from the lever 6, the spring 27 will act to retract the finger 25 below the plane of the upper face of the closure 5.

The construction of the device is such that but one element of the structure normally upstands beyond the plane of the

right of way, and this element is the wheel-engaging lever 6. This lever 6, operating below and adjacent the ball 7 of the rail 2, cannot well be moved, saving through the instrumentality of the depending wheel flange. The device, therefore, is well adapted for use upon street car lines and elsewhere, where it is desirable that all of the operating portions of the switch throw be disposed below the level of the track. Pedestrians and vehicles cannot well actuate the switch throw herein disclosed, and there are practically no protruding elements in the structure liable to be disarranged or broken in this manner.

In the appended claims, the words "horizontally" and "vertically" are used to explain the movements of the members 14 and 24, the same constituting the secondary and primary levers, respectively. The words "horizontally" and "vertically" are used in a relative sense only, it being understood that upon curves, where one rail is elevated above the other, and upon a down grade, these levers will of necessity move in planes which approximate only, the horizontal and the vertical.

Having thus described the invention, what is claimed is:—

1. In a device of the class described, a switch point; an actuating element operatively connected with the switch point and supported intermediate its ends upon a single fulcrum for tilting movement both horizontally and vertically, a portion of said element being engageable by a passing car, when said element is moved vertically, to throw the switch point, the horizontal movement of said element serving to move the switch point; and means engageable by the wheel of a passing car, to move said element vertically.

2. In a device of the class described, a primary lever supported intermediate its ends to tilt in two planes; a secondary lever engaged with the primary lever to swing the primary lever in one plane, thereby to position a portion of the primary lever for engagement by a passing car, the primary lever being slidable transversely upon the secondary lever in the other plane; a switch point; a connection between the switch point and the primary lever, whereby the switch point will be thrown by the primary lever,

when the primary lever is slid upon the secondary lever and is moved in the other plane by a passing car; and mechanism operatively connected with the secondary lever and engageable by a passing car, to actuate the secondary lever in the first named plane.

3. In a device of the class described, a supporting member; a primary lever fulcrumed upon top of the supporting member for movement both horizontally and vertically; a spring thrusting the primary lever against the supporting member, to maintain the primary lever horizontally positioned; means upon one end of the primary lever for engagement by a passing car, to swing the primary lever horizontally; a switch point; a connection between the switch point and the primary lever, whereby the horizontal movement of the primary lever will actuate the switch point; a secondary lever supported intermediate its ends and engaged with the primary lever to tilt the same vertically; and a movable member, engageable by the wheel of a passing car, to actuate the secondary lever.

4. In a device of the class described, a main line rail; a siding rail; a switch point; a wheel-engaging lever fulcrumed adjacent the main line rail; a secondary lever pivotally supported intermediate its ends, and engaged at one end with the wheel-engaging lever; a primary lever fulcrumed intermediate its ends for movement in two planes, the primary lever being engageable by the secondary lever, for movement in one plane, thereby to position a portion of the primary lever for engagement by a passing car and being slidable upon the secondary lever in the other plane; a link connecting the primary lever with the switch point, whereby a sliding movement of the primary lever upon the secondary lever in said other plane, by the passing car, will actuate the switch point; and spring means operating upon the primary lever to oppose the swinging of the primary lever by the secondary lever.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ROBERT B. WOODALL.

Witnesses:

ENOCH H. VANCE, Jr.,  
LEE MILLER.