

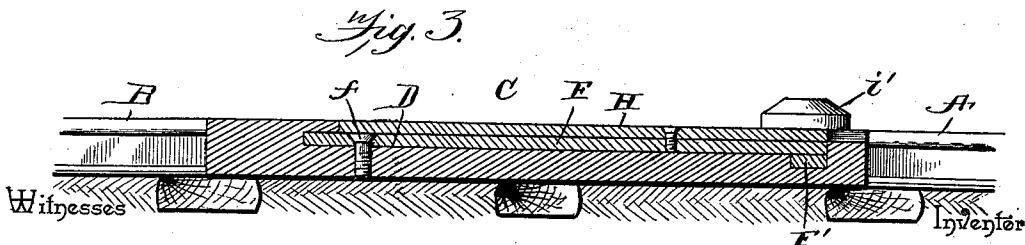
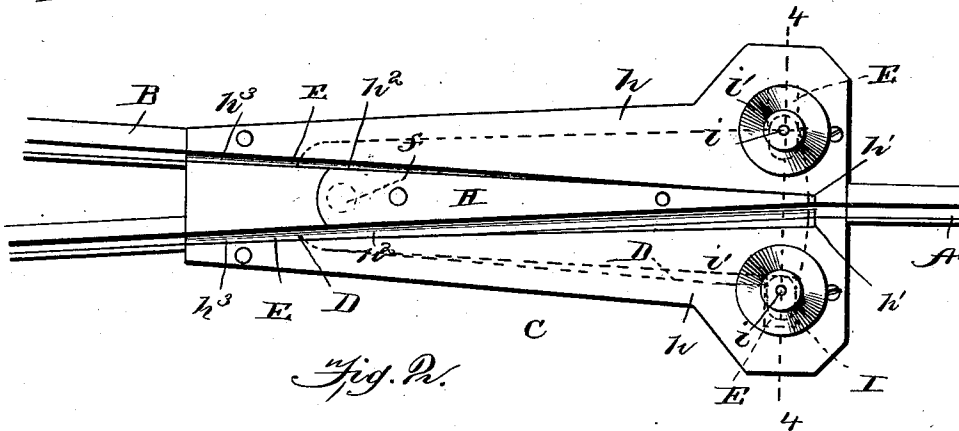
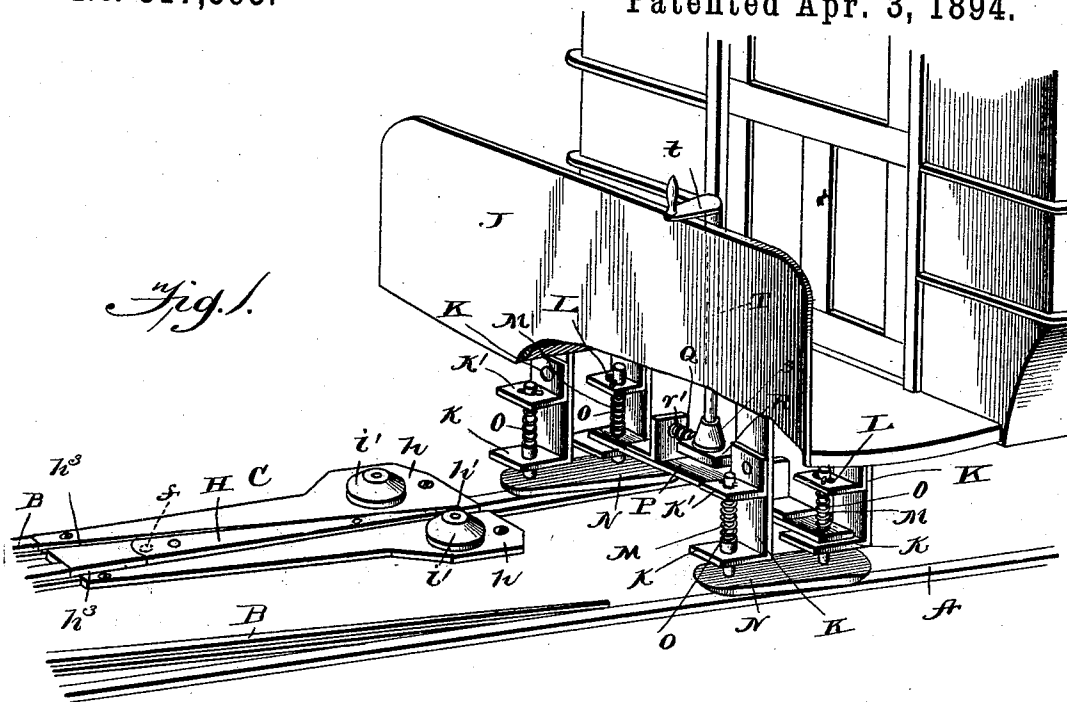
(No Model.)

W. H. SOUTHWORTH.
AUTOMATIC SWITCH.

2 Sheets—Sheet 1.

No. 517,595.

Patented Apr. 3, 1894.



Witnesses
John C. Shan
D. P. Haupt

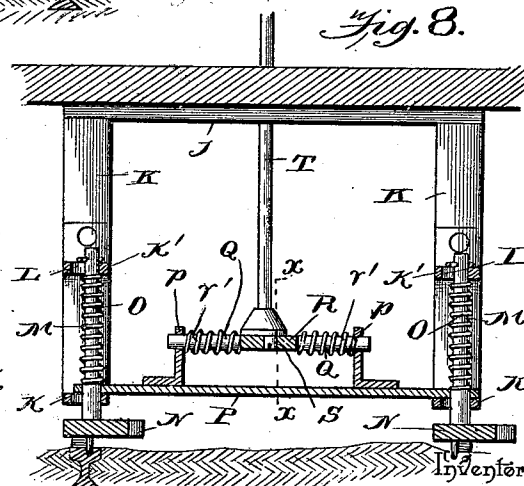
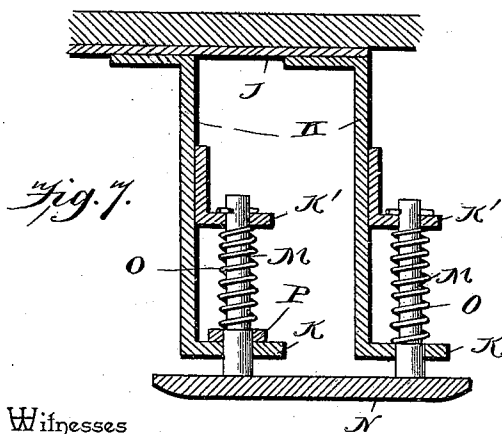
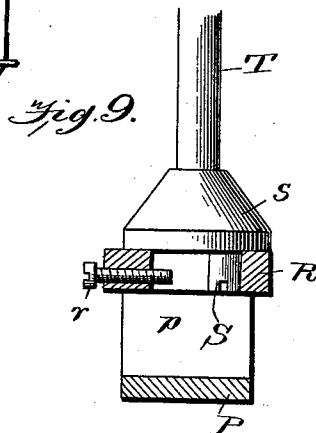
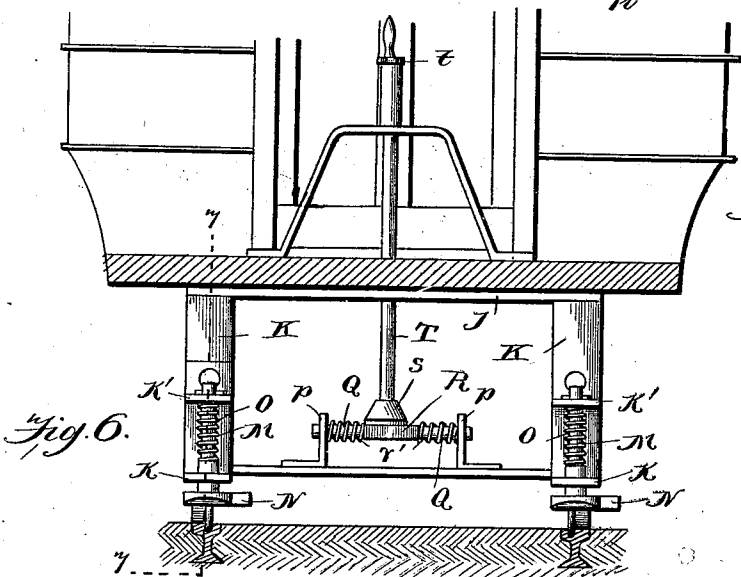
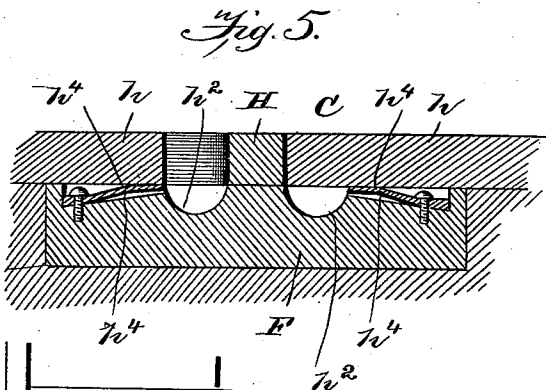
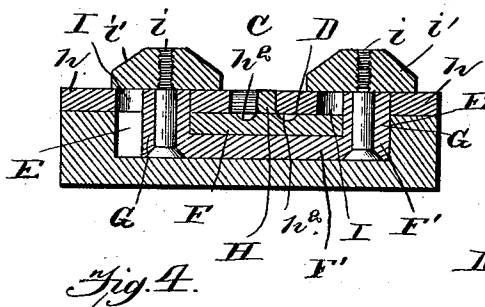
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AUTOMATIC SWITCH.

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Witnesses

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UNITED STATES PATENT OFFICE.

WALTER H. SOUTHWORTH, OF MEMPHIS, TENNESSEE, ASSIGNOR OF TWO-THIRDS TO V. A. CORDES AND J. A. WEBB, OF SAME PLACE.

AUTOMATIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 517,595, dated April 3, 1894.

Application filed April 28, 1893. Serial No. 472,242. (No model.)

To all whom it may concern:

Be it known that I, WALTER H. SOUTHWORTH, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented a new and useful Automatic Switch, of which the following is a specification.

This invention relates to automatic switches for street and other railways; and it has for its object to provide certain improvements in switches of this character whereby the driver, motor-man, or engineer, can accurately and conveniently control the switch as his car is in motion, so as to properly guide the car at the point where the switch is located.

To this end the main and primary object of the invention is to provide an improved automatic switch, and improved devices for controlling such switch whereby the necessity of having a switch tender is avoided, and accidents less likely to occur.

With these and other objects in view which will appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts, hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of a portion of a street railway track, showing my improved switch in position and a portion of a car provided with the switch operating devices. Fig. 2 is an enlarged detail plan view of the switch. Fig. 3 is a central vertical longitudinal sectional view of the switch. Fig. 4 is an enlarged transverse sectional view on the line 4—4 of Fig. 2. Fig. 5 is an enlarged detail transverse sectional view showing the cleaning springs attached to the movable switch plate. Fig. 6 is an end view of the car attachment for operating the switch. Fig. 7 is an enlarged detail sectional view on the line 7—7 of Fig. 6. Fig. 8 is a central transverse sectional view of the operating devices. Fig. 9 is a detail sectional view on the line $x-x$ of Fig. 8.

Referring to the accompanying drawings, A represents the main track rails from which lead the side or branch rails B, in the ordinary manner, and at the intersection of one of the rails A with one of the side or branch

rails B, is arranged the switch box or casting C, which box or casting carries the switching devices employed for shifting the cars or trains from the main track to the side or branch track.

The switch box or casting C, is provided in the face thereof with the pocket or recess D, from one end of which lead the transverse off-standing guide grooves E, and seated in the pocket or recess D, is the pivoted switch plate F, the top face of which is flush with the top face of the box or casting C. The pivoted switch plate F, is pivoted at one end on the pivot screw f , which also serves to hold the plate in position within the box or casting, and is embraced at its other end by the transverse sliding yoke F' , provided with the laterally extending lugs or arms G, which are adapted to move in the off-standing grooves E, in said box or casting the said movable or pivoted switch plate being of a suitable width in order to allow for the lateral play thereof inside of the switch box or casting C. The pivoted switch plate F, carries upon the top thereof the pointed switch rail H, which is designed to align with one of the main track rails A, so as to guide or direct the cars along the main track, or to be moved away from the straight line of the main track rail, and into alignment with one of the branch rails B, so as to switch the cars in the ordinary manner, and said pointed switch rail H, is designed to play between the opposite rail plates h . The opposite rail plates h , are detachably secured to the top of the switch box or casting at opposite sides thereof, so as to overlap the opposite edges of the movable switch plate therein, and said rail plates h , are disposed in a line with the main and branch rails respectively, so that as the switch rail is thrown against either of the same, the cars will be directed onto the side rails or straight along the main track as the case may be, the flange of the wheel of course traveling in the groove formed between the switch rail and the side of the rail plate with which it is not in contact. When the switch rail is thrown against either of the rail plates h , the point thereof registers in the shoulders h' , so that no projecting edges are presented to the flanged car wheels.

As may be clearly seen in the drawings the top of the switch plate F, on each side of the switch rail thereon, is provided with the longitudinal dirt grooves h^2 , which grooves align with corresponding grooves h^3 , at the top ends of the switch box or casting, and said grooves serve to catch and hold accumulations of dirt and other matter, which is scraped from the bottom of the overlapping rail plates h , by means of the cleaning springs h^4 , which may be attached to the top of the pivoted switch plate, so that as the same is moved back and forth, such springs will bear under the rail plates and clean the same from any dirt or obstructions which would tend to clog up the switch. The opposite rail plates h , are provided at a point directly over the guide grooves E, with the slots I, in which move the roller stems i , attached at their inner ends to the lugs or arms G, of the switch plate-yoke, and carrying at their outer ends the shifting rollers i' , between which are adapted to travel the devices carried by the car for shifting the switch rail by contacting with either of said rollers, and which I shall now proceed to describe.

As illustrated in Fig. 1, of the drawings, J represents the front end of a street car, which of course may be an engineer's cab or other part of the car from which the switch operating devices are to be controlled, such switch-operating devices being of course arranged in advance of the foremost set of wheels, so as to set the switch properly before the wheels reach it. Secured to a suitable point of attachment in advance of the front set of wheels of the car, is the attachment plate j , to the opposite ends of which and depending therefrom are the opposite pairs of brackets K. The brackets K, of each pair are provided at their lower ends with the feet or flanges k , and have attached thereto at a suitable point above said feet or flanges correspondingly disposed bracket arms k' , said feet or flanges and said bracket arms being perforated. The perforations in the bracket arms of the inner or rear brackets of each opposite pair are elongated to form slots L, to provide for the lateral play of the rear shoe-stems M, which arise from the front and rear ends of the shifting shoes N, and which pass through the flanges k , and the bracket arms k' , of each opposite pair, as clearly illustrated in the drawings.

The shifting shoes N, are flat and slightly tapered from their front ends, and by reason of the lateral play of the rear stems, the front ends of said shoes are pivoted so that the shoes can be disposed at the proper angle in order to properly set the switch, said shoes being held in close proximity to the track by means of the springs O, arranged on the stem between the flanges and bracket arms. The springs O, also allow the shoes to yield upward to pass obstructions on the rails.

The laterally movable stems of the opposite shifting shoes N, are connected by the trans-

verse laterally movable shifting bar P, which bar carries at an intermediate point the perforated lugs or ears p , in which is mounted the horizontal rod Q. The horizontal rod Q, is provided with a slotted box R, into one end of the slot of which works the set screw r , and at each side of which on the rod are coiled the opposite springs r' , bearing against the perforated lugs or ears p , so as to allow the rod to yield properly to prevent any part of the switch controlling devices from being broken or injured by any unusual jar or tension caused by obstruction in the switch. The slot in the box R, receives the crank pin S, of the crank wheel or hub s , carried upon the lower end of the turning operating shaft T, which carries at its other end a crank handle t arranged in convenient position for the operator. By adjusting the screw r , and therefore regulating the width of the slot in the box R, the degree of lateral play of the transverse shifting bar P, can be regulated, so that the pitch or angle of the shifting shoes can also be regulated. Now it will be readily apparent that by manipulating the shaft T, the operator can set the shifting shoes at such an angle, so that, according to which side of the track the switch is on, one of said shoes will pass between the shifting rollers i' , and will contact with one of said rollers so as to slide the same out, to throw the switch rail against one of the rail plates, and thereby properly set the switch for the guidance of the car.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described automatic switch will be readily apparent to those skilled in the art, and I will have it understood that changes in the form, proportion and the minor details of construction, as embraced within the scope of the appended claims, may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a switch, the combination of a switch box or casting having a pocket or recess, a switch plate pivoted in said pocket or recess and carrying a pointed switch rail, opposite rail plates attached to said switch box or casting on each side of the switch rail, and traveling devices for shifting the switch plate, substantially as set forth.

2. In a switch, the combination of a switch box or casting having a pocket or recess and opposite slotted rail plates, a switch plate pivoted in said pocket or recess beneath the rail plates and carrying a pointed switch rail moving between said plates, shifting stems connected to the switch plate, and means for laterally moving said shifting stems, substantially as set forth.

3. In an automatic switch, the combination of a switch box or casting having a pocket

or recess, rail plates removably attached to the opposite top sides of said box or casting and having slots at one end, a movable switch plate pivoted at one end in said pocket or recess and carrying a pointed switch rail moving between said rail plates, roller stems attached to the switch plate and moving in the slots in the rail plates, rollers mounted on the upper ends of said stems, and traveling shifting devices adapted to travel between said rollers and to contact with either one of the same, substantially as set forth.

4. In a switch, the recessed box or casting, a movable switch plate pivoted at one end in the box or casting and carrying a pointed switch rail, said plate being provided with longitudinal dirt grooves on each side of the switch rail, opposite rail plates attached to said box or casting and overlapping the switch plate, and cleaning springs attached to the switch plate and bearing under the opposite rail plates, substantially as set forth.

5. In an automatic switch, a switch box or casting having a recess and off-standing grooves at one end of said recess, opposite rail plates attached to opposite top sides of said box or casting and having slots over said off-standing guide grooves and shoulders at their inner edges, a movable switch plate pivoted at one end in the recess of said box or casting and having lugs at one end moving in said off-standing guide grooves, and carrying a pointed switch rail adapted to be thrown into the shoulders of the rail plates, roller stems attached to the lugs of the said switch plate and moving in the slots of said rail plates, and shifting rollers attached to the upper ends of said stems above the rail plates, substantially as set forth.

6. The combination with a switch carrying laterally movable shifting rollers; of shifting shoes adapted to be carried by a car, and means for disposing said shifting shoes at an angle so as to pass between and contact with either of the shifting rollers, substantially as set forth.

7. In an automatic switch, the combination

with the movable switch rail carrying separated shifting rollers; of the flat shifting shoes supported from a car and pivoted at their front ends so as to leave their rear ends free to move laterally, a transverse shifting bar connecting the laterally movable ends of said shoes, and a crank or eccentric device for moving the transverse shifting bar laterally to adjust the angle of the shoes, substantially as set forth.

8. The combination with a switch having a movable switch rail carrying separated shifting rollers; of depending brackets suspended from a car and having perforated bracket arms certain of which are provided with slots, flat shifting shoes having stems mounted in said bracket arms to leave their rear ends free to move laterally, springs arranged on said stems to normally extend the flat shoes below the brackets near to the track rails, a transverse shifting bar connecting the rear laterally movable shoe stems, and a crank or eccentric device for moving the transverse shifting bar laterally to adjust the angle of the shoes, substantially as set forth.

9. The combination with a car, of flat shifting shoes supported from the car and pivoted at their front ends, a transverse shifting bar connecting the rear movable ends of said shoes and carrying perforated lugs or ears at an intermediate point, a horizontal rod mounted in said perforated lugs or ears and having a slotted box, a set screw working into one end of the slot in said box, springs arranged on said rod between said box and the perforated lugs or ears, a turning operating shaft carrying at one end a crank wheel or hub provided with a crank pin adapted to work in the slot of said slotted box, substantially as set forth.

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

WALTER H. SOUTHWORTH.

Witnesses:

C. D. FINLEY,
L. M. WADE.