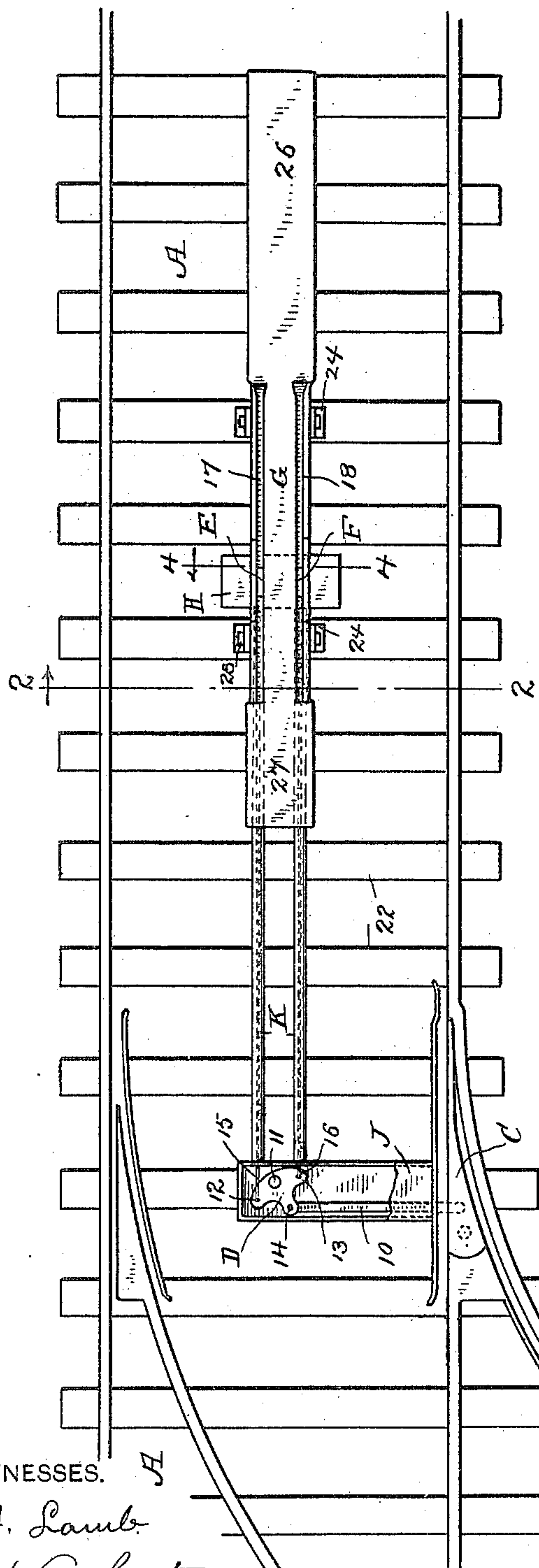


W. A. CLAPP,  
STREET RAILWAY SWITCH.

(Application filed Sept. 22, 1900.)

(No Model.)

**2 Sheets—Sheet 1.**



WITNESSES.

H. A. Lamb.

S. W. Atherton.

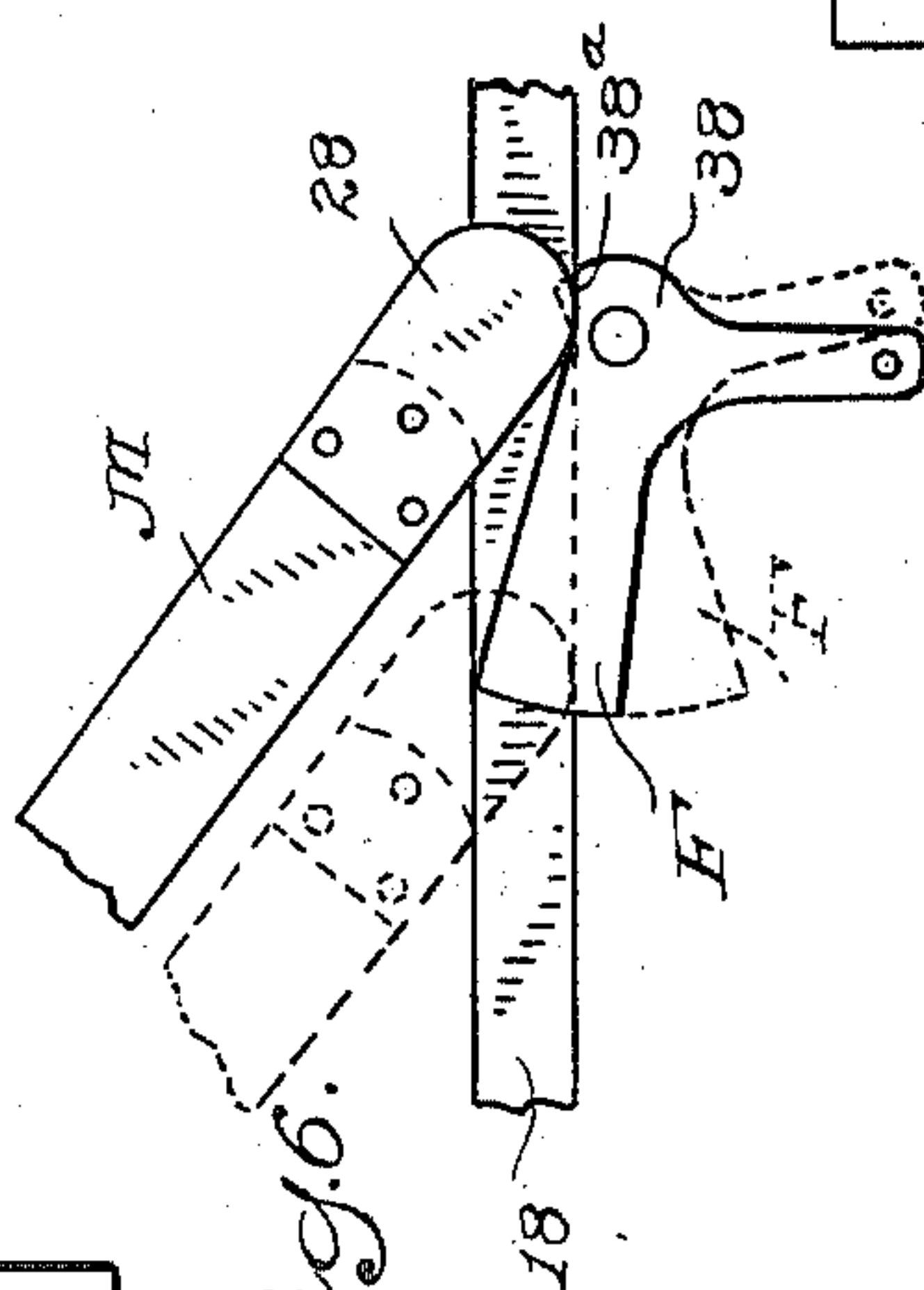
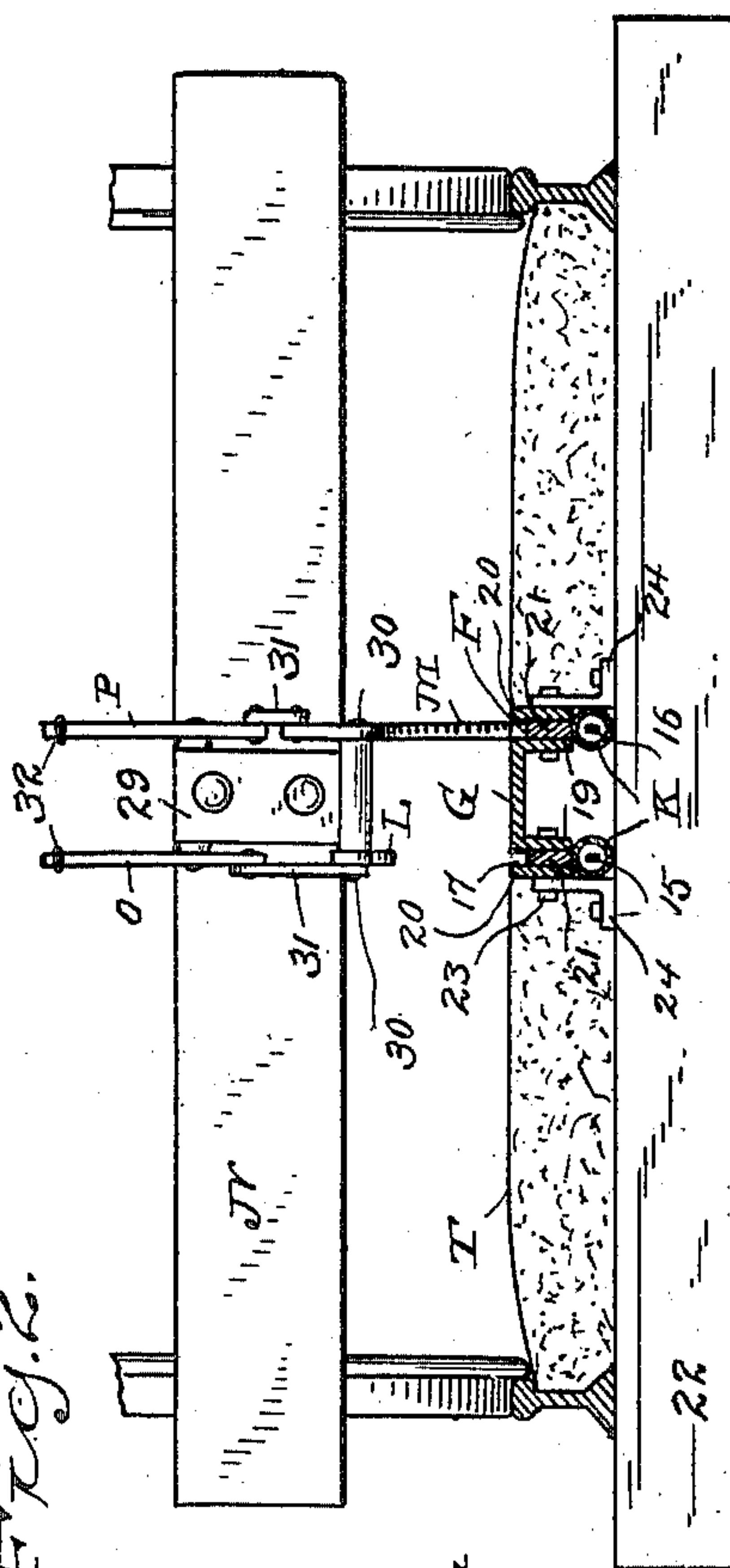


Fig. 6.

**INVENTOR:**

Wilson A. Clapp

By  
A. M. Crooster  
Atty.





# UNITED STATES PATENT OFFICE.

WILSON A. CLAPP, OF BRIDGEPORT, CONNECTICUT.

## STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 668,092, dated February 12, 1901.

Application filed September 22, 1900. Serial No. 30,829. (No model.)

*To all whom it may concern:*

Be it known that I, WILSON A. CLAPP, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Street-Railway Switch, of which the following is a specification.

My invention relates to the class of street-railway switches which are adapted to be operated by the motorman or driver of an approaching car and without stopping the car or the driver leaving his position; and my invention has for its object to provide track mechanism and also operating mechanism upon the car which shall be strong, durable, inexpensive, easy to operate, and under ordinary circumstances practically impossible to get out of repair.

With these ends in view I have devised the simple and novel railway-switch and operating mechanism therefor, which I will now describe, referring to the accompanying drawings, forming part of this specification, and using reference characters to designate the several parts.

Figure 1 is a plan view, the pavement being removed, illustrating a main track, a branch track leading therefrom, a switch-point, and my novel track mechanism, the switch-point being in position to retain a car on the main track; Fig. 2, an enlarged sectional view on the line 2 2 in Figs. 1 and 3, showing pavement between the rails, the parts upon the car being in position to produce the position of the switch-point shown in Fig. 1; Fig. 3, a view in side elevation illustrating a portion of the running-gear of a street-car and showing the application thereto of my novel switch-operating mechanism; Fig. 4, a detail sectional view, on an enlarged scale, on the line 4 4 in Figs. 1 and 5; Fig. 5, a similar view on the line 5 5 in Fig. 4, the position of the track mechanism in Figs. 4 and 5 corresponding with the position of the operating mechanism in Figs. 2 and 3; and Fig. 6 is a detail view illustrating the operation of one of the car-levers upon the corresponding track-lever.

A denotes the main track, B a branch track, and C a pivoted switch-point of any ordinary or preferred construction.

The switch-point is operated to open either

the main or the branch tracks by means of a link 10, pivoted thereto and to one arm of a three-armed lever D. This lever D is, in fact, a double bell-crank lever, the pivotal point of said lever, which I have indicated by 11, lying midway between the side arms, which I have indicated, respectively, by 12 and 13, the arm to which link 10 is pivoted being indicated by 14. The arms 12 and 13 of lever D are connected, respectively, by means of rods 15 and 16 with bell-crank levers E and F. These levers are pivoted to oscillate in slots at the bottoms of grooves 17 and 18 in a fixture G, which is rigidly secured in any suitable manner between the rails of the main track. The mode of construction of this fixture may of course be greatly varied without departing from the principle of my invention. In the present instance I have shown said fixture as comprising a metallic plate both sides of which, at the central portion thereof, are bent downward to form angle-flanges 19, and the grooves 17 and 18 as formed by means of side plates 20, corresponding with the angle-flanges, and narrower short plates 21, lying between the side plates and the angle-flanges, the tops of the short plates being enough lower than the side plates and the angle-flanges to form the grooves, which may be in practice three-fourths of an inch, more or less, in width and one inch, more or less, in depth. The parts which together complete fixture G are shown as secured together and to ties 22 by means of bolts 23, which pass through the angle-flanges, short plates, side plates, and a portion of which pass through angle-plates 24, which are themselves bolted to the ties. This construction is inexpensive to build and permits convenient access to levers E and F. The levers E and F are pivoted in slots 25, formed between the ends of the short plates by the angle-flanges and side plates, the upper arms of said levers being adapted, respectively, to swing upward into grooves 17 and 18, as is clearly shown in Figs. 4 and 5, and the lower arms of said levers, to which rods 15 and 16 are respectively connected, extending downward into a housing H. Lever D and the larger part of link 10 are inclosed in a housing J, the top of which is shown as broken away in Fig. 1. These housings may be bolted or otherwise rigidly



secured to ties and are suitably constructed to permit convenient access to the parts. It will be noted (see Figs. 5 and 6) that the upper arms of levers E and F are so shaped as to always closely fill slots 25, so that either in the raised or the lowered position of said levers it will be impossible for any appreciable amount of dirt to work into the slots. This result I accomplish by providing said levers E and F with arc-shaped portions 38, the top walls of which (indicated by 38<sup>a</sup>) lie flush with the bottoms of the grooves when the upper arms are in the raised position, as shown in full lines in Figs. 5 and 6, and which rise up into the grooves (see dotted lines in said figures) when the levers E and F are pressed down by the levers upon a car. Rods 15 and 16 are preferably inclosed in pipes K, the ends of which may be provided with reverse screw-threads and tapped into housings H and J, respectively. One end of fixture G—the right, as shown in Fig. 1—comprises an approach-plate 26, from which grooves 17 and 18 lead downward, the openings of said grooves being preferably made flaring, as clearly shown in Fig. 1, the purpose of which will presently be apparent. At the other end of fixture G, I preferably provide a tail-plate 27, the purpose of which also will presently be fully explained.

Levers E and F are operated by means of levers L and M, respectively, which are carried by the brake-beam N of a car, the lower or operative end of each of the levers being provided with a detachable shoe 28, which is adapted to engage the corresponding lever E or F and operate it, as will be more fully explained.

In order that my novel switch-operating mechanism may be applied to cars already in use without the necessity for any change whatever being made in their construction, I have in the present instance shown a bracket 29 as rigidly secured to and extending from the brake-beam, levers L and M being pivoted to this bracket, as at 30. O and P denote other levers pivoted to bracket 29 and corresponding with levers L and M, to which they are respectively connected by means of links 31. Levers O and P are connected, respectively, by means of rods 32 with levers Q and R, pivoted upon the car-platform S, as at 33. The short arms of levers Q and R, to which rods 32 are connected, extend downward through the platform, and the long arms extend upward into convenient position to be grasped by the motorman or driver. For convenience in operation these levers are provided with grips 34 and with locking-latches 35. As the construction of these locking-latches is not of the essence of my invention, I have not thought it necessary to illustrate them in detail. It is sufficient for the purposes of my invention to provide any suitable form of locking-latch adapted by gravity or spring to remain normally in engagement with a curved rack 36 and to be released by

a hand-lever 37, the construction being such that the levers Q and R will remain in any position in which they are placed until their position is changed by the operator.

The operation will be readily understood from the drawings. Suppose that a car is coming from the right, as seen in Figs. 1 and 3, and that it is desired to have it proceed on the main track, the branch track in this instance leading toward the left. The operator would swing down the corresponding platform-lever—in this instance lever R. This movement of lever R, through lever P, one of the rods 32, and one of the links 31, would operate lever M and bring the left shoe 28 down into contact with approach-plate 26. As the car moves forward this shoe will pass into groove 18, and if lever F is in the raised position, as in Figs. 4 and 5, will press said lever downward into the position in which lever E is shown in said figures—that is, the top of the lever will lie flush with the top of the intermediate short plates, which form the bottom of the groove. This movement of lever F will be communicated through rod 16 to lever D, and said lever through link 10 will carry the switch-point to the position shown in Fig. 1—i. e., a position which opens the main track. Suppose, on the other hand, that it was desired to have the car pass from the main track to the branch track. The operator would perform precisely the same operation, except that he would manipulate lever Q instead of lever R, and said lever Q, through lever O and the corresponding rod and link, would operate lever L and would place the shoe upon said lever L in engagement with the approach-plate, so that as the car moved forward the shoe would pass into groove 17, and in case of lever E being in the raised position would press it down to the lowered position, in which it is shown in Figs. 4 and 5, this being a position which will open the branch track. It should be carefully borne in mind that the position of levers E and F in Figs. 4 and 5 is a position that would cause the car to pass on to the branch track, said levers E and F in said Figs. 4 and 5 being in position before instead of after they have been operated to close the branch track and open the main track. As soon as either of the shoes 28 has reached the end of the corresponding groove it will ride up on the tail-plate 27, the object of the tail-plate being simply to prevent the shoe upon the lowered lever L or M, as may be, from dragging upon the pavement (indicated by T in Fig. 2) until it is raised to its normal or inoperative position by the return of the corresponding platform-lever Q or R, as may be, to its normal or upright position, it being borne in mind that in Fig. 3 lever Q is in the normal or inoperative position and lever R in the lowered position—i. e., a position in which it will cause the lever M to operate the lever F, the effect of which will be to throw the lever D to the position shown in Fig. 1 and open the



main track. The shoes 28 act under ordinary circumstances to clear the grooves of dust and snow. When worn, they may be quickly removed and replaced by new ones.

5 Having thus described my invention, I claim—

1. A street-railway switch comprising a pivoted switch-point, a three-armed lever to which the switch-point is connected, bell-  
10 crank levers adapted to be actuated from an approaching car and connected to the three-armed lever and a fixture G comprising a plate whose sides are bent to form angle-flanges, side plates 20 and short plates intermediate  
15 the side plates and the angle-flanges whereby grooves are formed and also slots in which the bell-crank levers are pivoted.

2. A street-railway switch comprising a pivoted switch-point, a three-armed lever to  
20 which the switch-point is connected, bell-crank levers adapted to be actuated from an approaching car and connected to the three-armed lever and a fixture G comprising an approach-plate and grooves leading there-  
25 from and bell-crank levers pivoted to swing into said grooves, said grooves being formed by means of angle-flanges, side plates 20 and plates intermediate the side plates and the angle-flanges.

30 3. A street-railway switch comprising a pivoted switch-point, a lever to which the switch-point is connected, bell-crank levers adapted to be actuated from an approaching car and connected to the first-mentioned lever, and a  
35 fixture G comprising an approach-plate and

grooves leading therefrom, said bell-crank levers being pivoted in said fixture and having their free arms normally extending horizontally in said grooves.

4. The combination with a switch-point, of  
40 a fixture G having grooves in its upper surface, bell-crank levers pivoted in said fixture and having their free arms normally extending horizontally in said grooves, connections intermediate the bell-crank levers and  
45 the switch-point, a brake-beam, levers carried thereby and having their ends by which the bell-crank levers are actuated in close proximity to the wheels of the car, platform-  
50 levers, levers O and P upon the brake-beam, connections intermediate said levers and the platform-levers and links 31 intermediate levers O and P and the shoe-carrying levers respectively.

5. The combination with the brake-beam  
55 of a car of levers L and M having rigid removable shoes and levers O and P carried by said brake-beam in close proximity to the wheels of the car, platform-levers Q and R, rods connecting said levers with levers O and  
60 P respectively, and links 31 connecting levers O and P respectively with levers L and M, substantially as and for the purpose set forth.

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

WILSON A. CLAPP.

Witnesses:

A. M. WOOSTER,  
S. W. ATHERTON.