

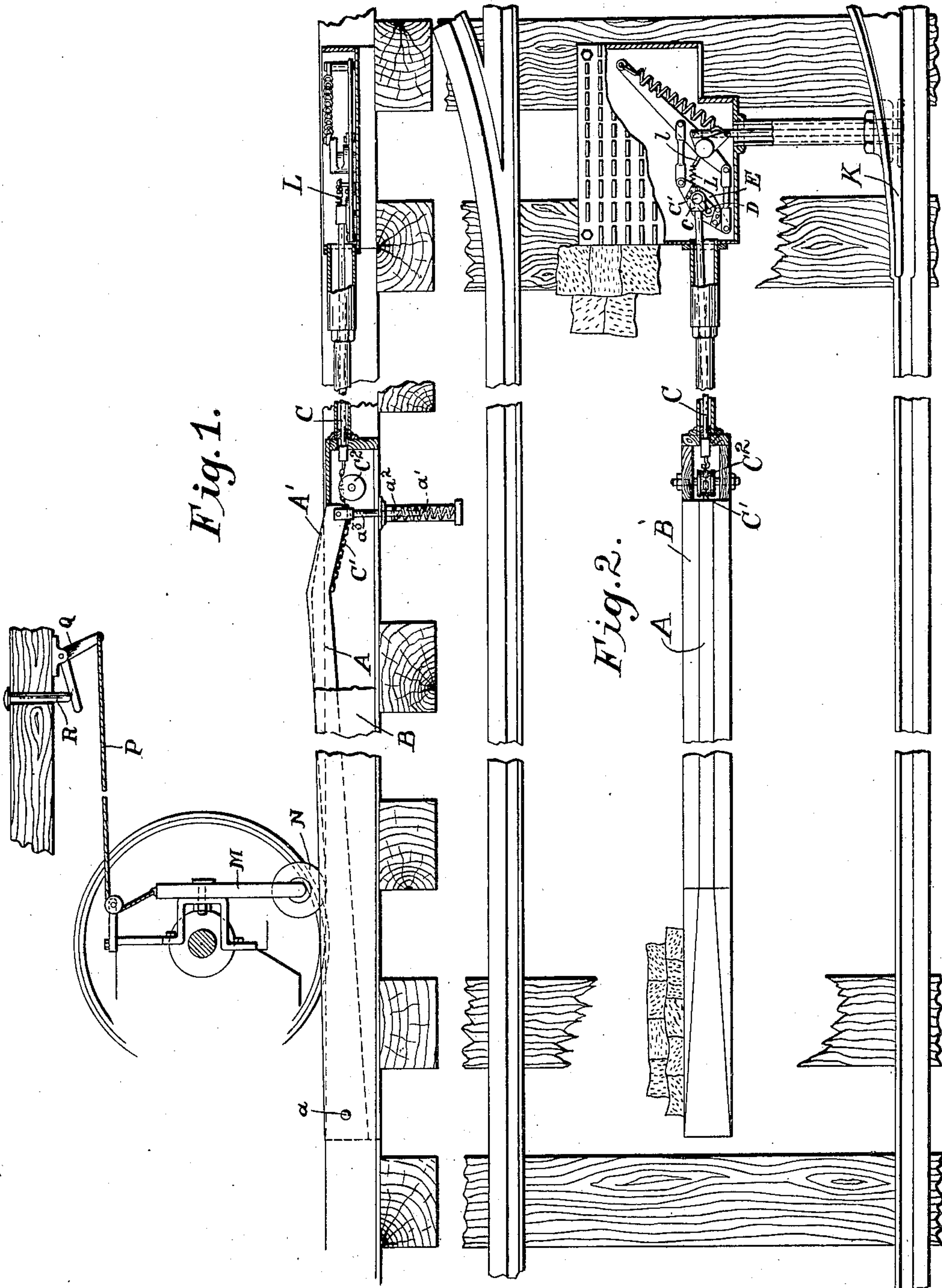
No. 897,627.

PATENTED SEPT. 1, 1908.

F. J. KENDRICK.  
TRAMWAY SWITCH.

APPLICATION FILED OCT. 25, 1907.

3 SHEETS—SHEET 1.



WITNESSES  
W. P. Burke  
M. P. Burke

INVENTOR  
Frank J. Kendrick  
M. P. Burke

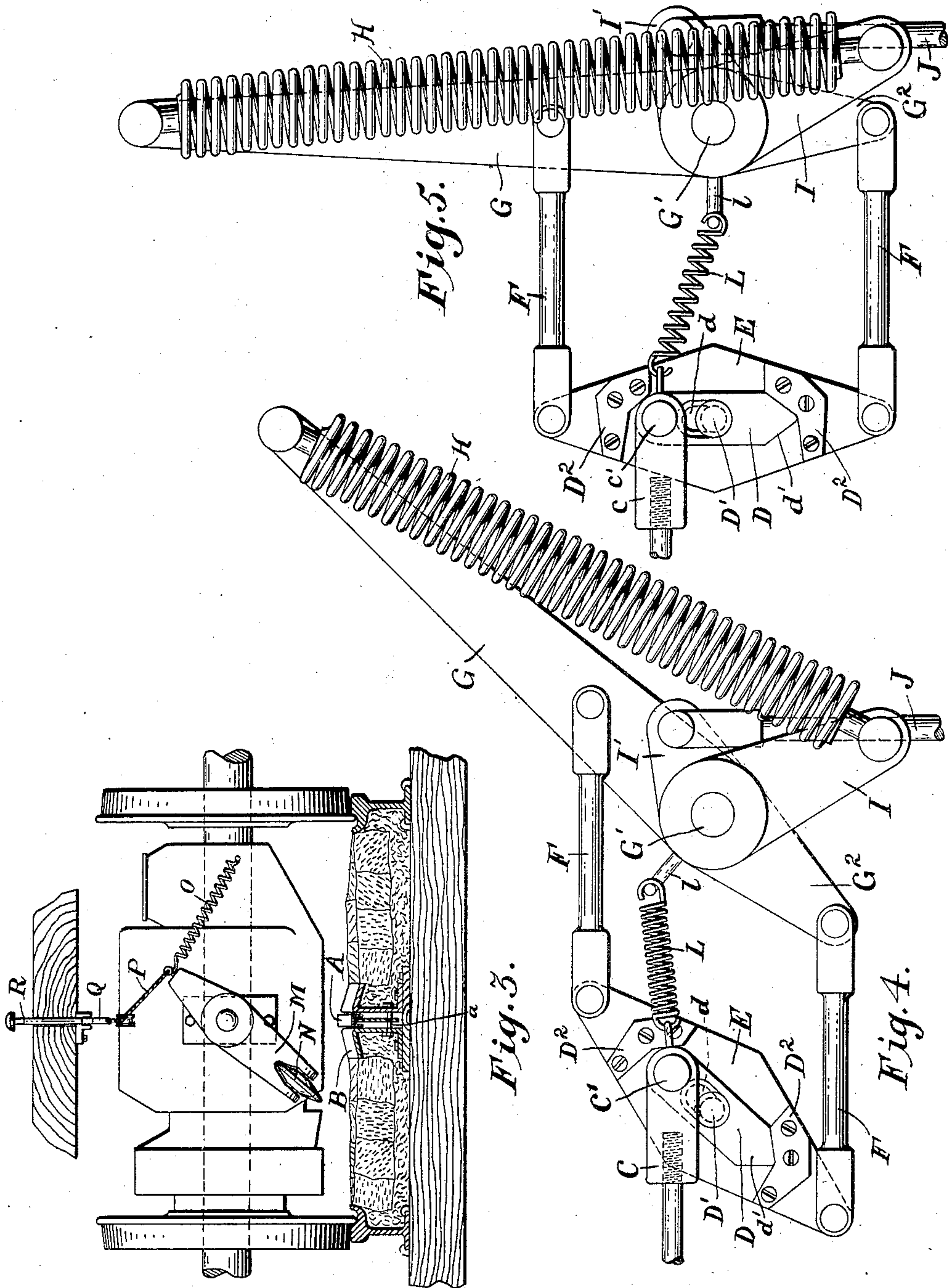
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WITNESSES  
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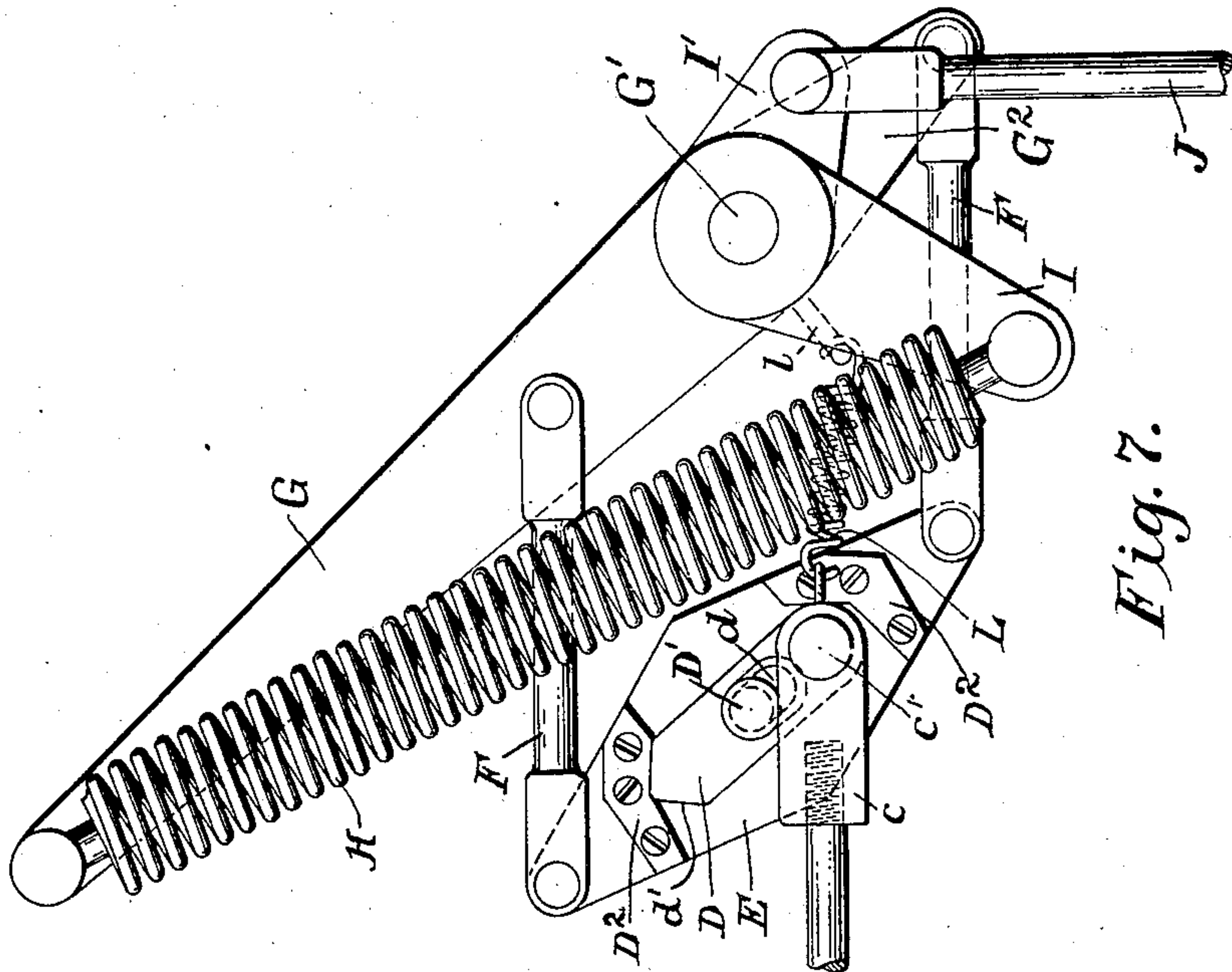


Fig. 7.

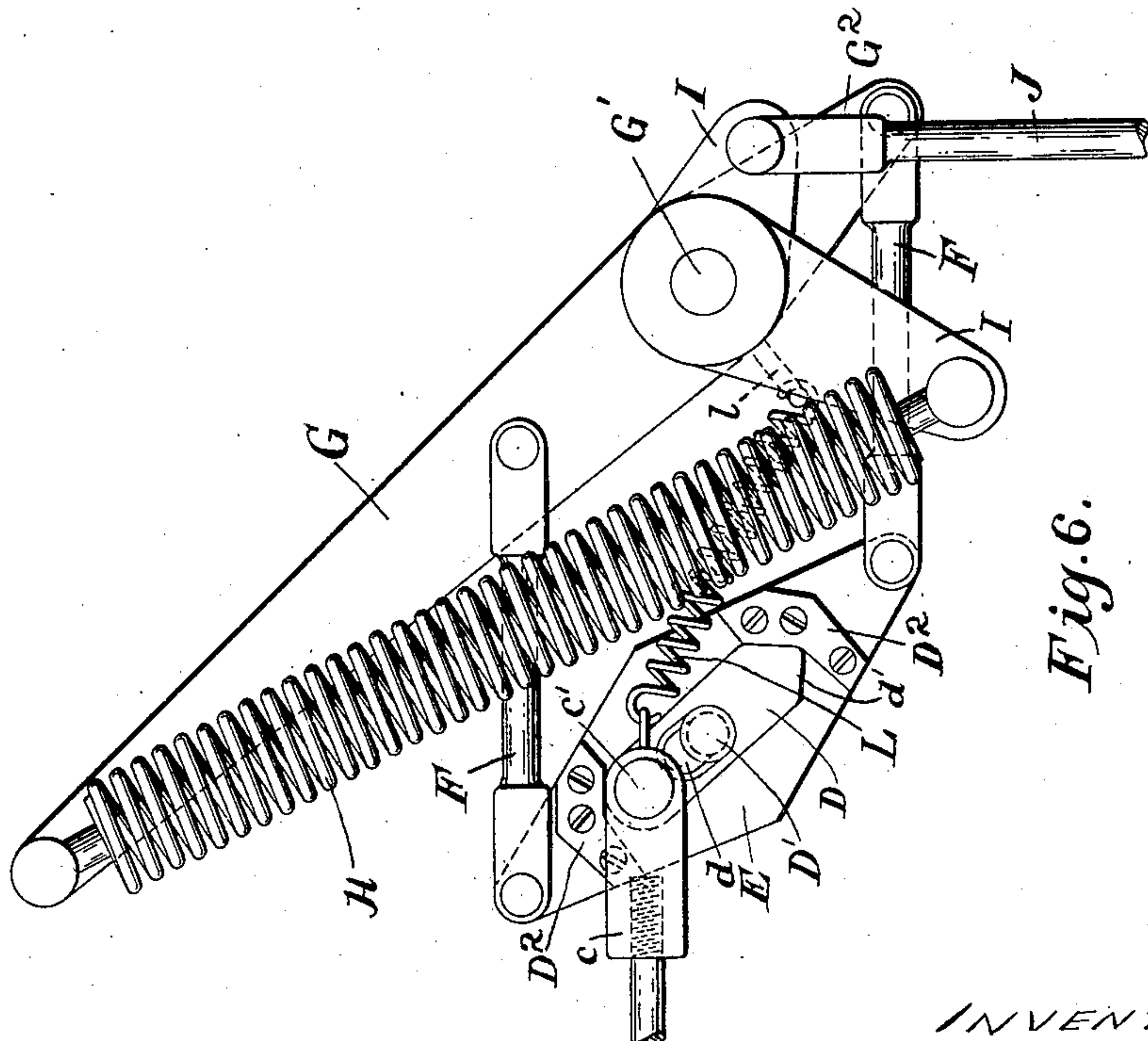


Fig. 6.

WITNESSES

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INVENTOR

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# UNITED STATES PATENT OFFICE.

FRANK J. KENDRICK, OF SCHENECTADY, NEW YORK.

## TRAMWAY-SWITCH.

No. 897,627.

Specification of Letters Patent.

Patented Sept. 1, 1908.

Application filed October 25, 1907. Serial No. 399,156.

*To all whom it may concern:*

Be it known that I, FRANK J. KENDRICK, a citizen of the United States, residing at Schenectady, New York, have invented new and useful Improvements in Tramway-Switches, of which the following is a specification.

My present invention relates to improvements in tramway switches of the type designed to be operated from the car.

Among the objects of the invention are to provide an apparatus which shall be simple in construction and durable positive and reliable in its action, and easily manipulated from the car.

With these and other objects in view the invention includes the various features of construction and arrangement and combination of parts hereinafter described and particularly set forth in the appended claims.

An embodiment of the invention is illustrated in the accompanying drawing in which:

Figure 1 is a sectional elevation of a portion of a railroad track and sufficient of a car to illustrate the application of the invention. Fig. 2 is a plan view. Fig. 3 is a transverse sectional view and Figs. 4, 5, 6 and 7 are enlarged detail views of the switch throwing mechanism.

Referring by reference characters to these drawings I have shown at A a switch operating lever which is located within a casing or box B which may conveniently be placed midway between the rails as shown in Fig. 3. The lever is pivoted at one end as indicated at  $a$ , and its front end is pressed upwardly so as to hold this end elevated above the pivoted end by the action of a spring  $a'$  located in a casing  $a^2$  and acting upon a plunger  $a^3$  pivotally connected at its upper end to the free end of the bar, which may be downwardly inclined as shown at A'. The lever A is connected with a draw rod C by a chain C' which passes over a pulley or roller C<sup>2</sup> in such a manner as to be drawn upon by the depression of the bar A under the action of the depressor carried by the car as hereinafter described.

The rod C has its head or end  $c$  connected by a pivot  $c'$  to one arm of a rocking piece or cam D which in turn is pivotally mounted on the face of a walking beam E. A convenient manner of mounting the walking beam and cam is to journal or pivot the walking beam on a pin or bolt D' and provide the

cam piece D with an elongated opening or slot  $d$  with which said bolt or pin engages as clearly shown in Figs. 4 to 7.

The ends of the walking beam are connected by links F F with a rocking lever G pivoted upon a stud or pin G' and arranged to move in unison with the walking beam. One arm of the lever G is extended as shown at G<sup>2</sup> and its free end is connected by a tension spring H with the long arm I of a bell crank lever mounted to oscillate on the stud G'. The short arm I' of this bell crank lever is connected by a rod or pitman J with the switch tongue K so as the bell crank is rocked to one side or the other the switch tongue will receive a corresponding movement.

The head or end of the rod C is connected by a spring L with an eye  $l$  on the lever G as shown. The walking beam is provided near opposite ends with stops D<sup>2</sup> against which the inclined faces  $d'$  are designed to abut as hereinafter described.

A convenient form of car device for operating the switch throwing mechanism is shown in Figs. 1 and 3 and comprises a member M pivoted to a suitable part of the car so as to swing transversely of the car, and provided at its lower end with a wheel N designed to ride on the top surface of the lever A and depress the same when the lever is in vertical position.

The lever is normally held in an inclined position as shown in Fig. 3 by a spring O and may be drawn into operative position by a cord P, connected to a bell crank Q designed to be operated by foot pedal R. When this foot treadle is depressed the wheel N will be brought into alinement with the bar A and depress the same. This draws upon the rod C which causes the cam D to swing on the walking or rocking beam E until its inclined end strikes one of the stops which causes the walking or rocking beam to rotate on its pivot and impart a corresponding movement to the arm G. This will place additional tension on the spring H, the tension increasing as the bar moves from the position shown in Fig. 4 towards the left into the position shown in Fig. 5. During this time no movement will be imparted to the bell crank lever I which will be held in the position shown in Figs. 4 and 5 by the tension of the spring. As soon however as the outer end of the lever G crosses the dead center the tension of the spring will instantly throw the bell crank lever to the opposite side into the position



shown in Fig. 6 where it will be securely held, this movement of course, instantly throwing or shifting the switch tongue and the spring H holding it locked in its shifted position.

5 It is very desirable that in switch mechanism of this type the switch tongue should be moved in either or both directions by a direct pull through the operating connections such as rod C and not in one direction by a  
10 pull and in the other by a push, as this simplifies the operating mechanism and renders it more reliable in action. To accomplish this I interpose the cam D hereinbefore described, between the rod C and walking  
15 beam and connect the end of the rod C with an eye or equivalent device on the lever G near its pivot point as already indicated. Thus when the parts have been shifted from the position shown in Fig. 4 to that shown in  
20 Fig. 6 additional tension is placed on the spring L which immediately reverses the position of the cam E, swinging it from the position shown in Fig. 6 to that shown in Fig. 7. In this latter figure it will be seen  
25 that the parts are in readiness to be operated by a direct pull upon the rod similar to that first described, to reverse the position of the switch tongue.

Having thus described my invention what  
30 I claim is:

1. In a tramway switch, a switch tongue, an operating lever connected therewith, a movable member adapted to be moved in one direction by a device on the car and re-  
35 turn automatically to normal position, and means interposed between said movable member and switch operating lever whereby one movement of said movable member operates the switch tongue in one direction and  
40 the succeeding movement of said member operates said tongue in the opposite direction.

2. In combination, a switch tongue, a bell crank lever having one arm operatively con-  
45 nected therewith, a rocking arm or lever mounted to oscillate on the same axis as said bell crank lever, a spring connecting the arm or lever with the other arm of the bell crank lever, and means for oscillating the said rock-  
50 ing arm or lever.

3. In combination, a switch tongue, a bell crank lever having one arm operatively con-

nected therewith, a rocking arm or lever hav-  
ing the same axis of rotation as said bell  
crank lever, a tension spring between the 55  
said rocking arm and the other arm of the bell crank lever, a movable member adapted to be operated from a moving car, and con-  
nections between said movable member and  
said rocking arm for causing the one to be 60  
moved by the other.

4. In combination, a switch tongue, a bell crank lever having one arm operatively con-  
nected therewith, a rocking arm or lever hav-  
ing the same rotation as said bell crank lever, 65  
a tension spring between the said rocking arm and the other arm of the bell crank lever, a walking beam connected to said rocking  
arm, a pull device for operating said walking  
beam and means whereby a pull upon said 70  
device will swing said walking beam in one direction and a second pull will swing it in the opposite direction.

5. In combination, an oscillating member, a switch tongue, connections interposed be- 75  
tween said oscillating member and tongue whereby the latter is operated from the former, a cam device reversibly connected with  
said oscillating member, a movable member  
adapted to be operated from a moving car, 80  
pull connections interposed between said cam device and movable member, and means for automatically reversing the position of  
said cam device after each pulling operation.

6. In combination, a switch tongue, a rock 85  
ing arm or lever, operating connections between the same, an oscillating or walking beam connected to said arm or lever, a cam device slidably pivoted on said walking beam, stops on said walking beam on opposite sides 90  
of its axis for coacting with one end of said cam device, a tension spring connected to the rocking arm or lever and exerting tension on the opposite end of said cam device, and a  
pull device connected to the said opposite 95  
end of the cam device.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK J. KENDRICK.

Witnesses:

ANNA M. DE GRAFF,  
D. VEDDER CLUTE.