

(No Model.)

3 Sheets—Sheet 1.

R. M. BLACKMER.
MECHANISM FOR OPERATING SWITCHES.

No. 440,390.

Patented Nov. 11, 1890.

Fig. 1.

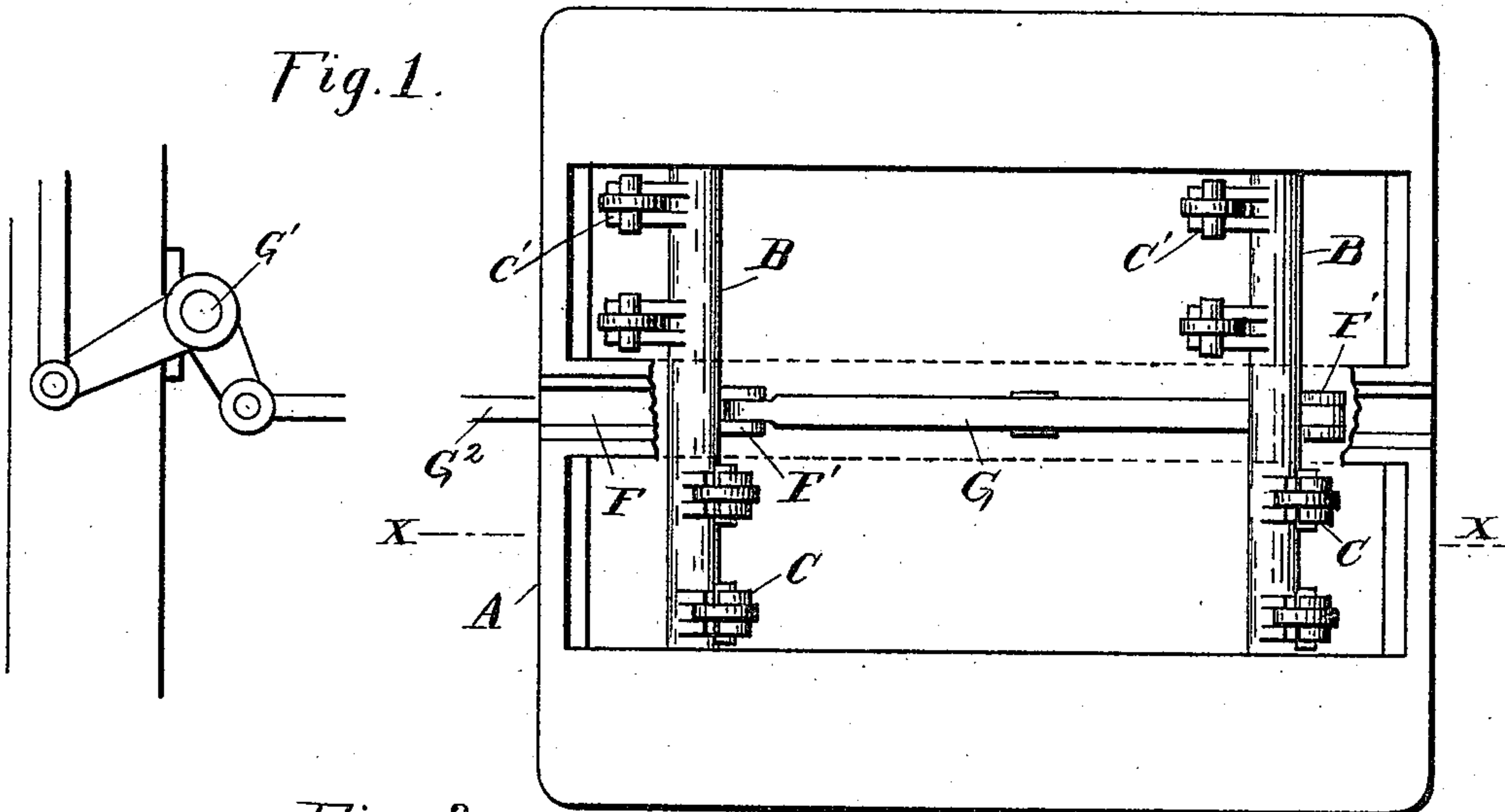


Fig. 2.

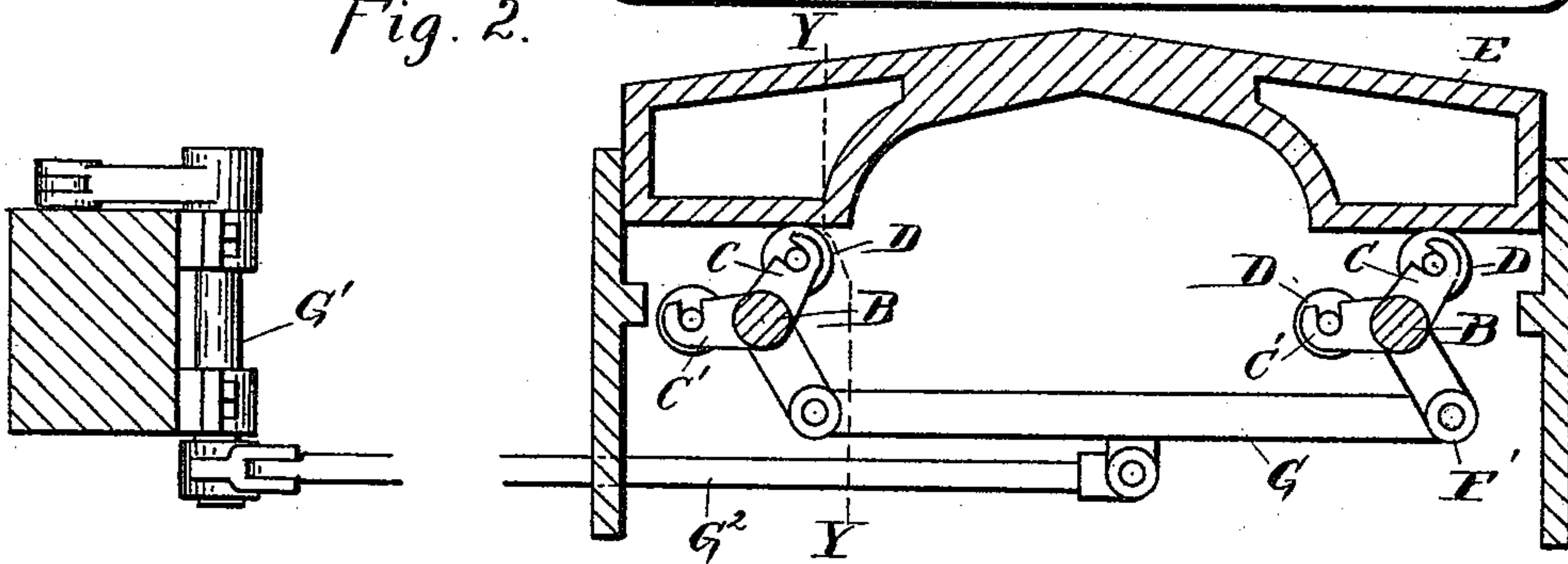
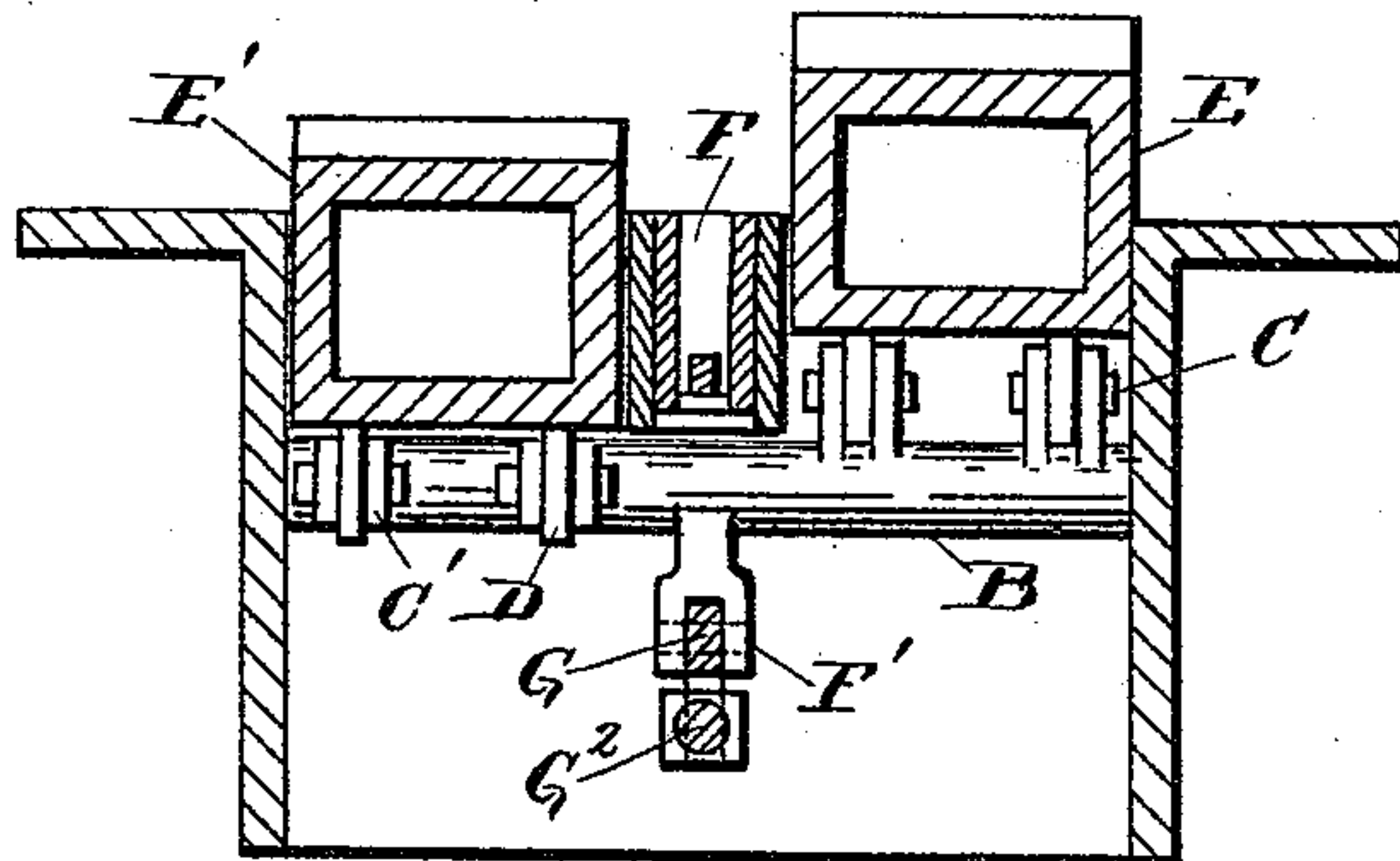


Fig. 3.



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Inventor:

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By James Whittemore
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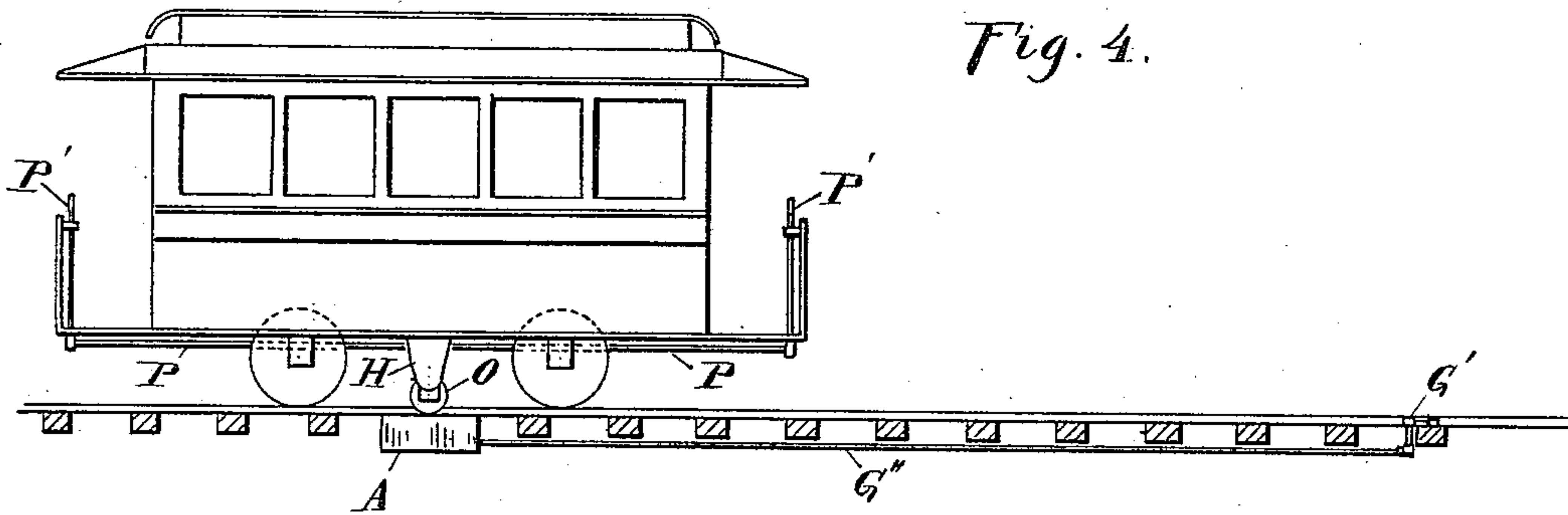


Fig. 4.

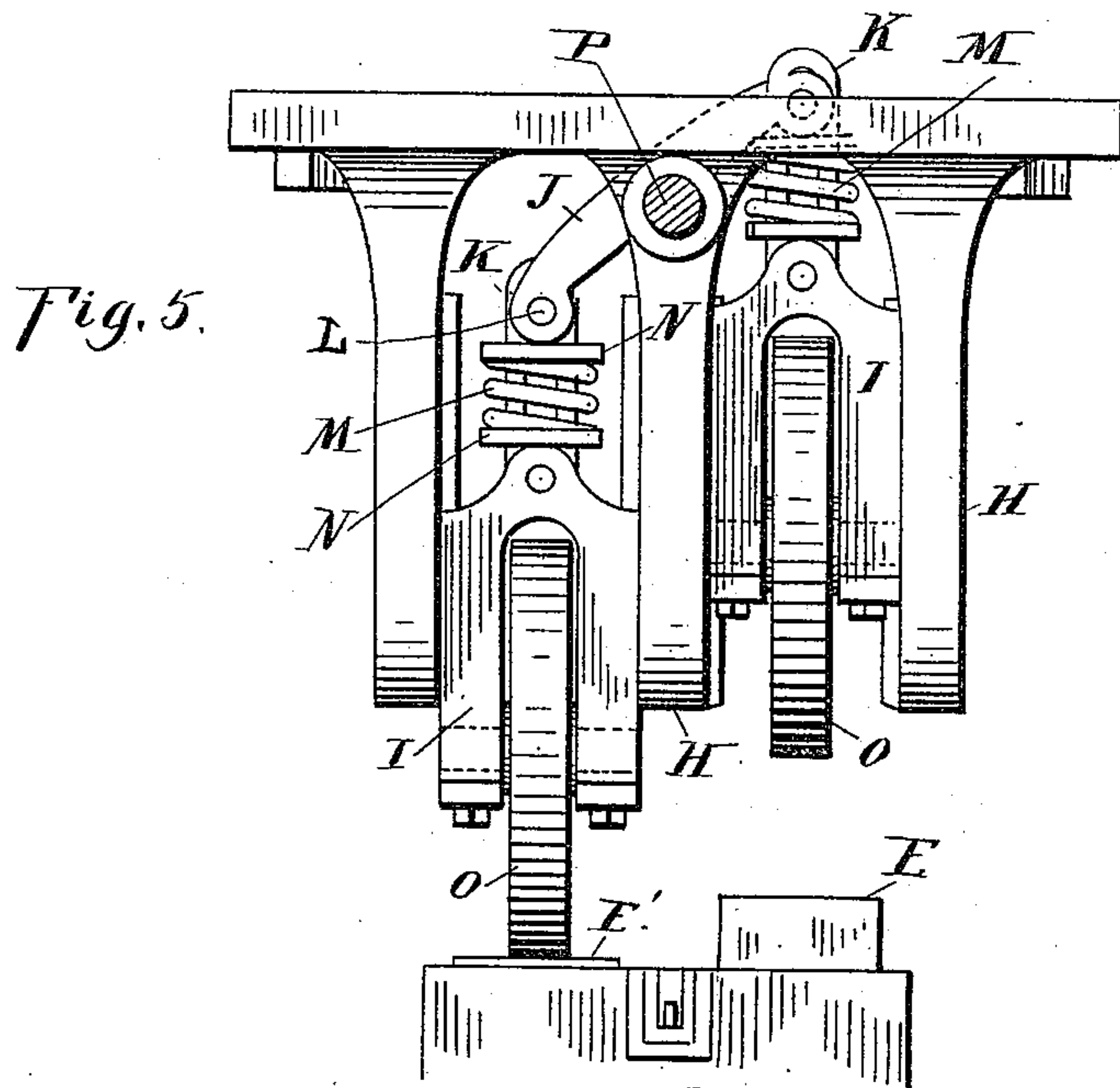


Fig. 5.

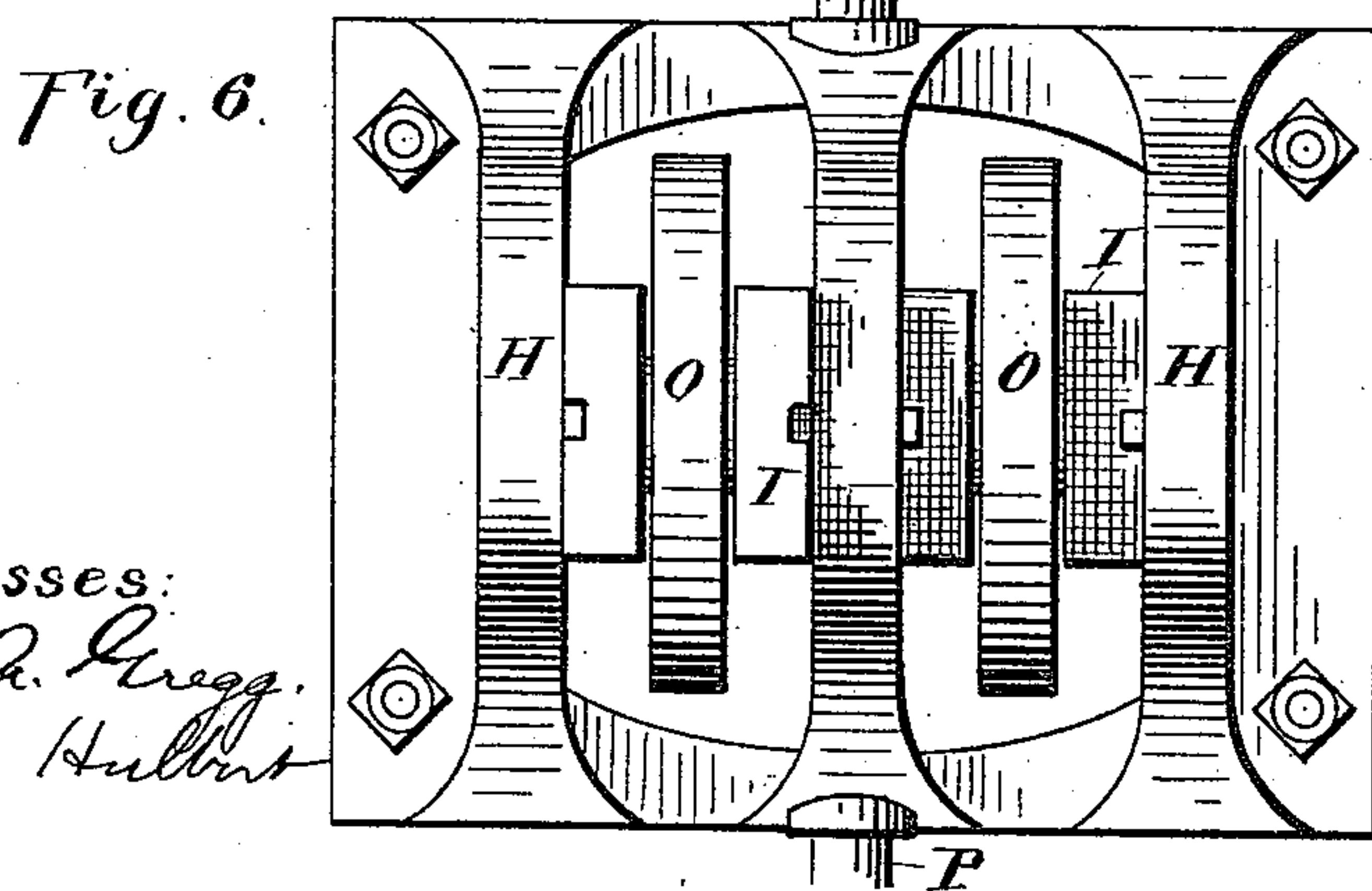


Fig. 6.

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Fig. 7.

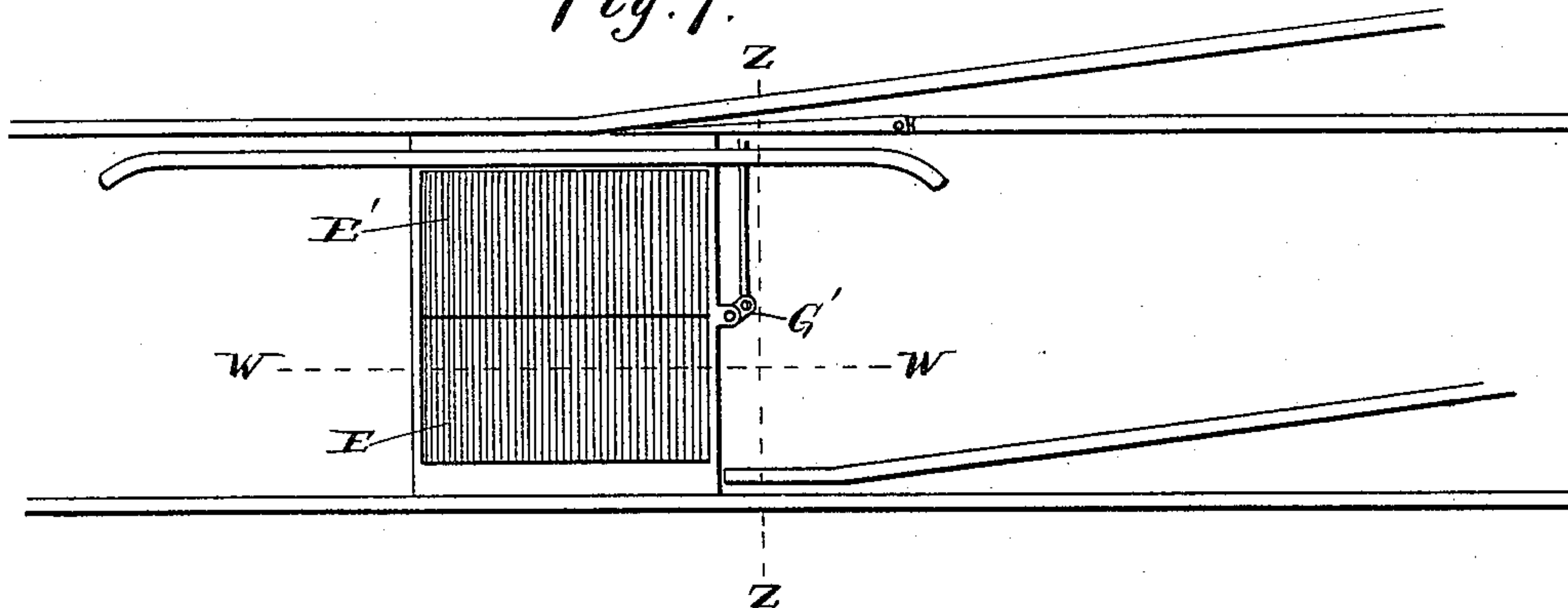


Fig. 8.

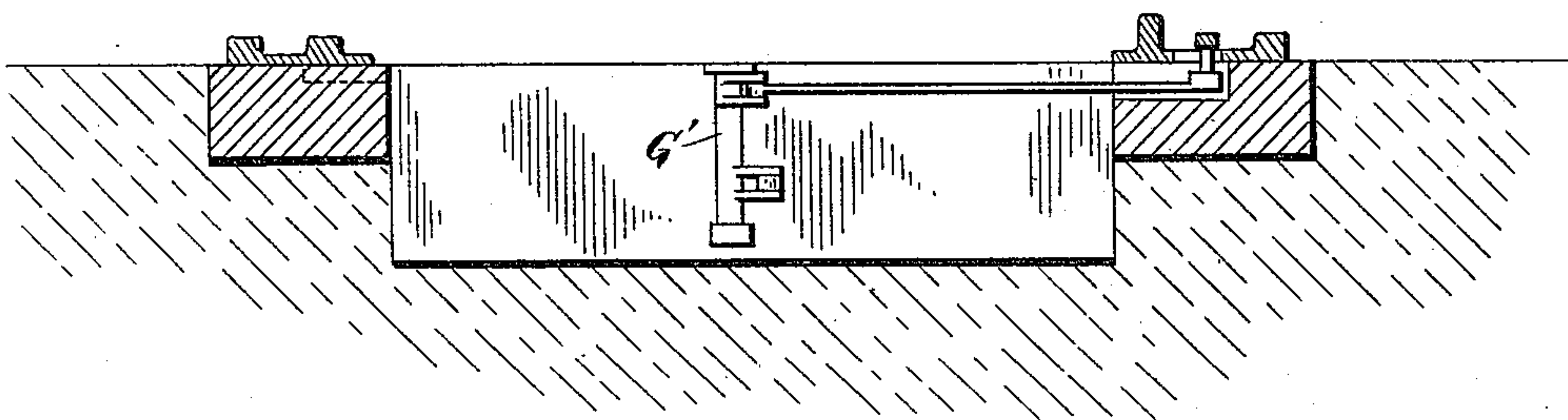
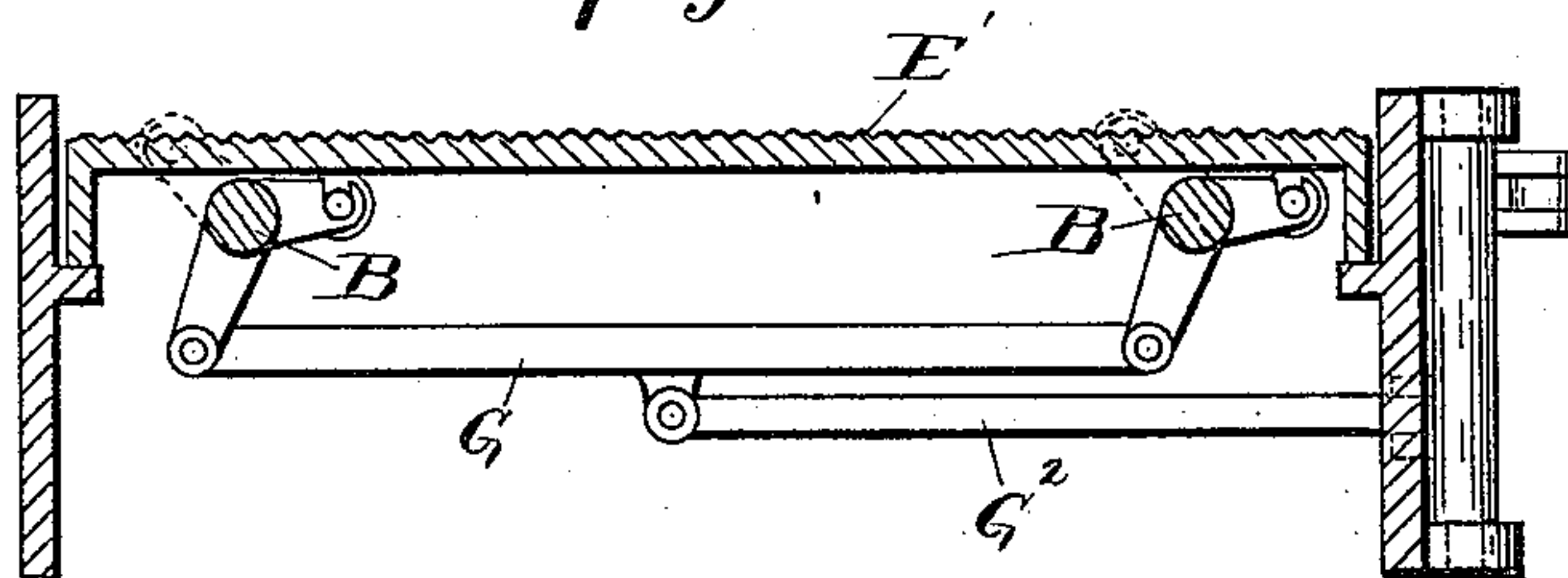


Fig. 9.



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UNITED STATES PATENT OFFICE.

ROBERT M. BLACKMER, OF EAST SAGINAW, MICHIGAN, ASSIGNOR OF ONE-HALF TO JOHN C. DAVIES, OF SAME PLACE.

MECHANISM FOR OPERATING SWITCHES.

SPECIFICATION forming part of Letters Patent No. 440,390, dated November 11, 1890.

Application filed April 25, 1890. Serial No. 349,562. (No model.)

To all whom it may concern:

Be it known that I, ROBERT M. BLACKMER, a citizen of the United States, residing at East Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Mechanism for Operating Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in switch-operating mechanism, especially designed for electric and horse railways; and the invention consists in the peculiar construction, arrangement, and combination of the various parts, all as more fully hereinafter described.

In the drawings, Figure 1 is a plan view of the crank-levers, &c., the bearing-plate being removed, as used for electric cars. Fig. 2 is a vertical section thereof on line $x x$, showing the bearing-plate. Fig. 3 is a cross-section on line $y y$ in Fig. 2. Fig. 4 is a diagram elevation, partly in section, of a car and the switch-operating mechanism in the track. Fig. 5 is an end elevation of the pressure-feet upon the car. Fig. 6 is a bottom plan view thereof. Fig. 7 is a diagram plan of a modification of my device designed to be used with horse-cars. Fig. 8 is a section on line $z z$ in Fig. 7. Fig. 9 is a longitudinal section on line $W W$ in Fig. 7.

A is a frame, preferably rectangular, sunk in the track between the rails and within which is a pit in which I place my device.

B are rock-shafts journaled in the side of the frame, extending across the pit at each end thereof. Each shaft is provided with two pairs of rock-arms C C', one pair on each shaft extending rearwardly and the other pair extending forwardly. Each rock-arm is bifurcated at its end, and between the bifurcations are journaled the rollers D, upon which rest the bearing-plates E E', upon the upper face of which I preferably form a double incline extending downwardly from the middle to the ends. These plates are preferably separated to allow room between for the conduit or conductor, such as F.

The shafts B are provided centrally with the downwardly-projecting arms F', which

are connected by the bar G. This bar is connected to the crank-shaft G', which connects by means of the rod G² to the movable rail of the switch, as shown in Fig. 4.

Upon the bottom of the car I attach movable pressure-feet of the following construction:

H are brackets secured to the bottom of the car and provided with vertical guide-bearings, in which are secured the sliding blocks I, which are pivotally connected to the double rock-arm J by the slotted links K by means of the pins L.

M are springs sleeved over the links K and bearing against collars N, all so arranged that a spring-bearing is formed between the blocks I and double rock-arm J. The blocks I are slotted to receive the bearing wheels or rollers O, which project some distance below the sliding blocks.

P is a shaft extending from end to end of the car, and at each end provided with the hand-lever P', projecting in proximity to the driver or engineer. The walking-beam J is secured upon this shaft, and the blocks I are reciprocated by rocking the shaft by the levers P'.

Figs. 7, 8, and 9 show the construction of the bearing-plates to be used with horse-railways, in which case the plates E E' extend over the entire space between the rails, and one or the other is depressed by driving the horses to one side or the other, so that one horse is upon the plate desired to be operated, the other horse being to one side of the track.

The parts being thus constructed and arranged, they are intended to operate as follows: As the car approaches the switch, the switch-operating mechanism being located some distance from the switch and connected therewith by means of a connecting-rod G'', the driver or engineer in order to throw the switch moves the lever P' to one side or the other, according as the switch is desired to be thrown, and this movement rocks the shaft P and with it the beam J, to which are connected the sliding blocks I, raising one and lowering the other into contact with the plates of the switch-operating mechanism, as shown in Fig. 5. The plate being provided with an inclined surface and the pressure-foot having

a roller or wheel O in its lower surface, the pressure of the wheel will gradually depress the plate, and thereby rock the shafts B, moving the connecting-bar G horizontally and throwing the connecting-rod G², and the crank G' will throw the switch. By throwing the lever to the other side the switch will of course be thrown in the opposite direction.

In case any obstacle should be present to prevent the depression of the plates no damage can come to the parts because of the spring M, which forms a yielding bearing for the pressure-foot. I also preferably leave the long lever P' free to move, merely securing it with a spring-catch, to prevent possibility of damage from this same cause.

It is evident that the connecting-rod G² may be of any desired length, so that the switch may be thrown as far in advance of the car as may be required.

The operation of the horse-car device has already been described.

What I claim as my invention is—

1. In a switch-actuating mechanism, a pendant frame on the car, carrying vertically-movable pressure-wheels, means for normally holding the same in place, an actuating-lever, and slotted links between the lever and wheels, substantially as described.

2. In a switch-operating mechanism, the combination of the inclined plates E E', the shafts B, rock-arms C C', rollers D, arms F', connecting-bars G G'', and crank-shaft G', substantially as described.

3. In a switch-operating device, a bracket

suspended from the car, having guides thereon, of vertically-movable pressure-wheels arranged in bearings in said bracket, means for normally holding the same in place, a rock-arm for connecting the wheels, slotted links between the same and wheels, and a lever for actuating the arm, substantially as described.

4. In a switch-operating mechanism comprising vertically-reciprocating bearing-plates connected to the switch, the combination of a car carrying a bracket having vertically-reciprocating pressure-feet slidingly secured therein, spring-cushions for the feet, and a rock-shaft having a hand-lever adapted to move said pressure-feet, substantially as described.

5. In a switch-operating mechanism, actuating mechanism upon the car, consisting of sliding pressure-feet secured in bearings beneath the car, a roller or wheel therein, a rock-shaft, a double rock-arm thereon, and a yielding connection between said rock-arm and pressure-feet, substantially as described.

6. In a switch-operating mechanism, the combination, with the car, of the shaft P, lever P', double rock-arm J, links K, springs M, sliding blocks I, and rollers O, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 24th day of March, 1890.

ROBERT M. BLACKMER.

Witnesses:

GEO. A. GREGG,
P. M. HULBERT.