(No Model.) 3 Sheets—Sheet 1.

H. L. FALCO.

ELECTRICALLY OPERATED RAILWAY SWITCH.

No. 510,384. Patented Dec. 5, 1893.

Fig. 1

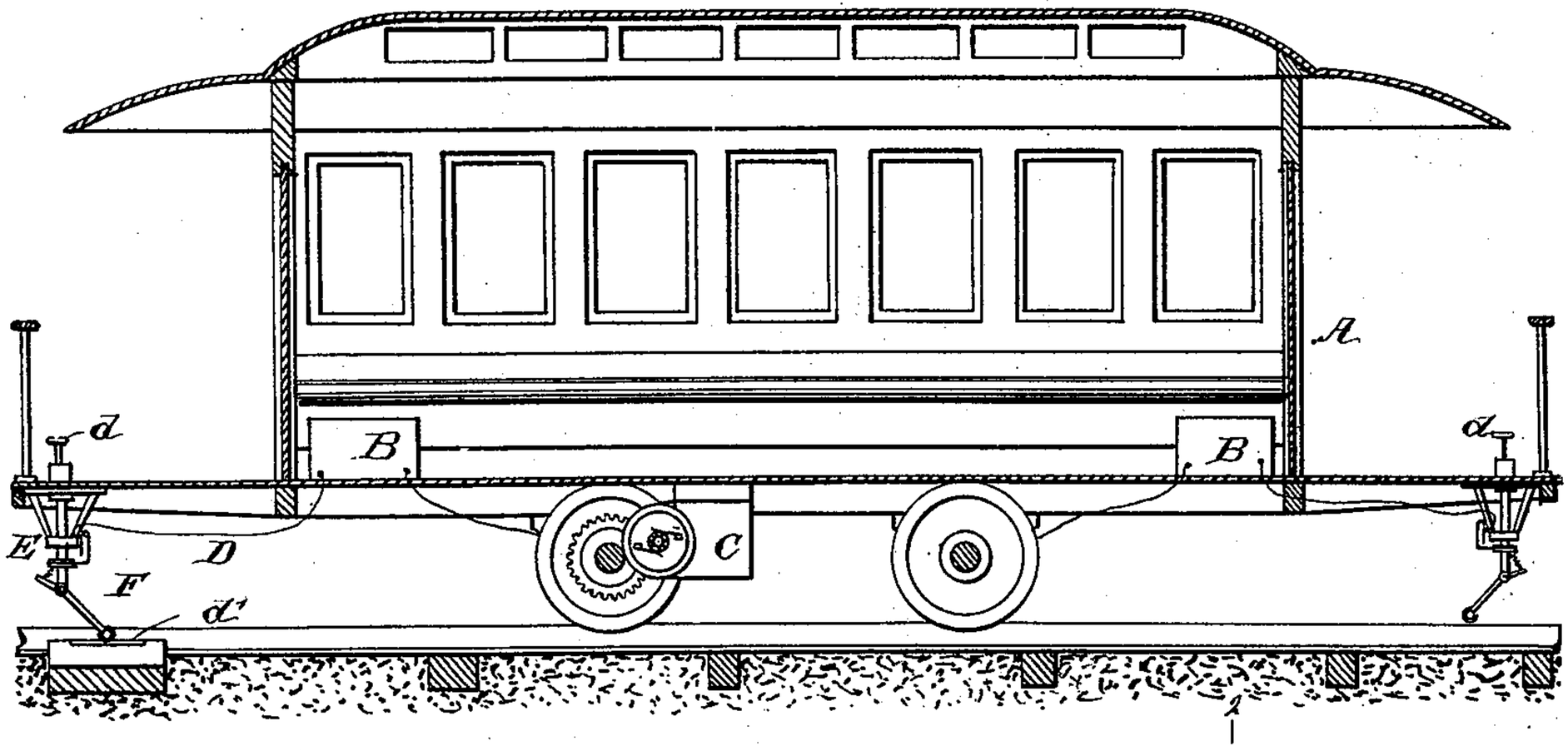


Fig. 2

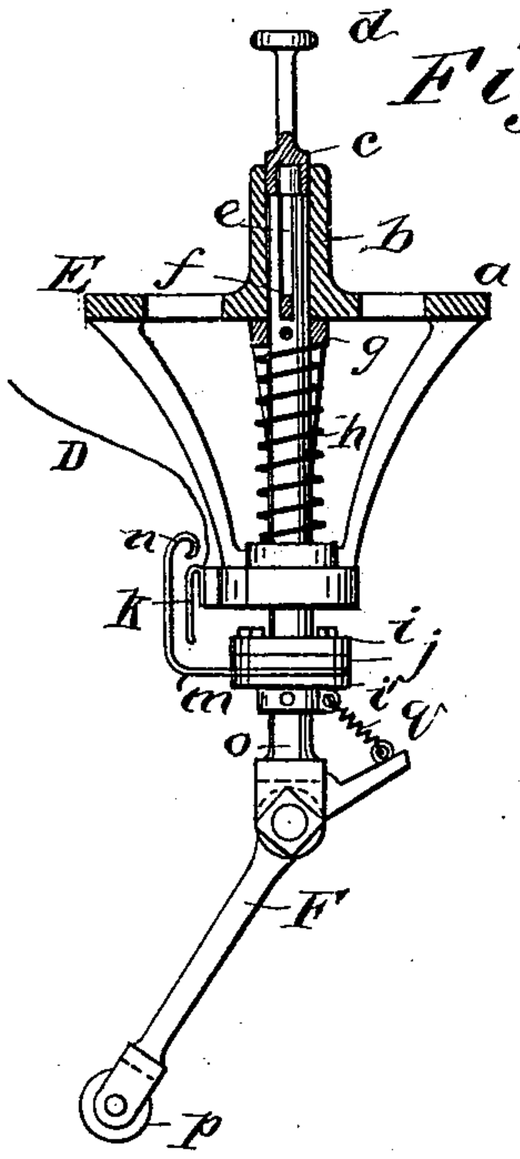


Fig. 4

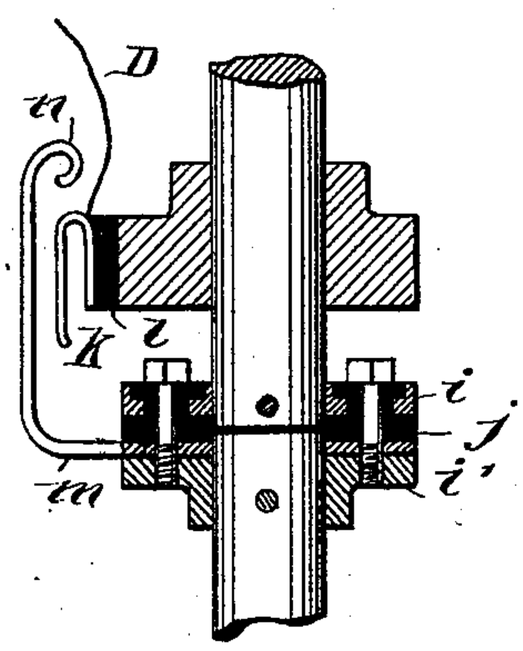


Fig. 5

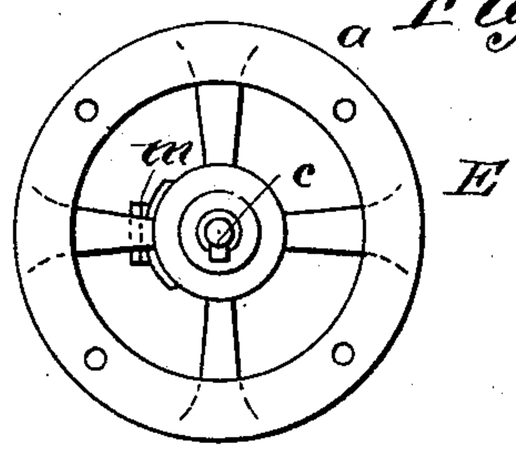
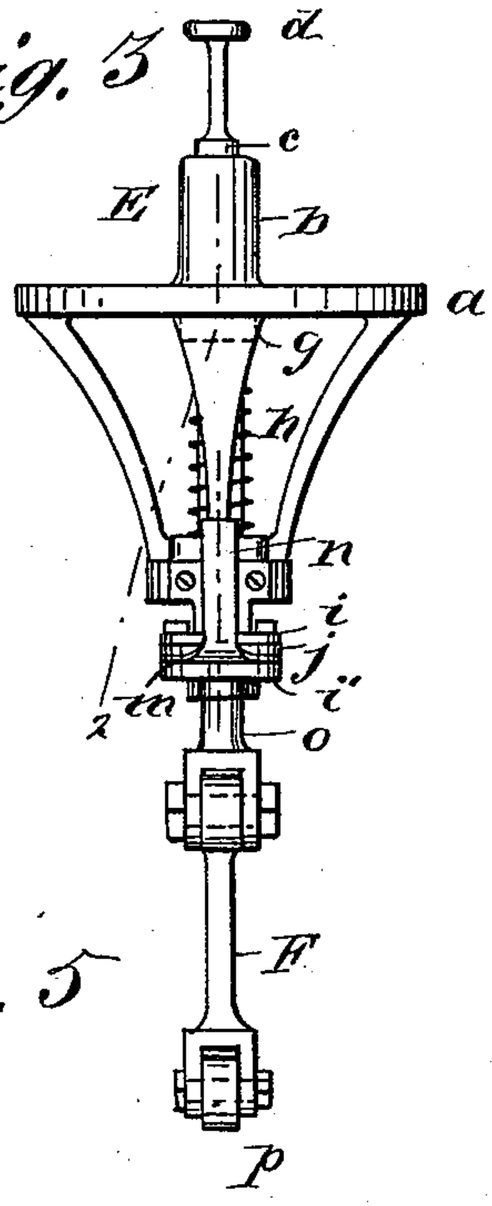


Fig. 3



WITNESSES:

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THE NATIONAL LITHOGRAPHING COMPANY,
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(No Model.) 3 Sheets—Sheet 2.

H. L. FALCO.

ELECTRICALLY OPERATED RAILWAY SWITCH.

No. 510,384. Patented Dec. 5, 1893.

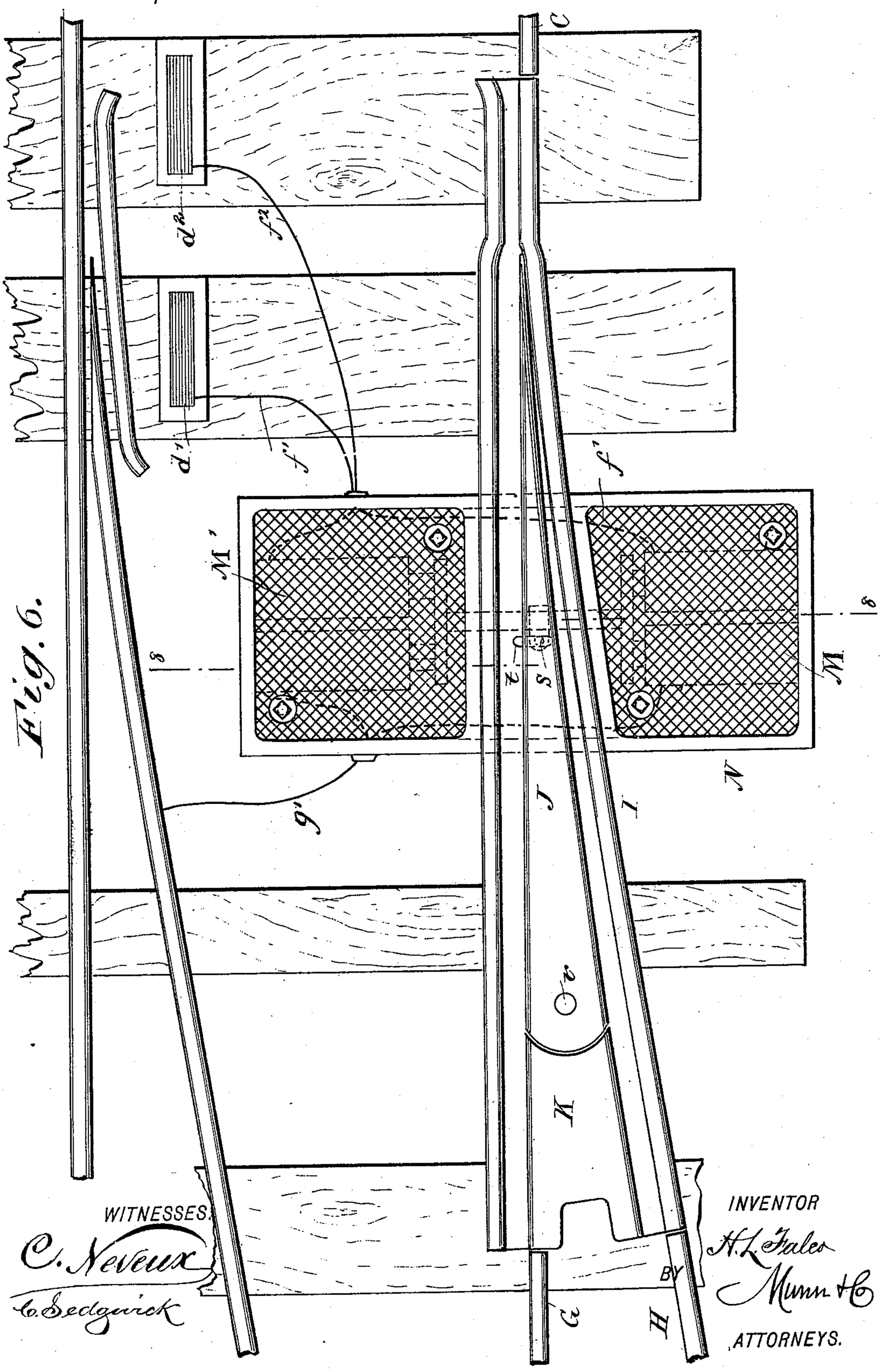

Fig. 6.

THE NATIONAL LITHOGRAPHING COMPANY,
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(No Model.) 3 Sheets—Sheet 3.

H. L. FALCO.

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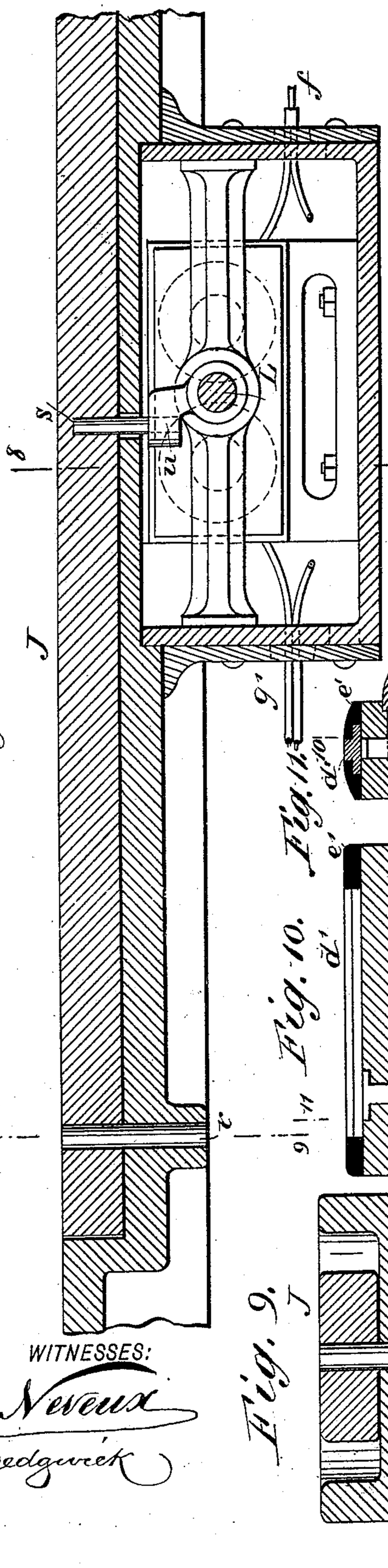

Fig. 8.

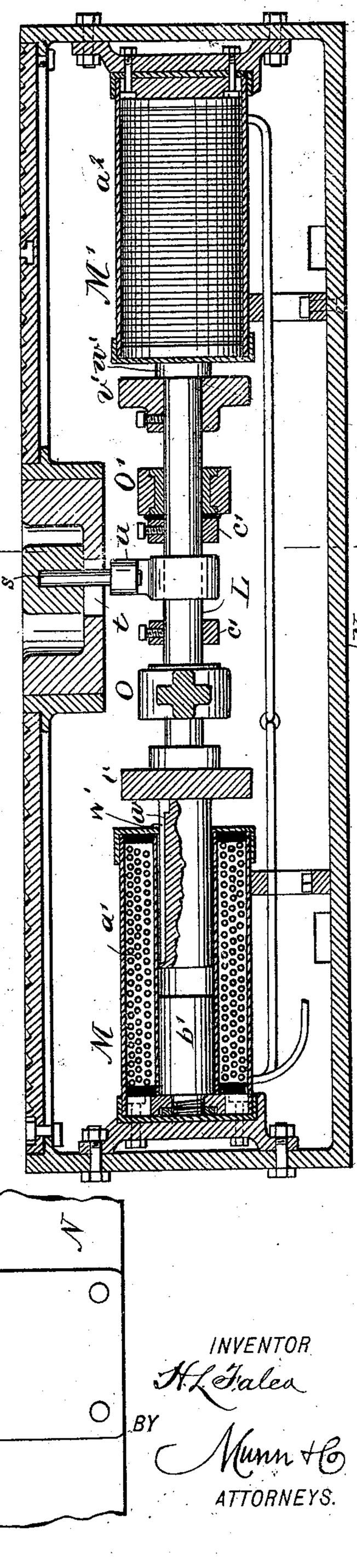

Fig. 7.

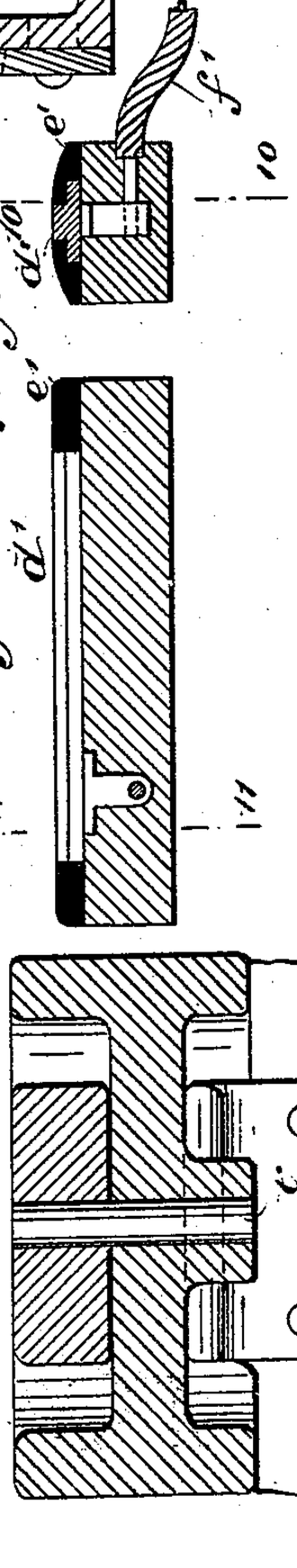

Fig. 10.

Fig. 11.

Fig. 9.

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UNITED STATES PATENT OFFICE.

HENRY L. FALCO, OF BROOKLYN, NEW YORK.

ELECTRICALLY-OPERATED RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 510,384, dated December 5, 1893.

Application filed January 26, 1893. Serial No. 459,853. (No model.)

To all whom it may concern:

Be it known that I, HENRY L. FALCO, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Electrically-Operated Railway-Switch, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side sectional elevation of a car and railway track to which my improvement has been applied. Fig. 2 is an enlarged sectional side elevation of the contact-making device. Fig. 3 is a front elevation of the same. Fig. 4 is an enlarged side sectional elevation of the contact making springs. Fig. 5 is a plan view of the contact-making device. Fig. 6 is an enlarged plan view of the electrically operated railway switch. Fig. 7 is a longitudinal section of the same, taken on line 7—7 in Fig. 8. Fig. 8 is a transverse section taken on line 8—8 in Figs. 6 and 7. Fig. 9 is a transverse section taken on line 9—9 in Fig. 7. Fig. 10 is a longitudinal section taken on line 10—10 in Fig. 11; and Fig. 11 is a transverse section taken on line 11—11 in Fig. 10.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to provide a simple and effective device whereby the switch rail of a railway switch may be moved by means of electricity, the same being controlled by a passing car.

It consists in a switch of peculiar construction carried by a car and arranged to send the current through the magnets arranged in the road bed so as to operate the switch before it is reached by the car, all as will be hereinafter more fully described.

While my improvement is designed principally for application to electric cars, it admits of being applied to cars which are propelled by other power than electricity.

The car A, is supplied with a current in any of the well known ways, either through a trolley from an overhead wire, or from storage batteries B, or in case the car is propelled by power other than electricity, a small dynamo C, taking its power from the car axle may be used for furnishing the current for operating the switch. In any event, the current is taken by the wire D to the contact maker E, carried by the car platform.

The contact-maker E, consists of a frame *a*, suspended from the platform and provided with a sleeve *b* extending upwardly through the platform. The upper and lower parts of the frame are apertured to receive the sliding rod *c*, which is provided at its upper end with a foot-piece *d*, and the upper end of the said rod *c* is provided with a slot *e*, to receive a bar *f* which is connected with the frame *a*, and passes through the slot to prevent the rod from turning.

On the rod *c* is secured a collar *g*, between which and the lower part of the frame is placed a spiral spring *h*, for holding the rod *c* in an elevated position. The rod *c* is formed of two parts, the upper part being provided with a collar *i*, which is connected with a collar *i'* on the lower part, the two collars and the adjoining ends of the parts of the rod *c* being separated by insulation *j*, and the said insulation surrounds and insulates the connecting bolts.

To the lower part of the frame *a*, is attached a U-shaped spring *k*, with an intervening insulating block *l*, the wire D being connected with the said spring *k*, and to the collar *i'*, is attached a contact spring *m*, which extends outwardly and upwardly and is provided with a curved end *n*, which contacts with the spring *k* when the rod *c* is pushed downward. The lower end of the rod *c* is provided with a fork *o*, in which is pivoted the lever F. The lower and longer arm of the lever F is forked at its free end, and in the said fork is journaled the contact roller *p*. The upper and shorter arm of the lever F is connected by a spiral spring *q* with the collar *i'*. By means of this construction, the contact-maker E is enabled to adapt itself to any distance between the car and the contact plates, the lever F turning on its pivot more or less according to the height of the car platform. The frame *a* being insulated from the electrical parts of the contact, does not become charged with the current, and therefore all danger of shock to the driver or to any one accidentally coming in contact with the device, is avoided.

Between the main track rail G and the branch track H, is arranged a switch I, pro-

vided with a switch rail or tongue J, arranged to turn on a pivot *r*. The said switch tongue is mounted on the casting K in the usual way. A pin *s*, projecting from the tongue J through a slot *t* in the casting K, enters an arm *u* on the sliding rod L, placed in the switch pit below the track rail. To opposite ends of the said rod L, are secured cross bars *v*, *v'*, carrying armatures *w*, *w'*, which enter the coils *a'*, a^2, of the electro magnets M, M'. The said magnets are furnished with short cores *b'*, and are inclosed in lead to prevent them from being acted upon by any water or moisture that may enter the pit.

The electro-magnetic mechanism is inclosed in an iron box N, provided with cross bars O, O', through which the rod L slides, and on the rod L, between the arm *u* and the said cross bars O, O', are placed buffers *c'*, to prevent shock when the armatures are drawn in either direction.

To some fixed support, preferably near the track rail, and in the path of the roller *p* of the contact maker E, are supported contact plates *d'*, d^2, which are surrounded by insulation *e'*. From the contact plate *d'* a wire *f'* extends to the magnet M, while the contact plate d^2 is connected by the wire f^2 with the magnet M', and both of the said magnets are grounded on the wire *g'*. The box containing the magnets is closed at the top by serrated covers in the usual way. When a car approaches a switch and the driver desires to open it, he depresses the rod *c*, bringing the contact roller *p* into contact with the plate *d'*, as shown in Fig. 1, when the magnet M is energized, and its armature and the rod L attached thereto are drawn over toward the magnet, carrying with them the tongue J, bringing it into the position shown in Fig. 6. Should he desire to change the switch so as to cause the car to take the side track, he brings the contact roller *p* into contact with the plate d^2, thus energizing the magnet M', causing it to draw the rod L and tongue J in the opposite direction.

The armatures *w'* are each provided with a longitudinal groove to admit of the introduction of oil into the magnets.

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

1. In an electrically-operated railway switch, the combination, with the car and electro-magnetic switch moving mechanism, of a contact-maker formed of a sliding spring-pressed rod, a fixed insulated contact spring, a movable contact spring carried by the rod, a yielding contact lever, and contact plates, substantially as specified.

2. In an electric railway switch, the combination of the frame *a*, the spring pressed rod *c*, the contact spring *m*, the insulated contact spring *k*, the yielding spring-pressed contact lever F, contact plate *d'* substantially as specified.

3. In an electrically operated railway switch, the combination with the car, of an adjustable yielding contact arm carried by the car, comprising in its structure plates to make or break the circuit, and electro-magnetic switch moving mechanism, substantially as specified.

HENRY L. FALCO.

Witnesses:
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