

No. 670,375.

Patented Mar. 19, 1901.

J. S. MORISON.

CONTACT SHOE LIFTING APPARATUS FOR ELECTRIC CARS.

(Application filed Apr. 20, 1900.)

(No Model.)

Fig. 1.

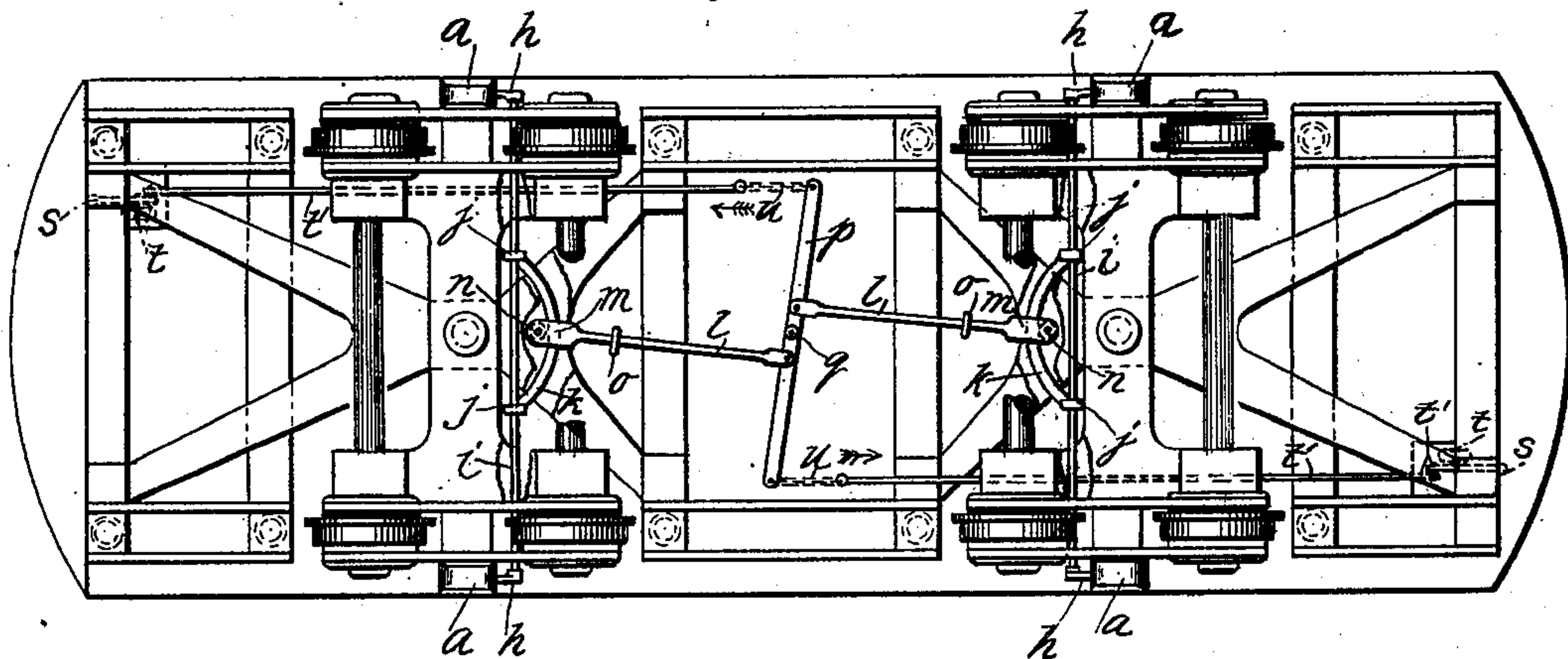


Fig. 2.

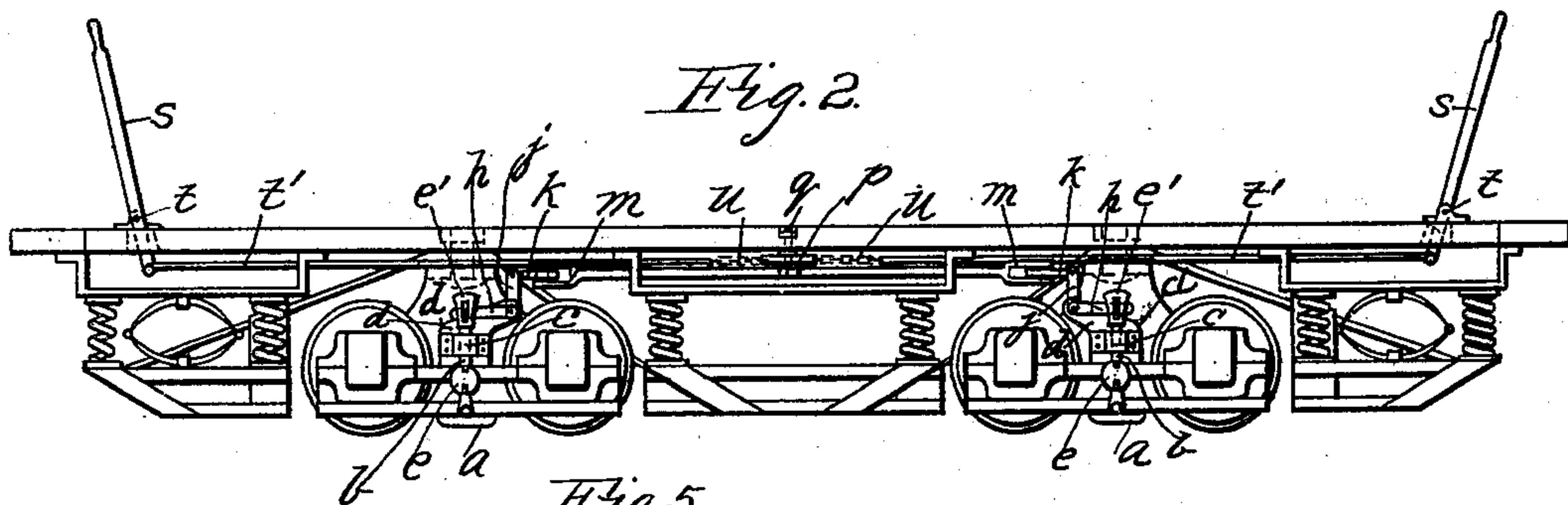


Fig. 5.

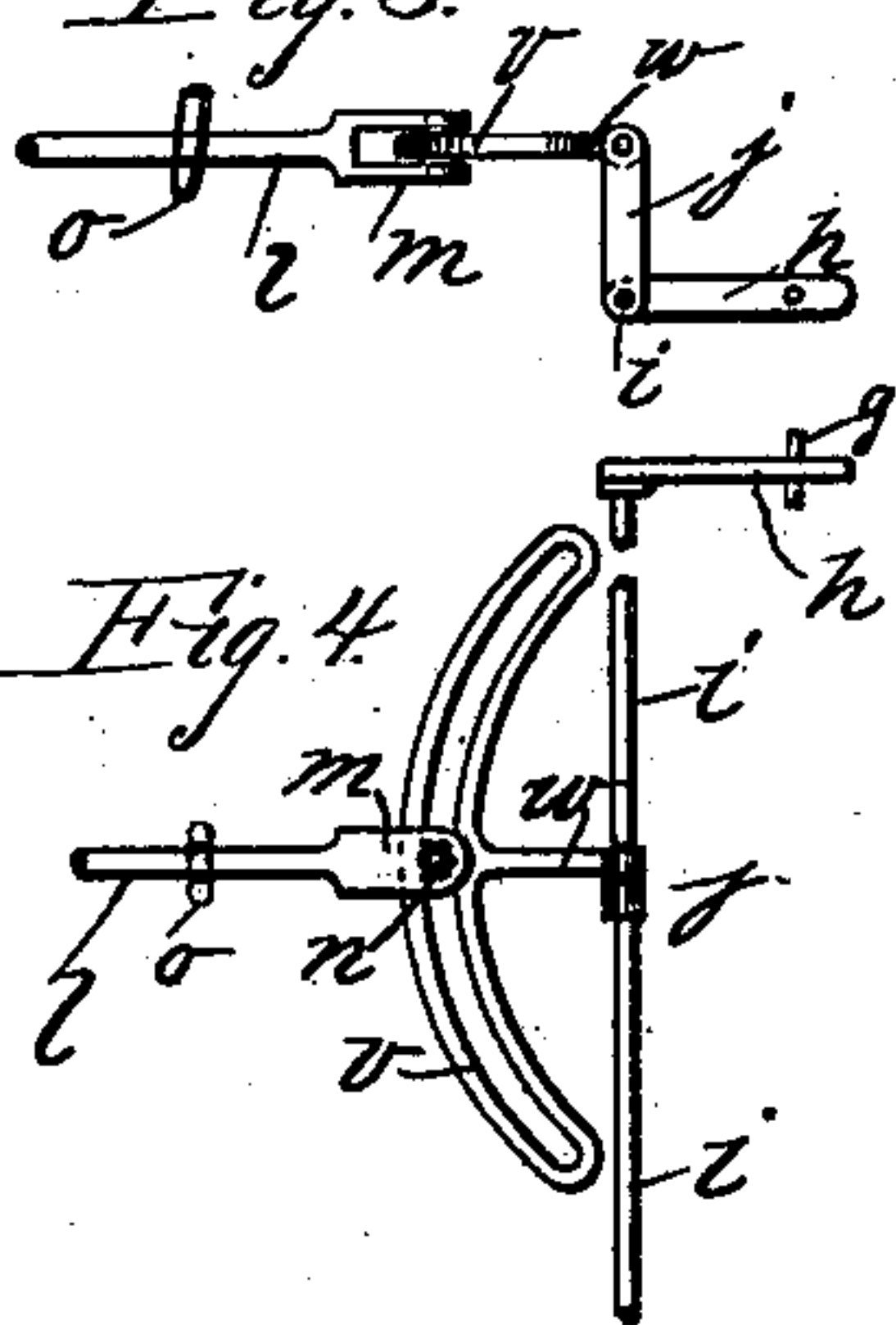


Fig. 3.

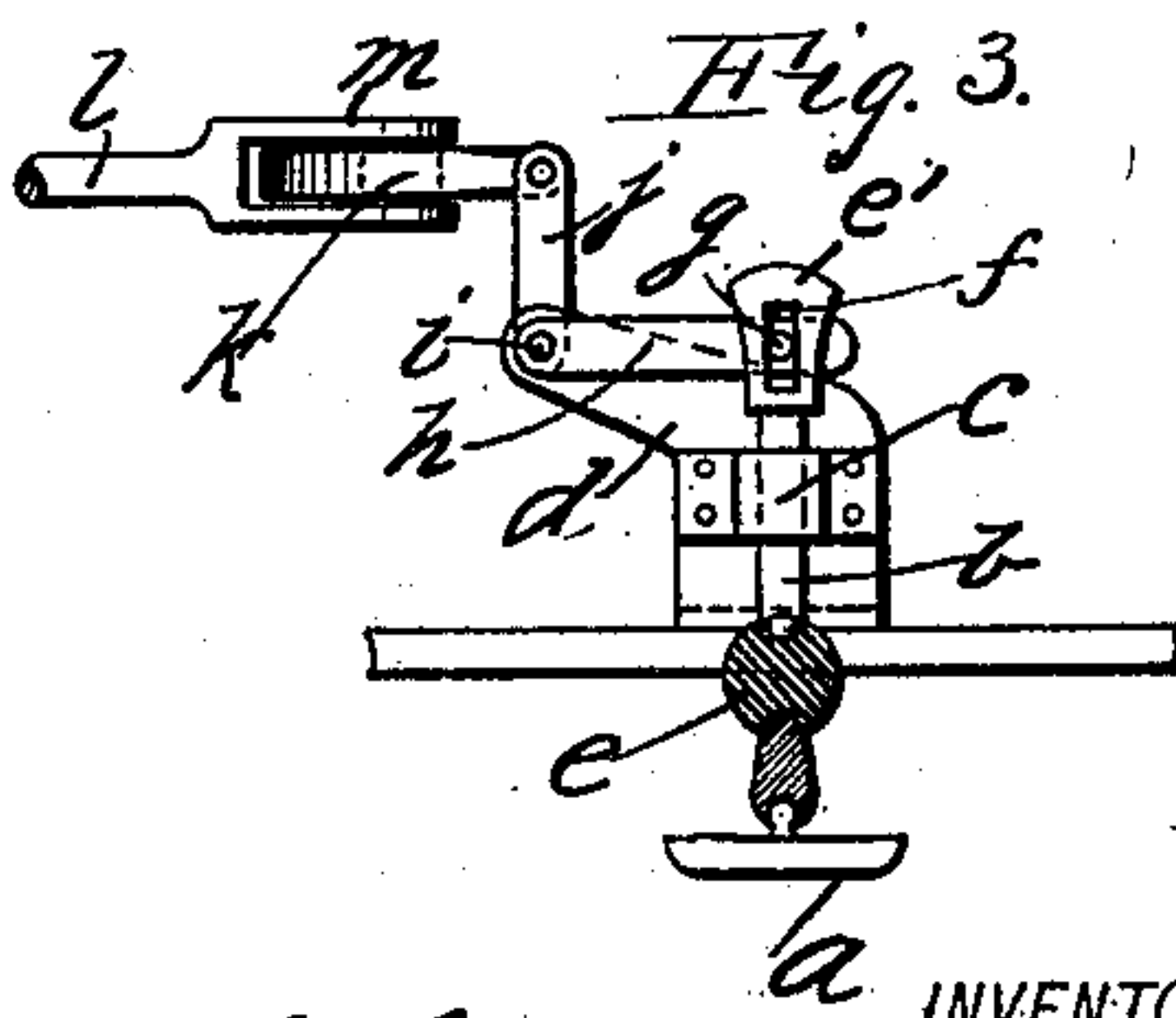
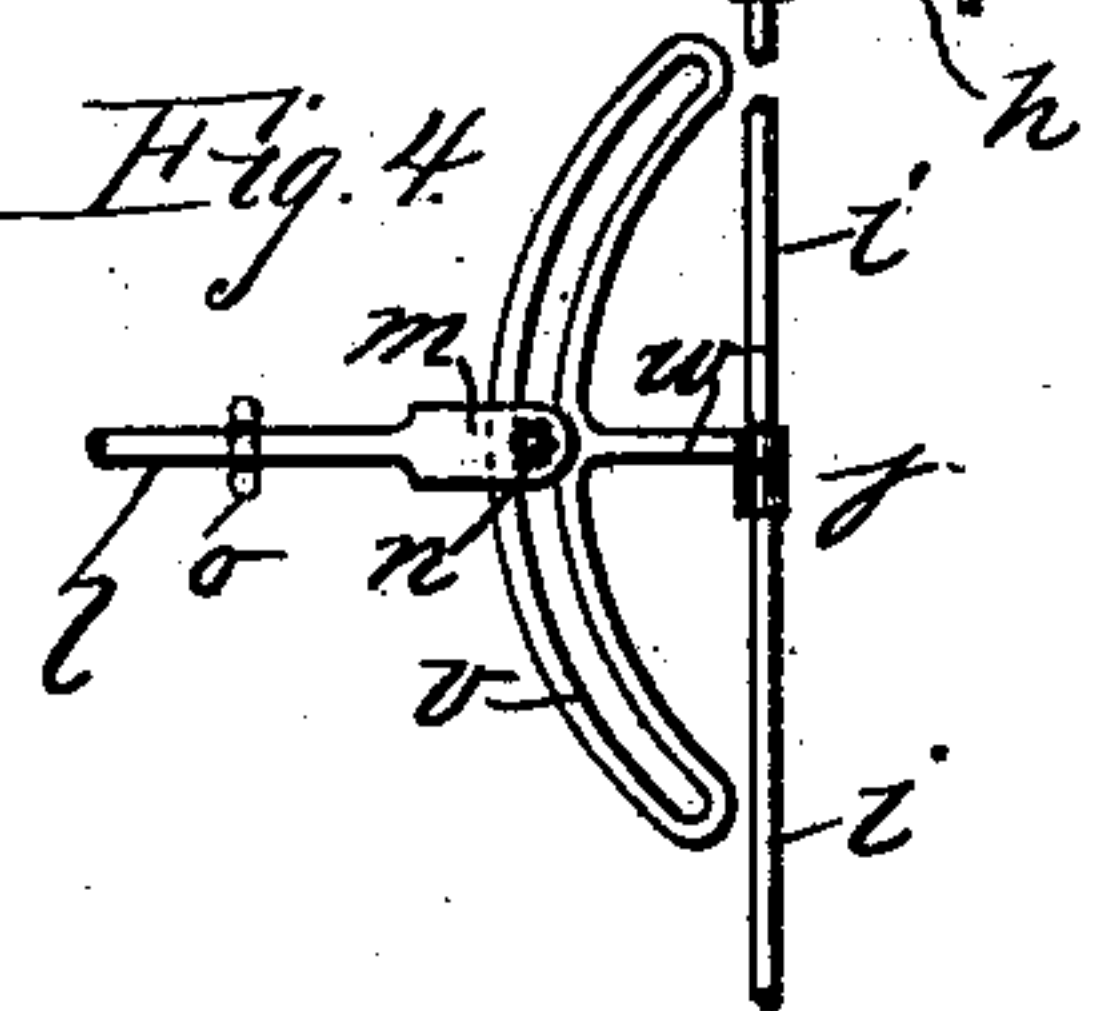


Fig. 4.



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CONTACT-SHOE-LIFTING APPARATUS FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 670,375, dated March 19, 1901.

Application filed April 20, 1900. Serial No. 13,580. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. MORISON, a citizen of the United States of America, and a resident of Richmond Hill, borough of Queens, city and State of New York, have invented certain new and useful Improvements in Contact-Shoe-Lifting Apparatus for Electric Cars, of which the following is a specification.

My invention consists of improved means for lifting the contact-shoes used on electric cars for making electrical connection with the conducting rail or rails, which is frequently required for various reasons, said apparatus being represented in the accompanying drawings, in which—

Figure 1 is a plan view of an inverted electric car having my improved shoe-lifting apparatus, applied. Fig. 2 is a side elevation of said car. Fig. 3 is a detail of the lifting apparatus, partly in side and partly in sectional elevation and enlarged for greater clearness. Fig. 4 is a detail in plan view showing a modification of some of the parts. Fig. 5 is a side elevation of the devices represented in Fig. 4.

The contact-shoes are represented at *a*, Figs. 2 and 3. They are to be understood as of the usual form and construction and to have the usual electric wire connections for transmitting the electric current, which it is not necessary to show or describe in this application, which relates only to means for lifting the shoes above the conducting rail or rails whenever it may be desired to do so for any purpose. For enabling the shoes to be so lifted they must in some form or other be suspended by supports of some kind adapted to be shifted up and down, which supports may be arranged in various ways. The arrangement herein shown and which may or not be best adapted for practical use consists of a vertical stock *b* for each shoe carried in a slideway *c*, supported on any suitable standard *d*, to the lower end of which stock the shoe is connected in any approved way with some sort of interposed insulator *e*. The stock *b* is provided with a head *e'*, which has intersecting slots in transverse planes, one of which is seen at *f* in the side view and is traversed by a pin *g*, carried in a lever *h*, traversing the other slot and located in said lever near its free end, said slots being adapted for

the head of the stock to have free play vertically to a limited extent for allowing the shoe freedom to rise and fall, as inequalities in the bearing-surface of the rails may demand. The lever *h* is rigidly attached to a rock-shaft *i*, extending from side to side of the truck in suitable supporting-bearings and carrying a lever *h* at each end for operating a shoe on each side, and such shoes and lifting apparatus are carried on each truck.

In Figs. 1, 2, and 3 the rock-shafts are represented with two upright rigid arms *j*, in the upper ends of which a curved bar *k* is pivoted at its ends, with the projecting side toward the middle of the car. A connecting-rod *l*, having a forked end *m*, is connected to this bar by a pin *n*, on which is a friction-roller between the members of the fork, whereby the bar *k* can traverse the fork freely, as the truck on which the rock-shaft is carried vibrates on its vertical axis, lateral movement of the connecting-rod being prevented by a staple or other equivalent device *o*, pendent from the car-body.

A lever *p* is pivoted at *q* to the center of the car-body, said lever ranging transversely to the car-body in a horizontal plane, and at equidistant points from and on opposite sides of this pivot *q*, respectively, the respective rods *l*, controlling the shoes of the respective trucks, are pivoted, this connection being made so that all the shoes may be raised by one movement of a hand-lever, and for effecting this operation from either end of the car a hand-lever *s*, thereon pivoted at *t*, is connected to each end of lever *p*, respectively, and in order that when raising the shoes from one end of the car the lever *s* of the other end of the car may not be shifted out of its normal position. Such connections are made by a rod *t* with a short length of chain *u* next to lever *p*, by which the thrust that would be made on the lever *s* (not used) if the entire connection were made by rod *t* is avoided.

Instead of the curved bar *k*, attached at each end to arms *j*, an equivalent device, consisting of the slotted curved bar *v*, having an arm *w*, jointed to a single arm *j*, on the rock-shaft *i*, may be used.

What I claim as my invention is—

1. In an electric car receiving the electric

current by the third-rail system, the combination with the contact shoe or shoes, of a support or supports therefor adapted to be raised to break contact with the conducting rail or
5 rails and means connecting said support or supports with a hand-lever in the control of the operator on the platform for so raising them, said means comprising a rock-shaft suitably connected with the hand-lever, and
10 having an arm for each shoe-support and connected with a head thereof having intersecting slots in transverse planes, one of which is traversed by said arm and the other by a pin carried in the extremity of said arm to
15 have free play relatively thereto to a limited extent, to accommodate it to the inequalities of the conducting-rail.

2. In an electric car receiving the electric current by the third-rail system, the combination with the contact shoe or shoes, of a sup-
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port or supports therefor adapted to be raised to break contact with the conducting rail or rails, a rock-shaft supported on the truck and having a lifting arm or arms connected with
a shoe support or supports, and one or more 25 arms for actuating it, a curved bar connected with said operating arm or arms of the rock-shaft, a rod connecting said curved bar with an operating-lever pivoted on the car-body, and being yoked to said curved bar for lateral traverse of it relatively to said rod, and
30 means connecting said operating-lever with a hand-lever in the control of the operator on the platform.

Signed by me at New York, N. Y., this 7th 35 day of April, 1900.

JOSEPH S. MORISON.

Witnesses:

C. SEDGWICK,
J. HOWARD.