

(No Model.)

2 Sheets—Sheet 1.

J. J. ENDRES.

CABLE LIFTING MECHANISM.

No. 347,785.

Patented Aug. 24, 1886.

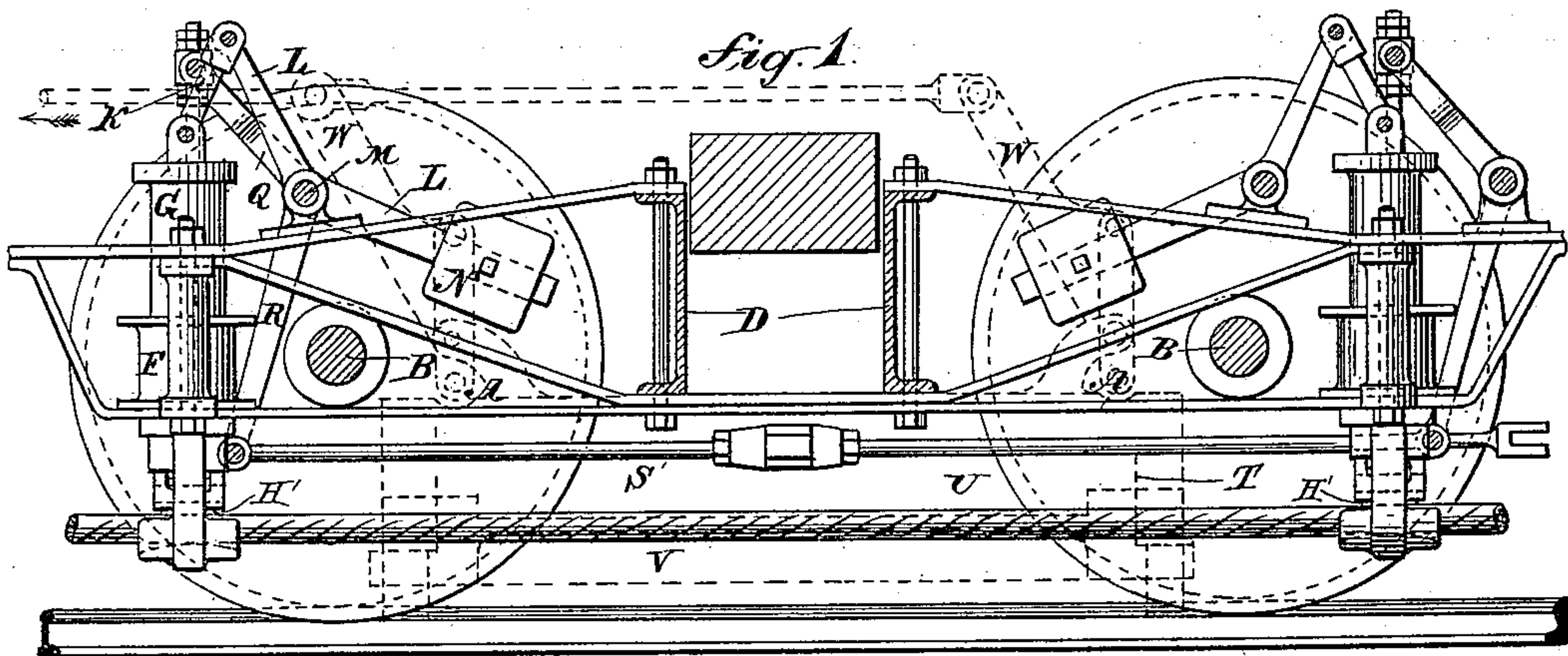
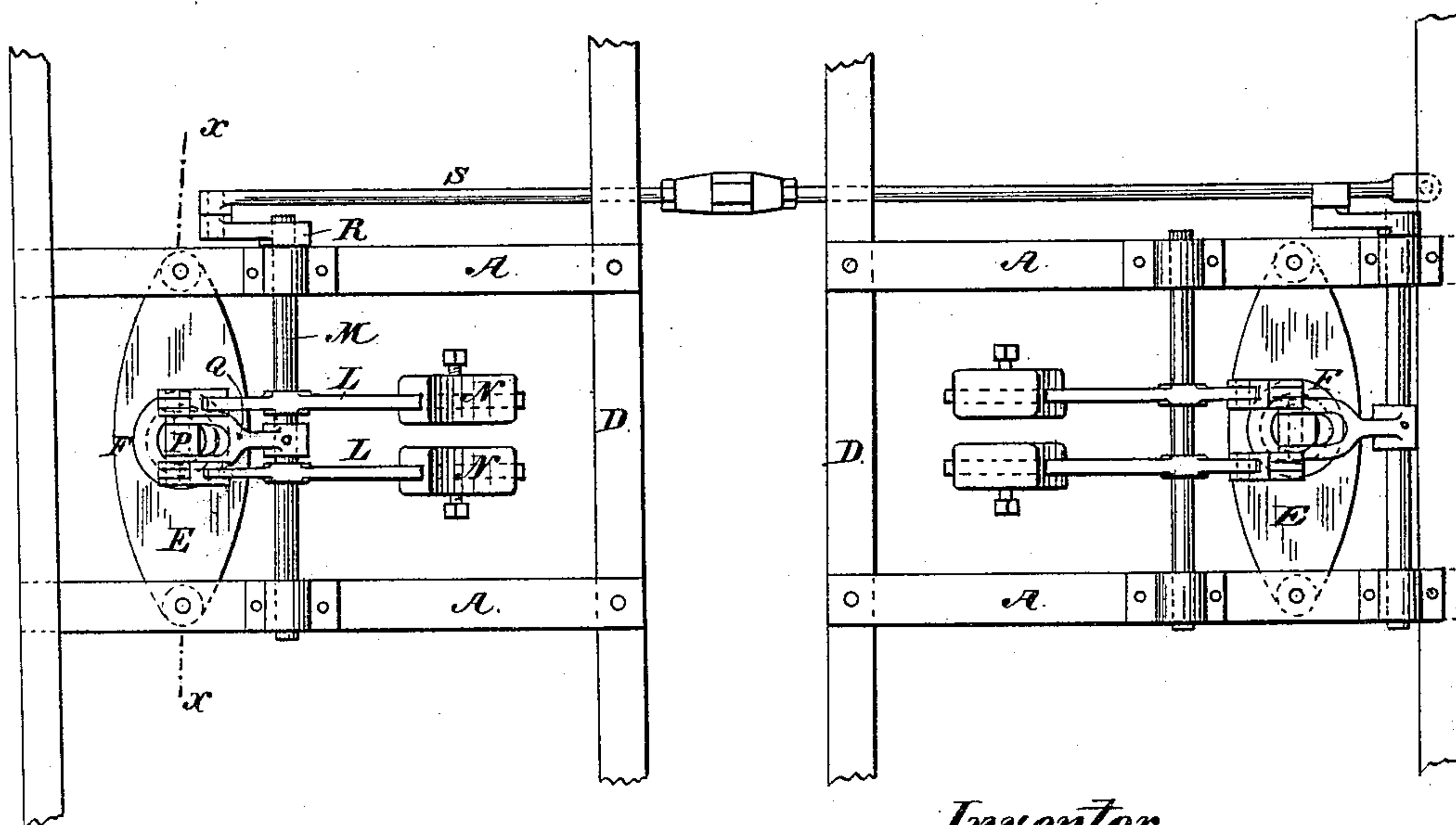


Fig. 2.



Inventor

Witnesses:

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(No Model.)

2 Sheets—Sheet 2.

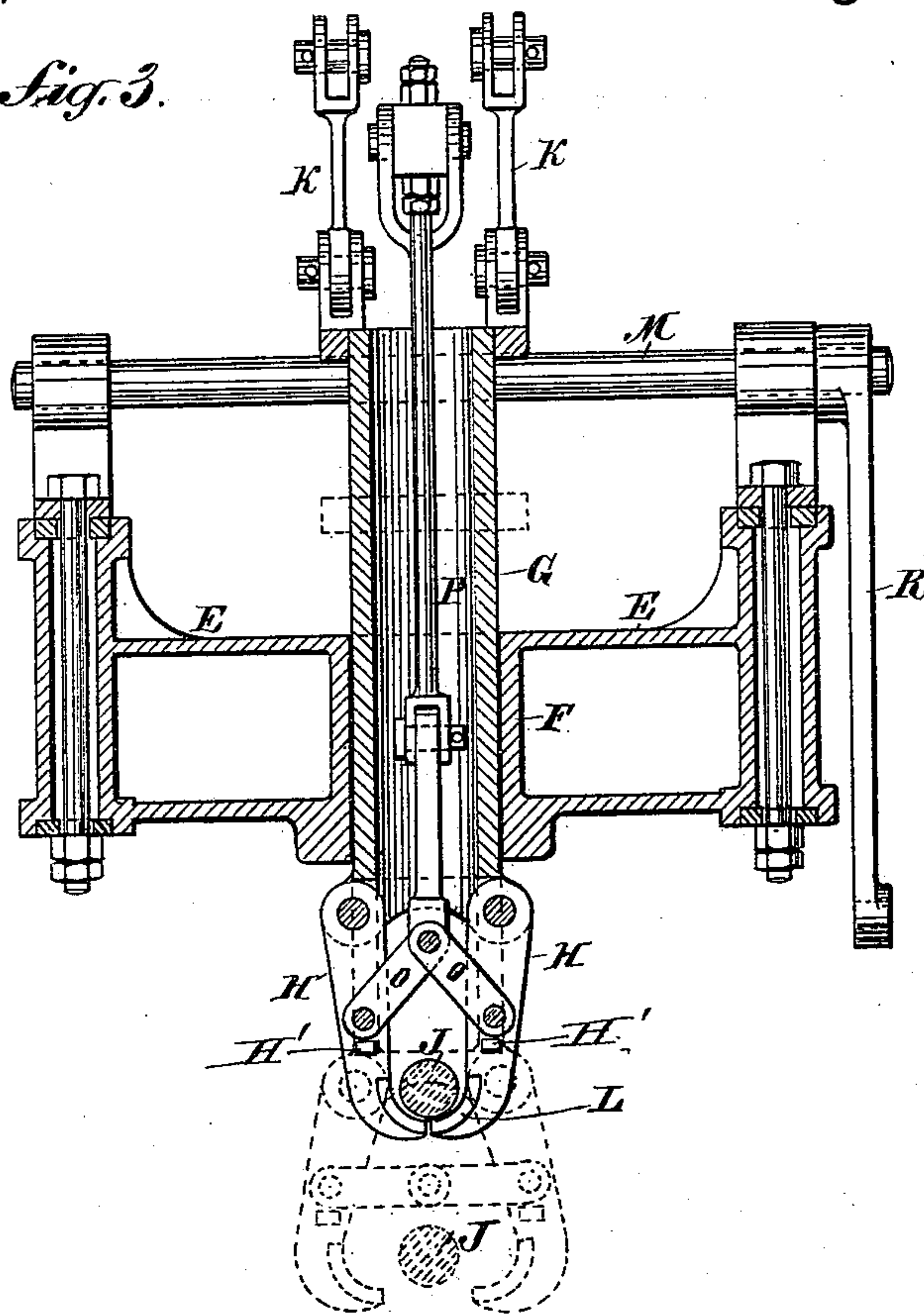
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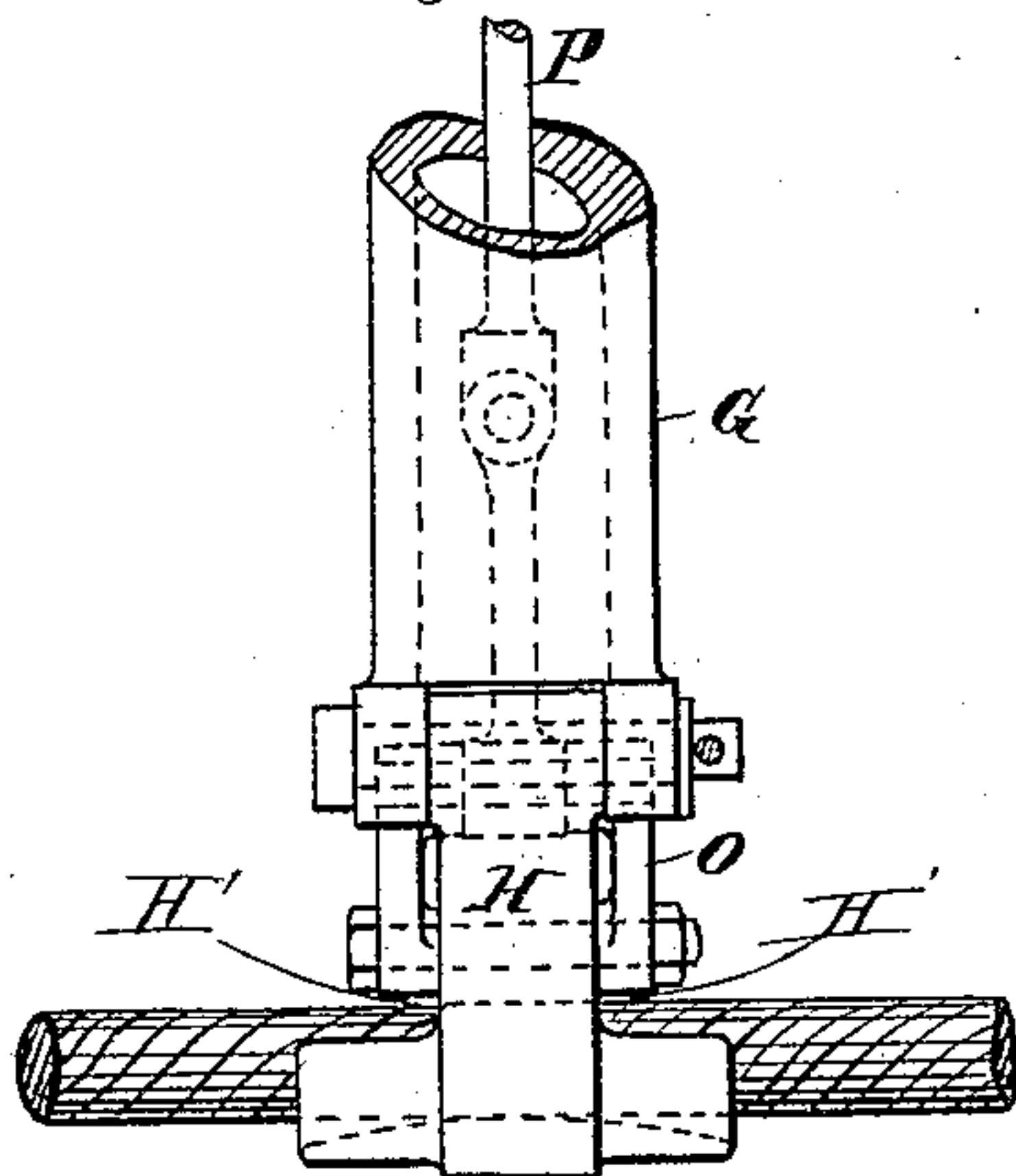
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*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

JOHN J. ENDRES, OF NEW YORK, N. Y.

## CABLE-LIFTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 347,785, dated August 24, 1886.

Application filed February 12, 1886. Serial No. 191,683. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. ENDRES, of the city, county, and State of New York, have invented certain new and useful Improvements in Cable-Lifting Mechanism for Cable-Road Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to mechanism for cable-road cars, by which the cable may be grasped and lifted from its normal position on its carrying-pulleys and brought between the jaws of the cable-grip on the car by the operation of a suitably arranged hand-operating mechanism.

The mechanism embodying the invention will be explained by the following description, and the features considered as new will be specially indicated in the claims.

In the drawings, Figure 1 is a side elevation view of a car-truck, the wheels on one side being removed, and provided with my improved cable-lifting mechanism mounted thereon. Fig. 2 is a plan view of the same. Fig. 3 is a cross section on plane  $x x$  of Fig. 2, and Fig. 4 is a detail side view of the cable-clutching-jaws.

Referring to these views in detail, A represents the frame of the truck, which frame may be of any suitable construction, it being preferably a frame rigidly connecting the axles B B of the truck and adapted to carrying thereon a cable-gripping mechanism. Such gripping mechanism is designed to be attached midway between the axles to the cross-bars D. At each end of the truck is a cross-bar, E, constructed with a vertical guide-bearing, F, through which passes the cylindrical plunger G, to the lower end of which are hinged the cable-jaws H, which are provided with friction-plates I-shaped and secured to said arms, so as to jointly form a grasp about the size of or a little larger than the cable J. This hollow plunger is pivotally suspended by connecting-rods K from the weighted levers L, loosely hung on the crank-shaft M, journaled on the frame of the truck. Through these levers M the plunger is counterbalanced by the movable weights U, or by springs or any like means, and is thus held up so that the jaws H are sufficiently above the normal posi-

tion of the cable to clear it and its carrying-pulleys.

Pivoted to each of the jaws H is a toggle-link, O, and these links are at their other ends pivoted to the lower end of the crank-rod P, which is pivoted at its upper end to the arm Q, this arm being rigidly attached to the crank-shaft M, and the cranks R of the shafts at each end of the truck being connected so as to operate together by the rod S, which is attached to any suitable hand-operating mechanism—such as a hand-wheel or hand-lever—and usually located on the car-body within convenient reach of the conductor of the car.

T indicates (in dotted lines in Fig. 1) the grip, by which the cable is attached to the truck of the car. This grip may be of any form, the form shown, however, indicating a fixed upper jaw, U, and a movable lower jaw, V, while W indicates levers at each end of the grip for raising and lowering the movable jaw, the grip being of the kind that takes the cable sidewise.

The operation of the mechanism is as follows, the position of the parts being as shown in Fig. 3, but with the jaws open, and the position of the cable when running on its carrying pulleys being as indicated in broken lines. The conductor through his hand-lever or hand-wheel pulls the rod connecting the crank-shafts and forces down the crank-rods attached to the toggle-arms until the links O strike the stops H'. When the cable-jaws are extended, these crank-rods can be pushed farther through the cylindrical plungers, and the further revolution of the crank-shafts causes the plungers to be pushed down through their bearings, so as to bring the cable-jaws on either side of the cable, as seen in dotted lines in Fig. 3. This downward movement of the hollow plungers lifts their weights so that in this position of the parts they do not counterbalance the plungers, and the plungers will remain as placed when the conductor's hand-operating mechanism is reversed. Upon reversing such hand mechanism the backward revolution of the crank-shafts causes the cable-jaws to first close together under the cable and then to lift the plungers, with the engaged cable, to a line with the open jaws of the cable-gripping mechanism, as seen in full lines in



Fig. 3. The gripping mechanism may now be closed, and then the hand mechanism of the cable-lifting devices can be released, when the cable-jaws will fall apart, but the plungers 5 carrying these jaws will be held up by their weights, being in position to more than counterbalance them.

By the use of a lifting mechanism at each end of the truck or near both ends of the gripping devices the cable is held evenly between 10 the gripping-jaws. In some cases, however, a single lifting mechanism might suffice; but generally it is better to have the cable lifted at two points, so that that portion of the cable 15 passing through the grip may be along a straight line parallel with the clamping-faces of the grip.

In an application for a patent filed by me of same date as this application, and numbered 20 189,600, I show a form of grip particularly adapted for use in connection with the cable-lifting devices here shown; but various other forms of grips are equally suitable.

The parts of these mechanisms may be 25 changed as to shape and construction without essentially altering their purpose and operation; and I do not, therefore, confine myself to the exact construction here shown.

What I claim as new is—

1. In combination, in the herein-described 30 cable-lifting mechanism, the jaws H, pivoted to the counterbalanced plunger, and the crank-rod P, attached to said jaws and to connections extending to hand-operating mechanism, substantially as and for the purpose 35 set forth.

2. In combination, the jaws H, the counterbalanced plunger G, carrying the same, the crank-rod P, for operating said jaws and attached to the crank-shaft M, and the connect- 40 ing-rod S, all substantially as set forth.

3. In combination, the plunger G, suspended from the weighted levers L and carrying the jaws H, the links O, and crank-rod P, the crank-shaft M, and connecting-rod S. 45

4. In combination, the two cable-lifting mechanisms arranged to engage the cable at points on both sides of the gripping mechanism, each consisting of a vertically-moving counterbalanced plunger carrying cable-lift- 50 ing jaws, and a crank-rod connection arranged to move said plunger and operate said jaws, substantially as and for the purpose set forth.

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Witnesses:

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