No. 787,034. PATENTED APR. 11, 1905.

B. A. GRASBERGER.

TROLLEY STAND.

APPLICATION FILED FEB. 9, 1905.

FIG. 1.

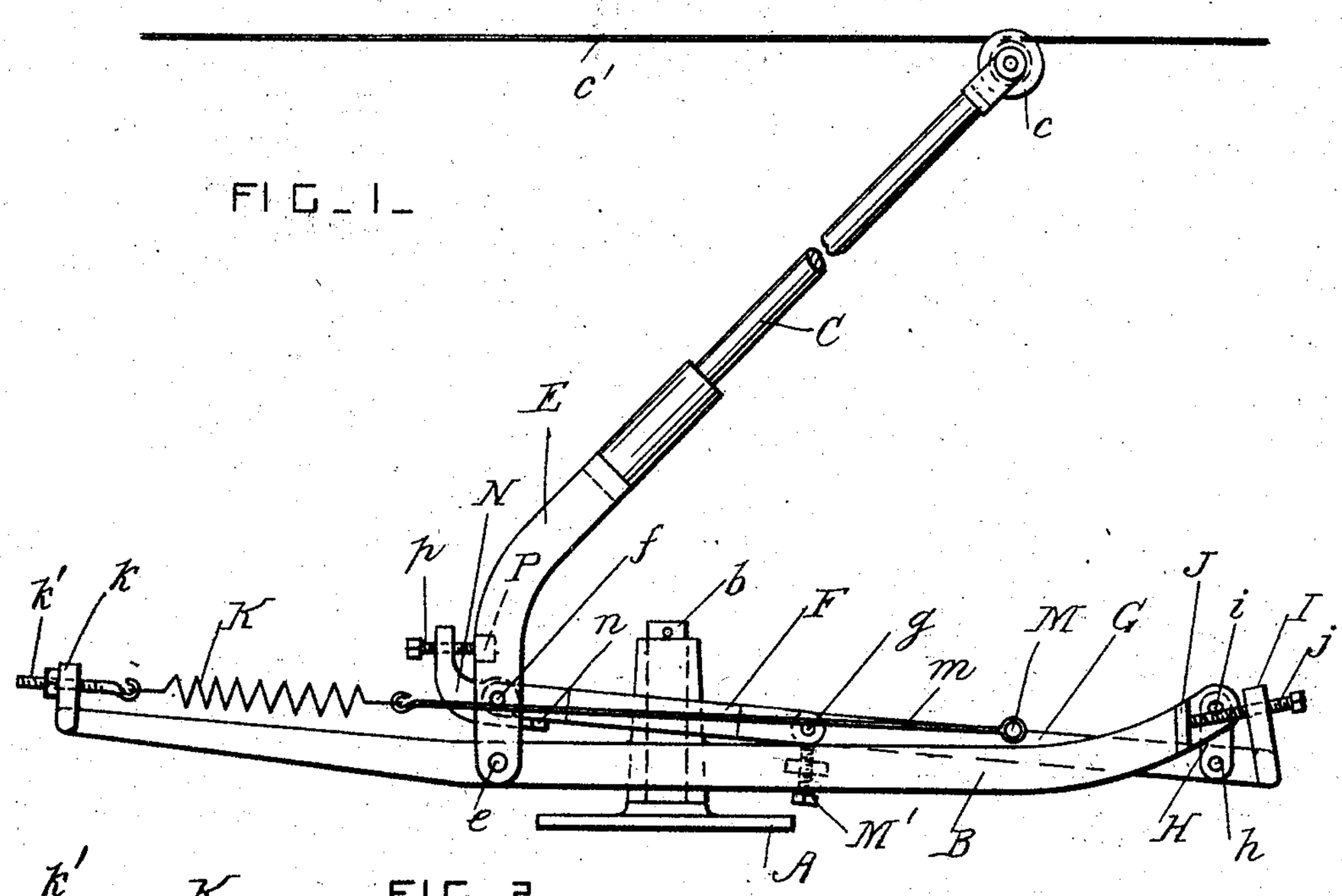


FIG. 2.

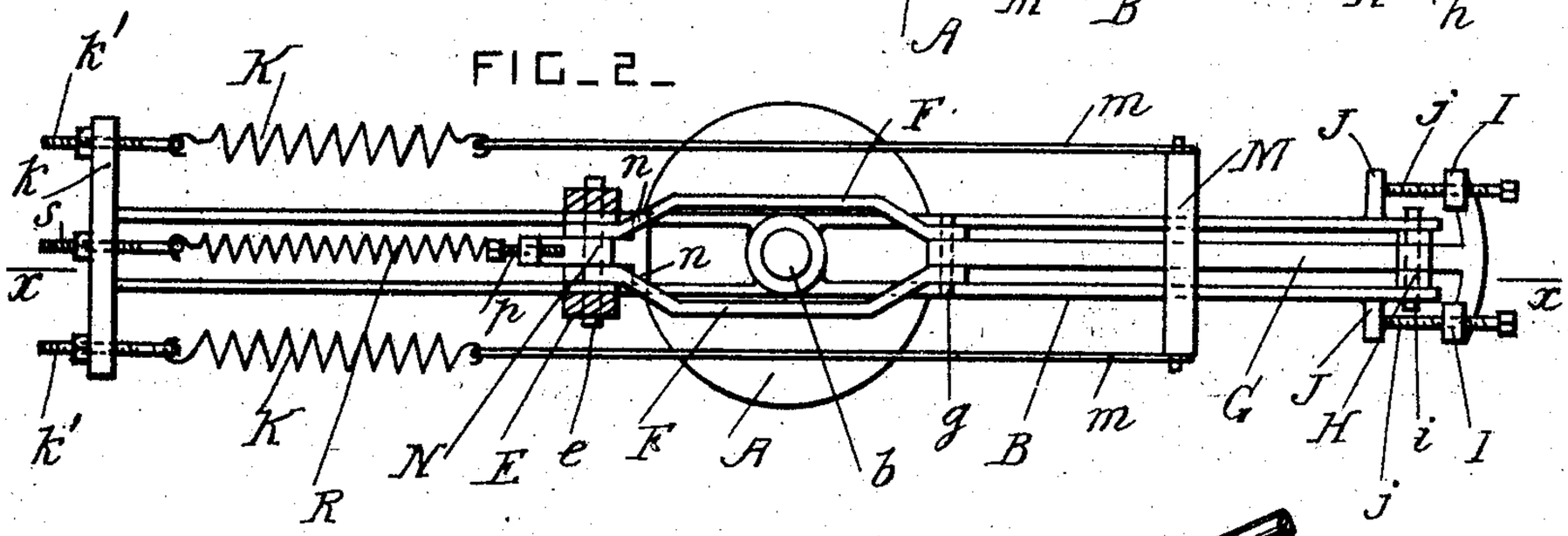
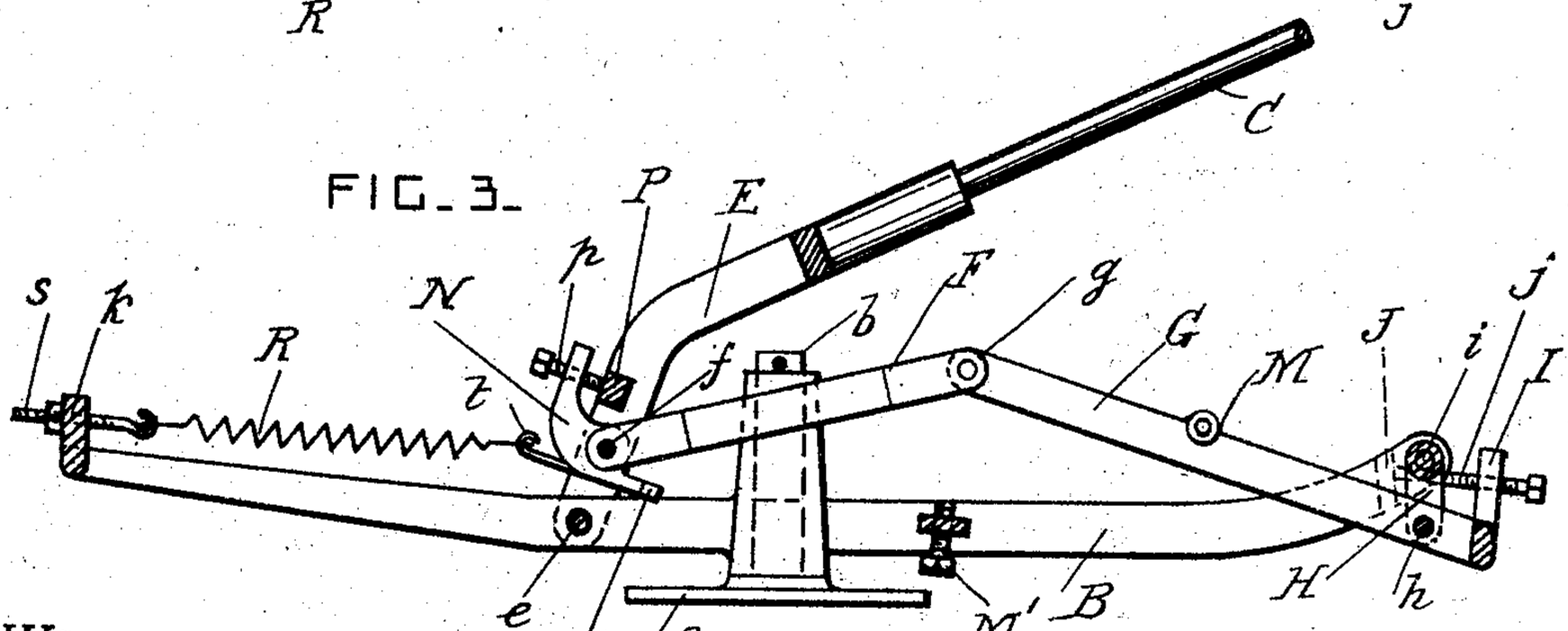


FIG. 3.



WITNESSES:

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No. 787,034. Patented April 11, 1905.

UNITED STATES PATENT OFFICE.

BONIFACE A. GRASBERGER, OF RICHMOND, VIRGINIA.

TROLLEY-STAND.

SPECIFICATION forming part of Letters Patent No. 787,034, dated April 11, 1905.

Application filed February 9, 1905. Serial No. 244,909.

To all whom it may concern:

Be it known that I, BONIFACE A. GRASBERGER, a citizen of the United States, residing at the city of Richmond, in the State of Virginia, have invented certain new and useful Improvements in Trolley-Stands; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to trolley-stands; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a side view of the trolley-stand. Fig. 2 is a plan view of the trolley-stand, partly in section. Fig. 3 is a longitudinal section through the trolley-stand, taken on line *x x* in Fig. 2 and showing the toggle-links doubled up.

A is a stationary base-plate which is secured to the top of a car.

B is a frame which is pivoted on a pin *b*, which projects from the base-plate A, so that the frame can be swung around in a horizontal plane to reverse the trolley. The frame may, however, be connected pivotally with the base-plate by any other approved means.

C is the trolley-pole, provided with a trolley-head or sheave *c*, which is pressed into contact with the line-wire *c'*. The trolley-pole is secured to an arm E, which is forked, and *e* is a pin which pivots the lower end portion of the said arm to the frame B, so that the said trolley arm and pole can move freely in a vertical plane.

F and G are toggle links or levers. Two links F are preferably provided and are pivoted to the trolley-arm E by a pin *f*, arranged above the said pin *e*. The links F are pivoted to the link G by a pin *g* at the bending-point or knee-point of the toggle links or levers. The toggle-links are slidable longitudinally to a limited extent, and H is a guide-link, which is pivoted to the other end of the link G from the pin *g* by means of a pin *h*. The link H is pivoted to one end of the frame B by a pin *i*, and I represents stop-lugs on the said toggle-link G. The stop-lugs I are provided with adjusting-screws *j*, which bear against projections J on the frame B, so that the forward longitudinal motion of the toggle-links is limited. The toggle-links are pressed forward longitudinally by means of springs K. These springs are connected to a cross-bar *k* at the forward end of the frame B by means of adjustable screws *k'*, and the rear ends of the said springs are coupled to a cross-piece M on the rear link G by rods *m*. The cross-piece M is preferably arranged at the middle part of the link G, and it projects over the frame B. A stop M' prevents the said toggle links or levers from being folded downwardly.

N is a tappet which is pivoted on the pin *f* and which is shaped like a bell-crank lever. The rear and lower end of this tappet has lugs *n*, which project under the forward end portions of the links F. The upper and forward end of the tappet N is provided with an adjusting-screw *p*, which bears against the bar or projection P on the trolley-arm E above the pin *f*. R is a check-spring which connects the said tappet with the cross-bar *k*. An adjustable screw *s* is provided for connecting the front end of the spring R with the cross-bar, and the rear end of the spring is coupled to a hook *t* at the lower part of the tappet, so that the adjusting-screw *p* is normally pressed against the bar or projection P. The use of the check-spring, however, is mainly to prevent the trolley-pole from dropping too hard.

When the trolley-sheave is running in contact with the line-wire, the toggle links or levers are free to move to a limited extent longitudinally, so that the trolley-sheave may adapt itself to the line-wire. When the trolley-sheave accidentally leaves the line-wire and flies upward, the bar or projection P operates the tappet, the said bar being pressed against the screw *p* and the said screws of being pressed against the projections J on the frame B. The tappet moves the center line of the pin *g* upward, so that the toggle links or levers are doubled up by the springs K, and the trolley-pole then drops downward to a position in which its head will not strike any of

the supports which hold the line-wire in position. As the stops I project upward, as shown, they also act as tappets and assist in folding the toggle-links upward. One stop or tappet or two of them may be used. The rear toggle-link may be supported and guided by one or more guide-links or by any other approved means which will permit the toggle-links to slide to a limited extent longitudinally.

The adjusting-screws of the tappets are desirable, as they enable the mechanism to be set with great accuracy; but the tappets could be set without these screws, if desired.

What I claim is—

1. The combination, with a frame, and a trolley-arm pivoted thereto; of toggle-links pivoted to the said trolley-arm, a spring arranged between the rear toggle-link and the said frame, means for preventing the said toggle-links from folding downward, and a tappet pivoted to the said trolley-arm and operating to fold the said toggle-links upward when the trolley leaves the line-wire.

2. The combination, with a frame, and a trolley-arm pivoted thereto; of toggle-links pivoted to the said trolley-arm, a spring arranged between the rear toggle-link and the said frame, and a tappet pivoted to the said arm and provided with an end portion which projects under the front toggle-link and an upper end portion which engages with the said arm.

3. The combination, with a frame, and a trolley-arm pivoted thereto; of toggle-links pivoted to the said trolley-arm at one end and slidably supported from the said frame at the other end, a spring arranged between the rear toggle-link and the said frame, a tappet operating between the said trolley-arm and the front toggle-link, and a second tappet operating between the rear toggle-link and the said frame, the said toggle-links being folded upward by the joint action of the said tappets.

4. The combination, with a frame, and a forked trolley-arm pivoted thereto and provided with a projection above its pivot; of toggle-links pivoted to the said arm by a pin arranged between the said projection and pivot, a spring arranged between the rear toggle-link and the said frame, and a tappet pivoted on the said pin in the fork of the said arm and provided with an end portion which projects under the front toggle-link.

5. The combination, with a frame, and a trolley-arm pivoted thereto; of toggle-links pivoted to the said trolley-arm, the rear toggle-link being provided at its middle part with a cross-piece which projects over the said frame, means for preventing the toggle-links from folding downward, springs arranged between the said cross-piece and the said frame, and tappet mechanism operating to fold the said toggle-links upward when the trolley leaves the line-wire.

6. The combination, with a frame, and a trolley-arm pivoted thereto; of toggle-links pivoted at their front end to the said arm, a link pivotally connecting the rear end of the said toggle-links with the said frame, a tappet or stop which limits the forward movement of the said toggle-links, means for preventing the said toggle-links from folding downward, and a tappet operating between the said trolley-arm and the front toggle-link.

In testimony whereof I have affixed my signature in the presence of two witnesses.

BONIFACE A. GRASBERGER.

Witnesses:

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