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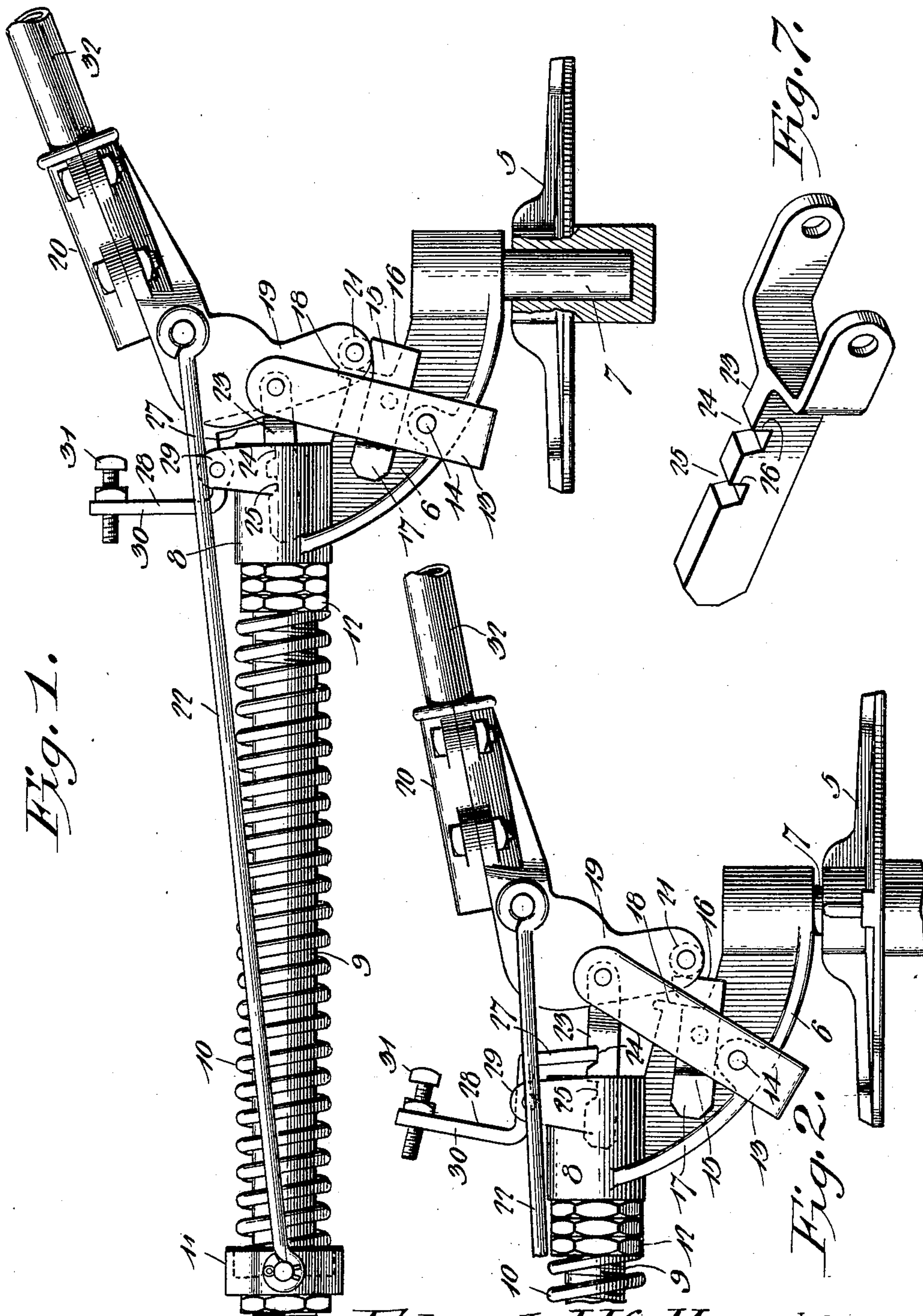
Patented Aug. 13, 1901.

E. J. KELLEY.
TROLLEY STAND.

(Application filed May 18, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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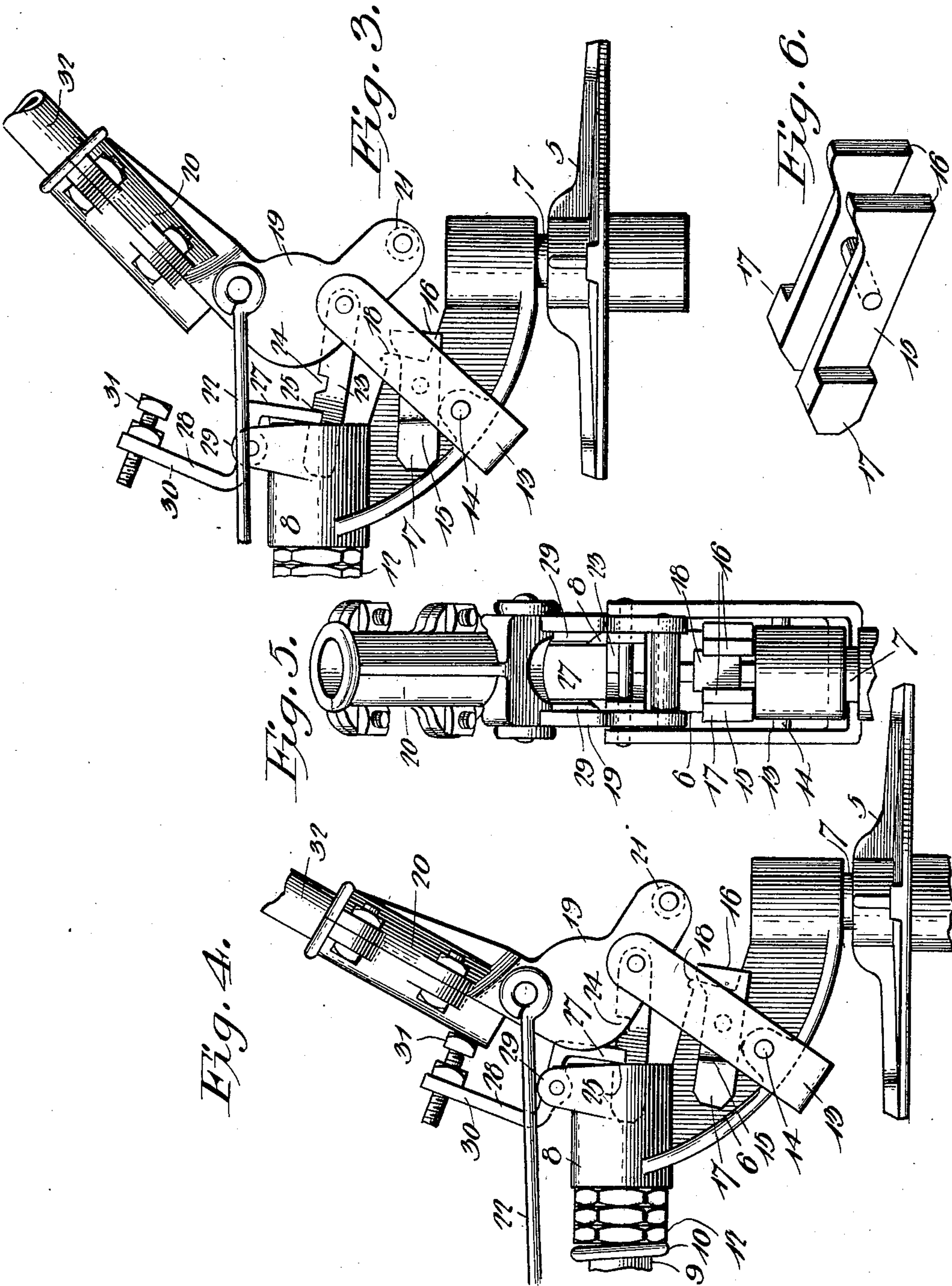
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(No Model.)

3 Sheets—Sheet 2.



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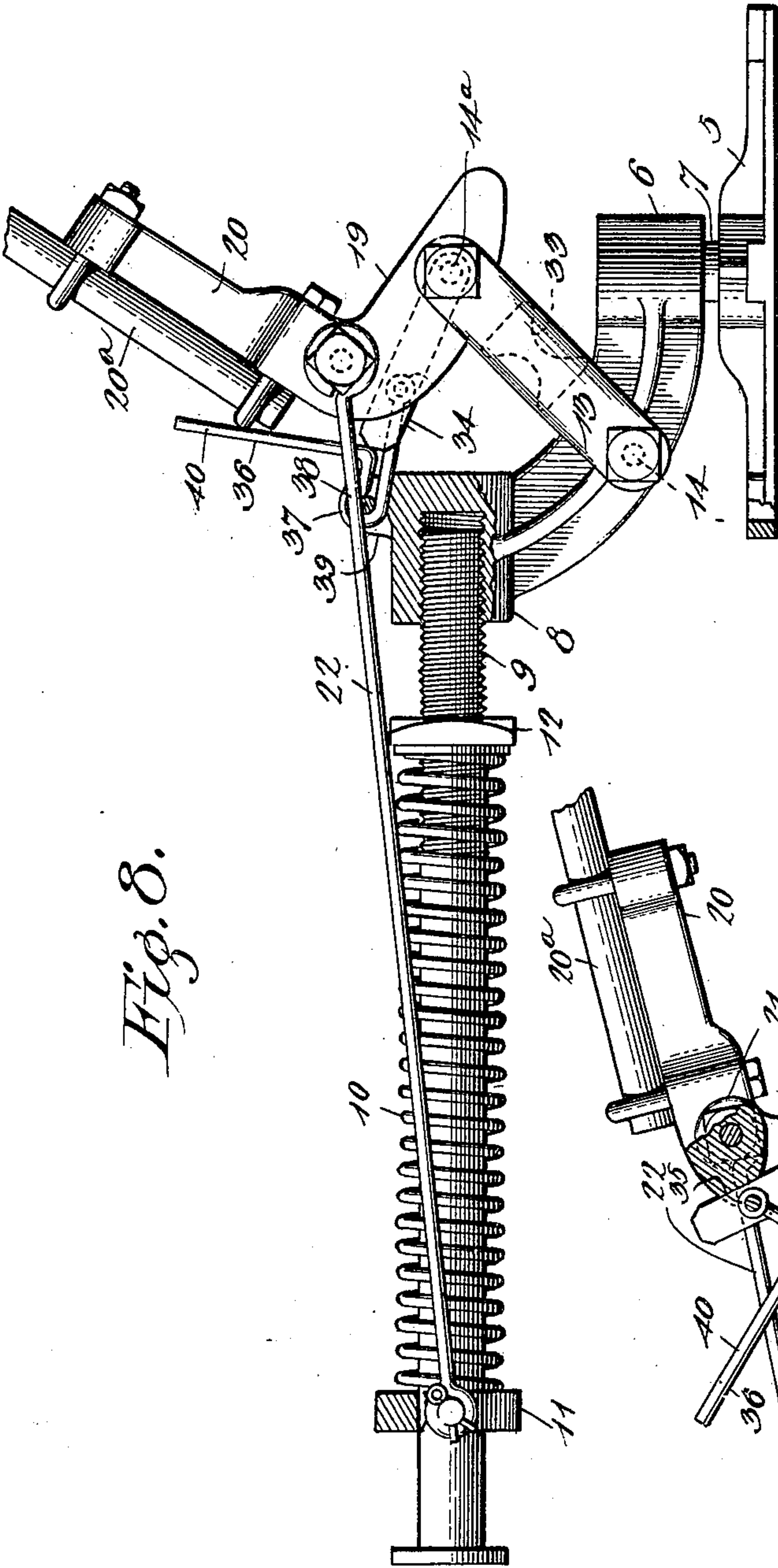


Fig. 8.

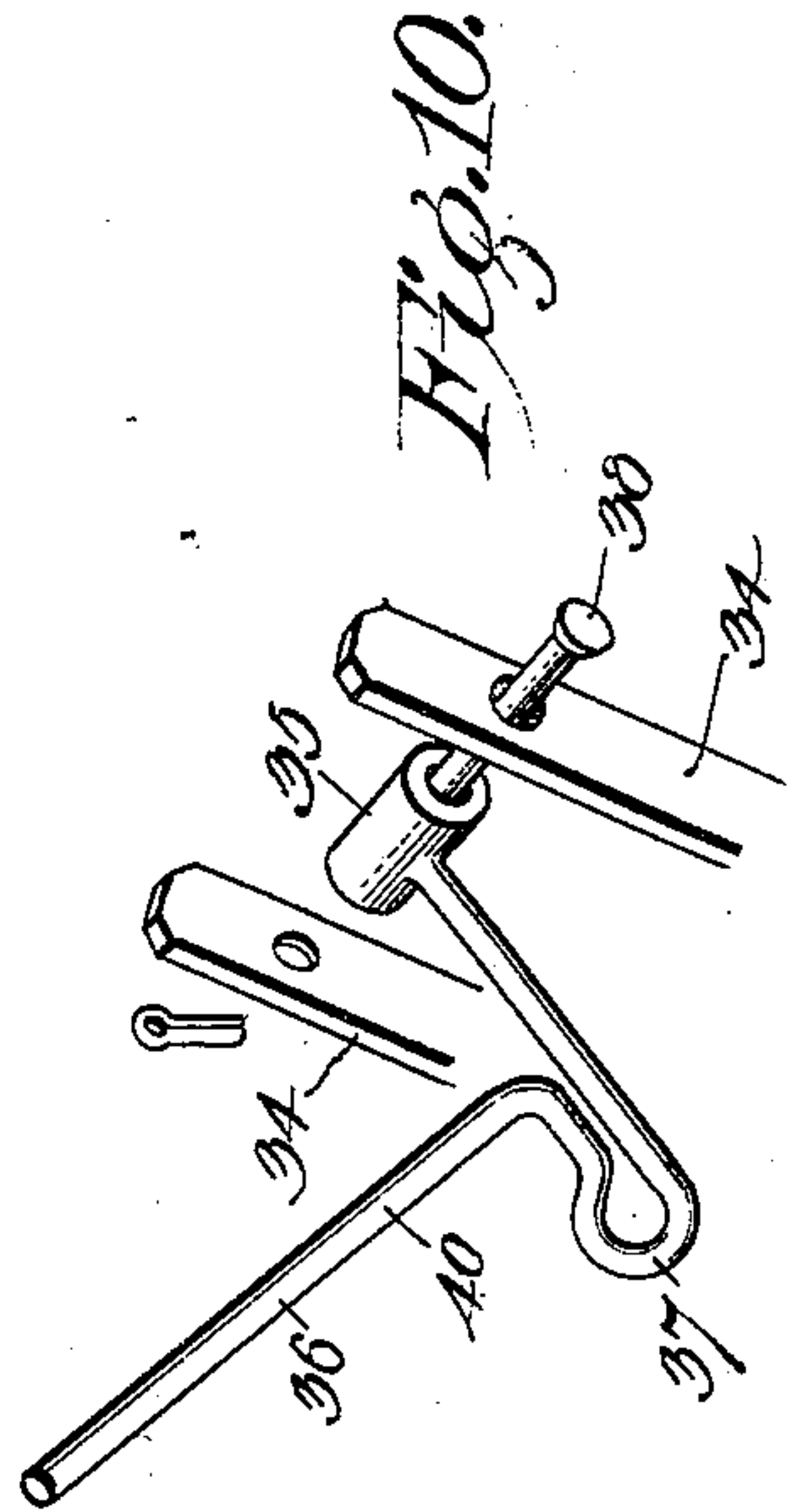


Fig. 10.

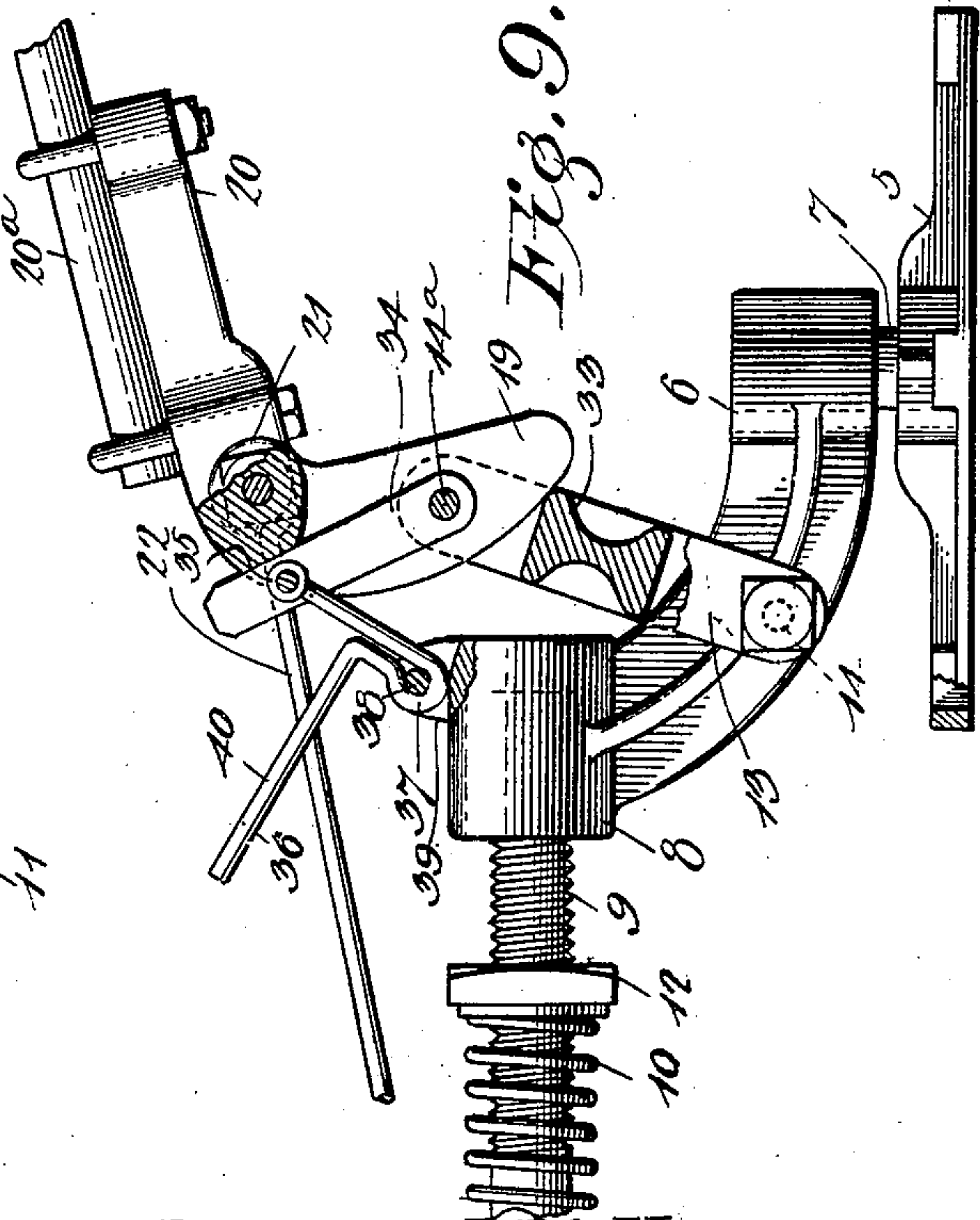


Fig. 9.

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UNITED STATES PATENT OFFICE.

EDWARD J. KELLEY, OF NORFOLK, VIRGINIA.

TROLLEY-STAND.

SPECIFICATION forming part of Letters Patent No. 680,663, dated August 13, 1901.

Application filed May 18, 1901. Serial No. 60,914. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. KELLEY, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented a new and useful Trolley-Stand, of which the following is a specification.

This invention relates to trolleys for electric railways and the like, and more particularly to the frame for the trolley-arm and ordinarily termed the "trolley-stand" and by means of which the arm is mounted upon the vehicle.

In the usual application of trolley-arms the arm is pivoted in a rotatable frame or stand and is provided with opposed spring-tension devices to maintain the arm in upright position. When the trolley-wheel is in engagement with the trolley-wire, one of the tension devices is compressed and the other relaxed, and a disengagement of the wheel from the wire will bring the relaxed tension device into operation as a cushion or buffer to check the shock that would otherwise tend to tear the frame from the roof of the vehicle. When the arm comes to rest, however, it is in a vertical position and will then strike the suspension-wires or suspension-arms by means of which the trolley-wire is hung, with obvious disadvantageous results.

One object of the present invention is to provide an organization of parts which will not only overcome the tendency to fracture the frame or stand and arm when the wheel leaves wire, but will release the resilient maintaining means for maintaining the arm in operative position, so that the arm will be pulled automatically into such lowered position as will prevent it from striking the suspending devices, and thereby prevent the arm from injuring the latter devices and of itself freed from the liability to injury.

A further object of the invention is to provide an organization of parts whereby the sustaining resilient means will be tripped after the trolley-wheel has left the wire and the energy of said means will be brought into play to lower the said arm positively, and by downward pulling action on the trolley-arm by an operative from its inoperative position, just set forth, the resilient sustaining means for the arm will be given its initial tension by

a gradual operation without the exertion of excessive strain on the part of the operative and cause said arm to assume a normal position and at the same time set holding mechanism therefor to maintain it in the latter position.

With these and other objects and advantages in view the invention consists in the construction and arrangement of the several parts, which will be more fully hereinafter described and claimed and embodying a modified structure, the organization being capable of a wide range of modification without departing from the principle involved.

In the drawings, Figure 1 is a side elevation, partly in section, of a trolley-arm organization embodying the features of the invention and showing the trolley-arm as held in locked position below the wire. Fig. 2 is a side elevation of the same organization, showing the first manually-set position of the same. Fig. 3 is a similar view showing the normal position of the arm after the second manual operation and at which time the contacting device carried by the arm will be in engagement with the wire. Fig. 4 is a similar view of the organization, showing the position of the parts after the contacting device on the trolley-arm has slipped or become disengaged from the wire and from which position the mechanism automatically assumes that shown by Fig. 1. Fig. 5 is a front elevation of a portion of the mechanism. Figs. 6 and 7 are detail perspective views of parts of the mechanism. Fig. 8 is a side elevation, partially in section, of a trolley-arm organization embodying the features of the invention in modified form. Fig. 9 is a view similar to Fig. 8, showing a different position of the modified parts. Fig. 10 is a perspective view of a portion of the modified construction.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

First referring to the preferred form of the improved organization as disclosed by Figs. 1 to 7, both inclusive, the numeral 5 designates a turn-table or base-casting, upon which is mounted an arcuate casting 6, having a pivot-post 7 engaging the said turn-table, the casting being provided with a head 8, having a threaded recess to receive the threaded end

of a supporting-bar 9. Upon the bar is disposed the sustaining-spring 10 for the trolley-arm, one end of the spring bearing against a collar 11, slidably mounted upon the bar, the opposite end of the spring bearing against a nut device 12, engaging the threads of the bar and by means of which the tension of the spring may be adjusted.

A yoke 13 is pivotally mounted on the casting 6 and has the opposite side arms thereof embracing the said casting, so as to freely move on the latter, the pivot 14 of the yoke being of a strong and durable nature, and to the casting a pair of fulcrum-bars 15 are also pivoted inside of the yoke and have rear enlarged bearing ends 16 and front weighted terminals 17, whereby said ends 16 will be automatically moved when free to do so to throw them upward into the path of engagement of another part which will be presently set forth. The casting 6 at the rear edge adjacent the point of application of the bars 15 is formed with an angular stop-abutment 18, with which the depending bifurcated foot 19 of the trolley-arm socket 20 engages through the medium of a roller 21, carried between the lower terminals of said foot. The distance between the opposite members of the said foot is such that the maximum distance between the terminals or ends 16 of the bars 15 will be spanned thereby to allow the roller 21 to contact therewith, and the casting 6 being less in thickness than the said ends of the bars 15 the said roller will also contact with the angular stop or abutment 18 thereof. The foot 19 is pivotally supported by the upper extremities of the opposite members of the yoke 13, and running from the upper part of one side of the said foot to the collar 11 on the bar 9 is a connecting-rod 22, both terminals of the latter being movably attached. The head 8 of the casting is horizontally disposed and it and the bar 9 are tubular, and pivotally secured at its front end to the foot 19 is a catch-bar 23, which is movable in said head, but never becomes disengaged from the latter. The said catch-bar moves simultaneously with the foot, and in the upper edge are two notches 24 and 25, having rear right-angular abutting-walls 26, which are adapted to be engaged by the depending member 27 of an angular latch 28, fulcrumed between upstanding ears 29 on the rear extremity of the head 8, the upstanding member 30 of the said latch being provided with a horizontally-disposed adjustable stop 31, against which the trolley-arm socket 20 strikes when the contact device for engagement with the wire carried by the arm in said socket becomes accidentally disengaged from the wire.

The normal condition and position of the several parts when the contacting device or wheel carried by the trolley-arm 32 is in engagement with the wire is shown by Fig. 3, and at such time the depending member 27

of the latch will be in engagement with the front notch 24 of the catch-bar 23, and the full or normal tension of the spring 10 in accordance with the adjustment will be exerted on the trolley-arm to yieldably hold the wire-contacting device of the said arm in place on the wire. The moment the wire-contacting device carried by the trolley-arm slips from the wire the spring 10 exerts a forceful pulling tension through the connecting-rod 22 and draws the arm and foot upwardly and over to the front until the socket 20 strikes the stop 31, the fulcrum for the foot then being the pivot at the upper terminals of the arms of the yoke 13. The socket 20 striking the stop 31 throws the upstanding member 30 of the latch over to the front and disengages the lower end of the depending member 27 of the said latch from the notch 24 in the catch-bar 23, to thereby liberate the said catch-bar and immediately set up a movable fulcrum for the foot and trolley-arm by permitting the catch-bar to slide into the head 8, as shown by Fig. 1. The foot and yoke 13 move closer to the head 8 by the force exerted by the relaxation of the spring, and at the moment the force of the spring is spent there is no further resistance to the gravitation of the trolley-arm, and at such time the foot will simply turn on its fulcrum, which is still maintained in the pivot engaging the terminals of the arms of the yoke 13, the said turning movement of the foot and gravitation of the trolley continuing until the roller 21 strikes the stop-abutment 18 of the casting 6. The trolley-arm is now in position to be reset in normal operative position by pulling on the rope or cable usually connected to such devices. The spring 10 is so strong, however, that it would be impossible for an operative to exert sufficient strength or apply sufficient force with one pulling operation to accomplish this result, and hence provision is made through the medium of the catch-bar 23 and the latch to engage therewith for a step-by-step operation to accomplish said result. The operative first pulls downwardly on the trolley-arm against the resistance offered by the stop-abutment 18, which, with the roller 21, constitutes the fulcrum for the foot 19, and the catch-bar 23 will be drawn rearwardly until the notch 25 thereof is engaged by the depending member 27 of the latch 28, the contraction of the spring thus far obtained being thus positively preserved, and said contraction being carried on through the connecting-rod 22 and collar 11. At the time the latch engages the rearward notch 25 the roller 21 will have been drawn in rear of the stop-abutment 18 far enough to permit the fulcrum-bars 15 to gravitate and throw up the front bearing ends 16 thereof between the plane of the stop-abutment 18 and the plane of the roller 21, the latter then contacting with said ends, as clearly shown by Fig. 2. The operative then exerts

a second downward pull on the trolley-arm, the fulcrum now being between the ends 16 of the bars 15 and the roller 21 and a greater leverage thereby also established, and the catch-bar 23 is again moved rearward until the latch 28 engages the front notch 24, and at such time the spring 10 will have been set to its full tension in accordance with the primal adjustment. The spring will now immediately overcome the preponderance of the trolley-arm, socket 20, and foot 19 and raise said trolley-arm, so that the contacting device carried thereby will be caused to engage the wire, the arm being guided during said latter operation by the operative. During this latter operation also the foot turns on the pivot connected to the upper terminals of the arms of the yoke 13 and assumes the position shown by Fig. 3. It will be seen that when the trolley-arm slips from contact with the wire the full tension of the spring 10 will be exerted thereon and it will be thrown over to the front, as before explained.

The modification of the improved device, as illustrated by Figs. 8, 9, and 10, embodies a turn-table 5, casting 6, having a pivot-post 7 extending down into the said turn-table, all of the same construction as the similar parts heretofore described. The head 8 on the casting 6 in this instance is not open at the rear, but has a forwardly-opening screw-threaded recess to receive the rear screw-threaded end of the supporting-bar 9, which, as in the former construction, has a spring 10 thereon adjustably confined between a slidable collar 11 and a nut device 12, the collar having the front end of the connecting-rod 22 movably attached thereto, and at its rear end is also movably attached to the foot 19 of the trolley-arm support 20, to which in this instance the trolley-arm 20^a is clamped. The yoke 13 in this modified construction is in the form of two oppositely-disposed bars connected by a pivot 14 to the casting, as in the first construction, the upper ends of the members or bars being connected by a pivot 14^a to the foot 19. The bars or members of the yoke 13 in this modified construction have a web 33 intermediately connecting the same, and within the foot 19, which is bifurcated, as in the first construction, the rear ends of links 34 are movably mounted on the pivot 14^a and held spaced apart from each other by a sleeve 35, located between them and forming a part of an angular trip 36, provided with an eye 37, movable on a fulcrum 38, held between ears or lugs 39, projecting upwardly from the head 8, said trip being also provided with an upstanding arm or member 40. The links 34 correspond to the catch-bar 23, heretofore described, and form one constituent of a toggle-lever, the other constituent of the latter being the trip 36. When these two toggle-links are in alinement, as shown in Fig. 1, they act as a brace to hold the members of the yoke 13 in rearward position to prevent bodily movement of

the trolley-arm, which latter, however, is held in its erect or operative position and is free to move beyond such position should its contacting device or wheel slip from the wire. It will be noted that the arm 40 stands directly in front of the lower end of the trolley-arm, and in such position that if the trolley slip from the wire the forward pivotal movement of the trolley-arm under the influence of the spring 10 will cause the trolley-arm to strike said arm 40 and move the trip 36 on its fulcrum, so that the said arm 40 will be pushed over in a forward direction and raise the lower rear portion of the same carrying the sleeve 35 and break the toggle, and the latter will then fold into the position shown by Fig. 2, and the links 34 rest against the heel of the foot 19, thereby insuring a reclining position of the trolley-arm through the tension of the spring 10, set up by the relaxing tendency of the latter from its compressed or contracted condition at the time the movement of the said parts begins. The downward movement of the trolley-arm continues until the front lower portion of the web 33 contacts with the adjacent edge of the casting 6 and the toe of the foot 19 bears on the upper rear portion of said web. This changes the location of the fulcrum for the trolley-arm and modifies the operating leverage for the latter, so that when the operative catches hold of the rope or cable attached to the trolley-arm to reset the latter the interposed fulcrum set up by the web 33 will give a better purchase to overcome the resistance of the spring 10, which is powerful. The operative pulls downwardly on the trolley-arm and compresses the spring 10 through the connecting-rod 22 and collar 11, and after the members of the toggle are again moved into alinement, and thereby locked, and the trolley-arm be released the latter will be raised to contacting position with the wire under the guidance of the operative by the reestablished tension of the spring, the foot then turning on the fulcrum engaging the upper ends of the yoke members and clearing the other adjacent parts.

The difference between the modified construction and that first described is that the operative in resetting the trolley-arm of the last organization must exert a continuous pull thereon until the toggle is reset instead of having an interval of relief, as in the first construction. In both forms of the device there is an interposed locking mechanism between the foot and the spring for permitting the spring to be manually drawn to its normal tension and so held to automatically raise the trolley-arm for engagement with the wire without disturbing the adjustment of the several parts. Both forms of the device also include means for automatically breaking the lock of the devices interposed between the foot and the spring when the trolley-arm slips the wire, so that the spring may exert its downward-drawing tension on the trolley-

arm and dispose the several parts for the manual operation of resetting.

The improved construction will overcome numerous disadvantages heretofore present in this class of devices, and by illustrating and describing a modified form of the same is intended to indicate all other modifications within the scope of the invention.

Having thus described the invention, what is claimed as new is—

1. A device of the class described comprising a trolley-arm mounted for pivotal and bodily movement, a sustaining tension means disposed to move the arm into and out of operative position, and means for holding the arm normally against one movement out of operative position, said latter means being operated by the other movement of the arm to permit the tension means to move the arm from operative position.

2. A device of the class set forth comprising a trolley-arm mounted for pivotal and bodily movement, a sustaining tension means disposed to move the arm into and out of operative position, and locking means interposed between a portion of the arm and the tension means and provided with a projecting portion which is engaged by the arm to automatically unlock the same, said locking means holding the arm normally against one movement out of operative position and actuated by another movement of the arm to permit the tension means to move the arm from operative position.

3. A device of the class described comprising a trolley-arm mounted for bodily movement, a sustaining tension means disposed to move the arm into and out of operative position, and locking mechanism interposed between the arm and the tension means and including devices for shifting the fulcrum for movement of the arm.

4. A device of the class described comprising a trolley-arm mounted for bodily movement, a sustaining tension means disposed to move the arm into and out of operative position, and devices for shifting the fulcrum for movement of the arm.

5. A device of the class described comprising a trolley-arm mounted for bodily movement, a sustaining tension means disposed to move the arm into and out of operative position, a connection between the arm and tension means, and locking mechanism interposed between the arm and the tension means and including devices for shifting the fulcrum for movement of the arm and a change of lev-

erage to obtain a greater purchase in the operation of resetting the arm.

6. A device of the class set forth comprising a trolley-arm mounted for bodily movement, a sustaining tension means disposed to move the arm into and out of operative position, and locking means interposed between the arm and tension means to permit a step-by-step operation of the said tension means when manually resetting the arm.

7. A device of the class set forth comprising a trolley-arm mounted for bodily movement, a sustaining-spring disposed to move the arm into and out of operative position, and locking means interposed between the arm and spring to permit a step-by-step operation of the said spring to restore the latter to its normal tension when manually resetting the arm, the said locking means including a projecting member which is adapted to be struck by a portion of the arm when the latter slips from the wire to automatically disengage the said locking means.

8. A device of the class set forth comprising a trolley-arm mounted for bodily movement, a notched catch-bar movably connected to said arm, a sustaining-spring disposed to move the arm into and out of operative position, and a latch to engage said catch-bar having a projecting portion adapted to be struck by the arm.

9. A device of the class set forth comprising a trolley-arm mounted for bodily movement, a yoke pivotally supporting said arm, a sustaining-spring disposed to move the arm into and out of operative position, a casting for holding the arm provided with a stop-abutment, and locking means interposed between the yoke and arm and the spring.

10. A device of the class set forth comprising a trolley-arm mounted for bodily movement and having a sustaining tension device connected thereto, a support for the arm having a stop-abutment, means for pivotally holding the arm, a fulcrum device mounted in the lower terminal of the arm, gravitating fulcrum-bars attached to said support, and locking means interposed between the arm and the said tension device therefor.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

E. J. KELLEY.

Witnesses:

E. E. DOYLE,
FRANK S. APPLEMAN.