

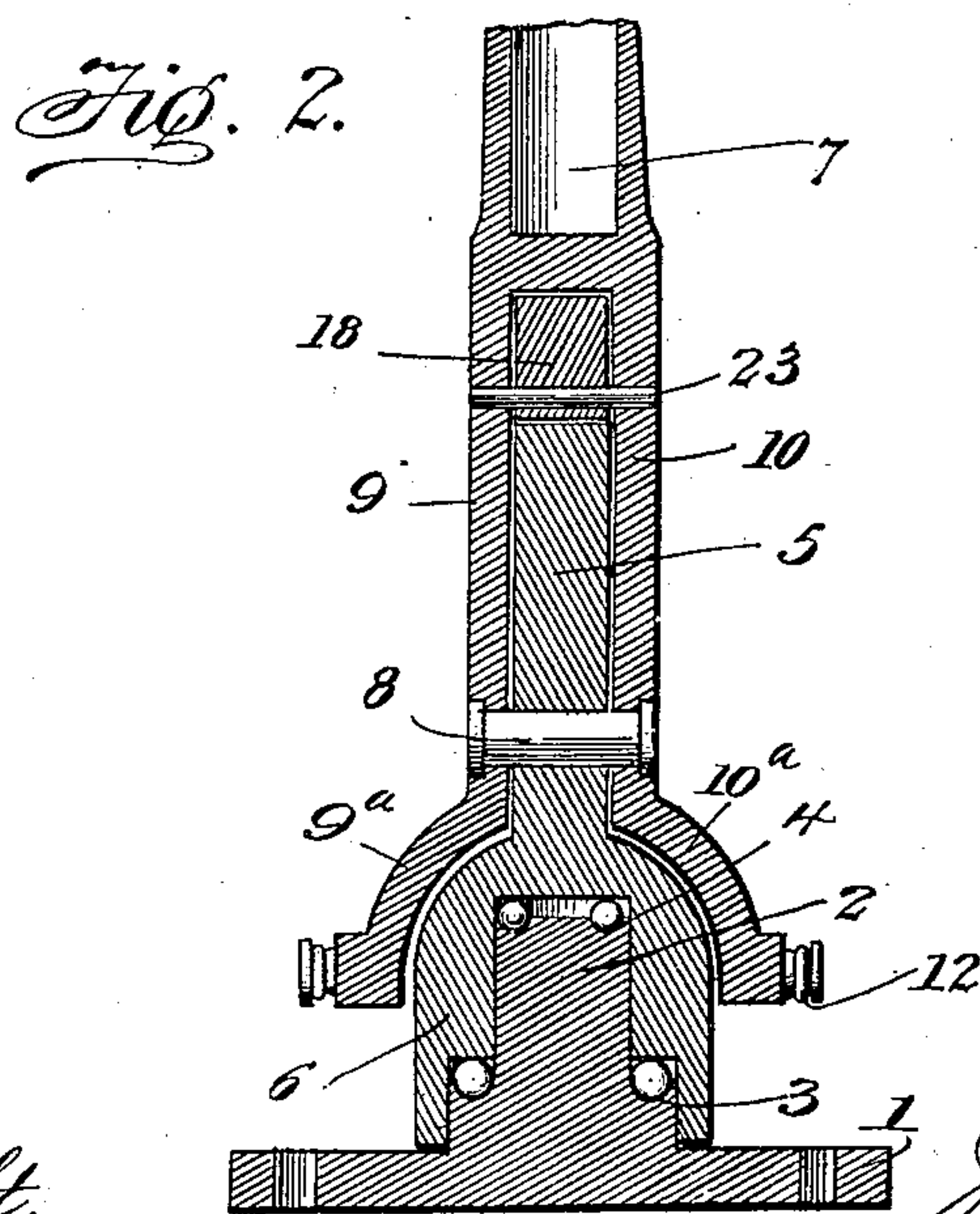
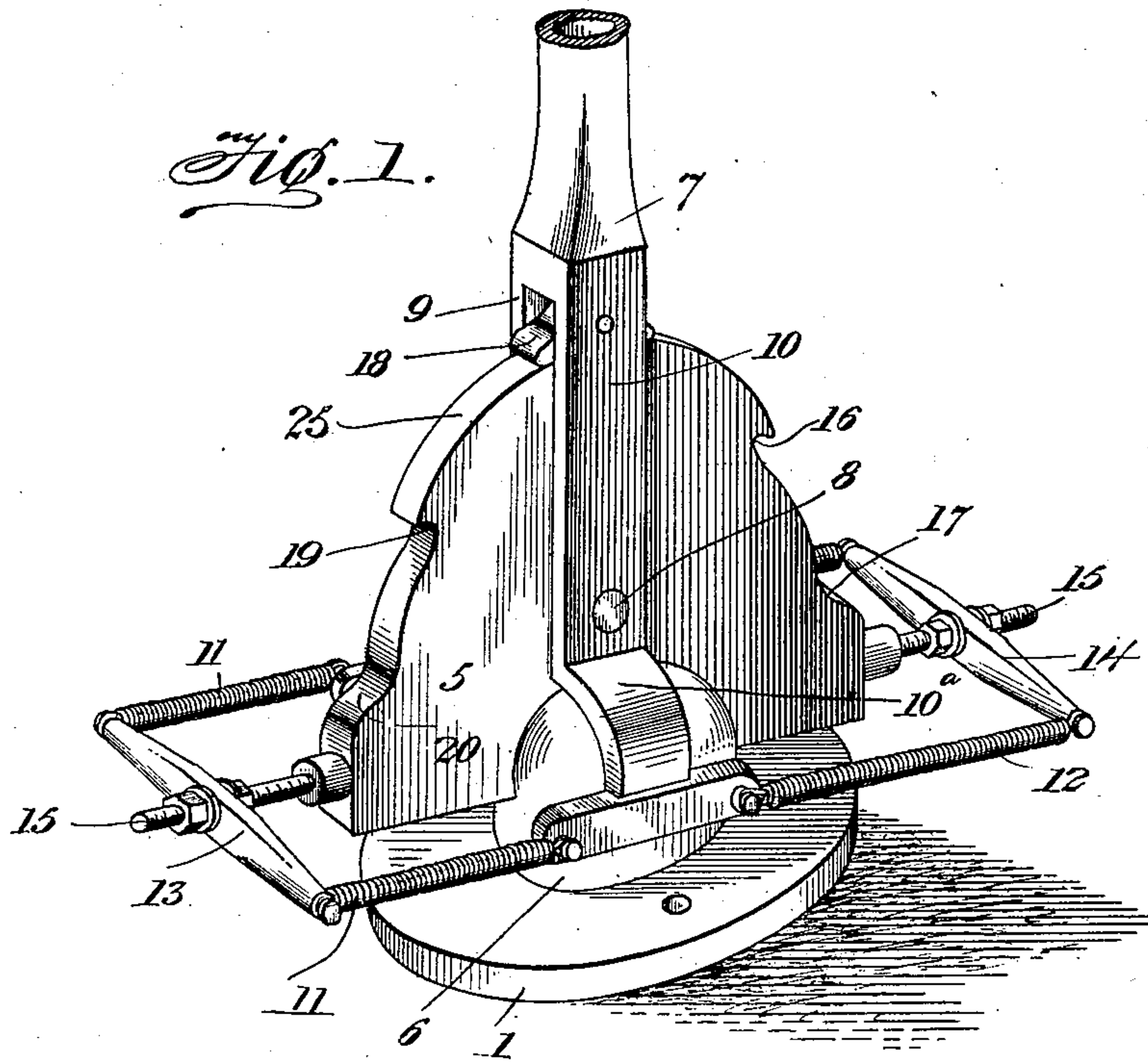
No. 706,092.

Patented Aug. 5, 1902.

J. A. NORTON.
TROLLEY POLE CATCH.
(Application filed Nov. 19, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 3.

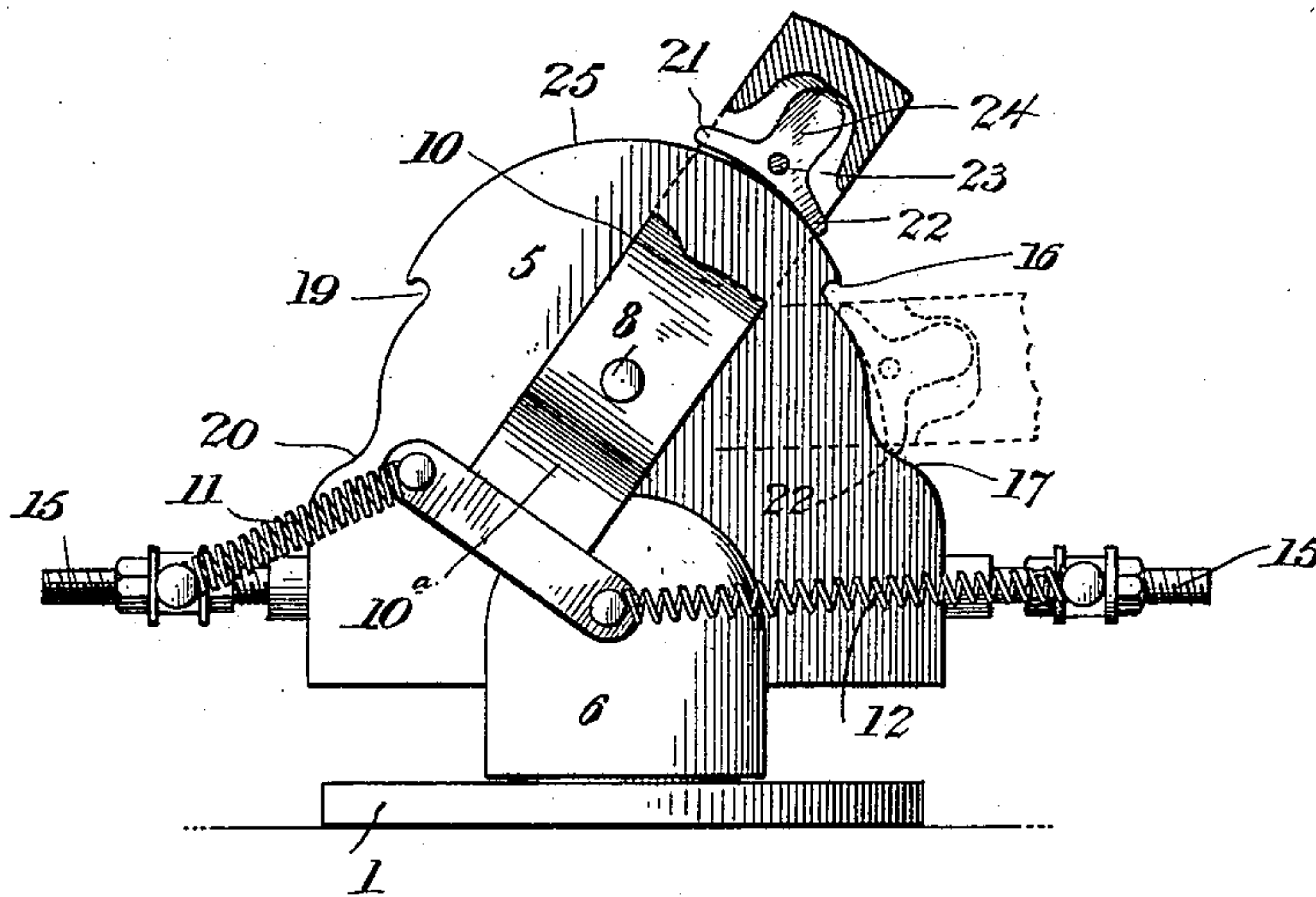
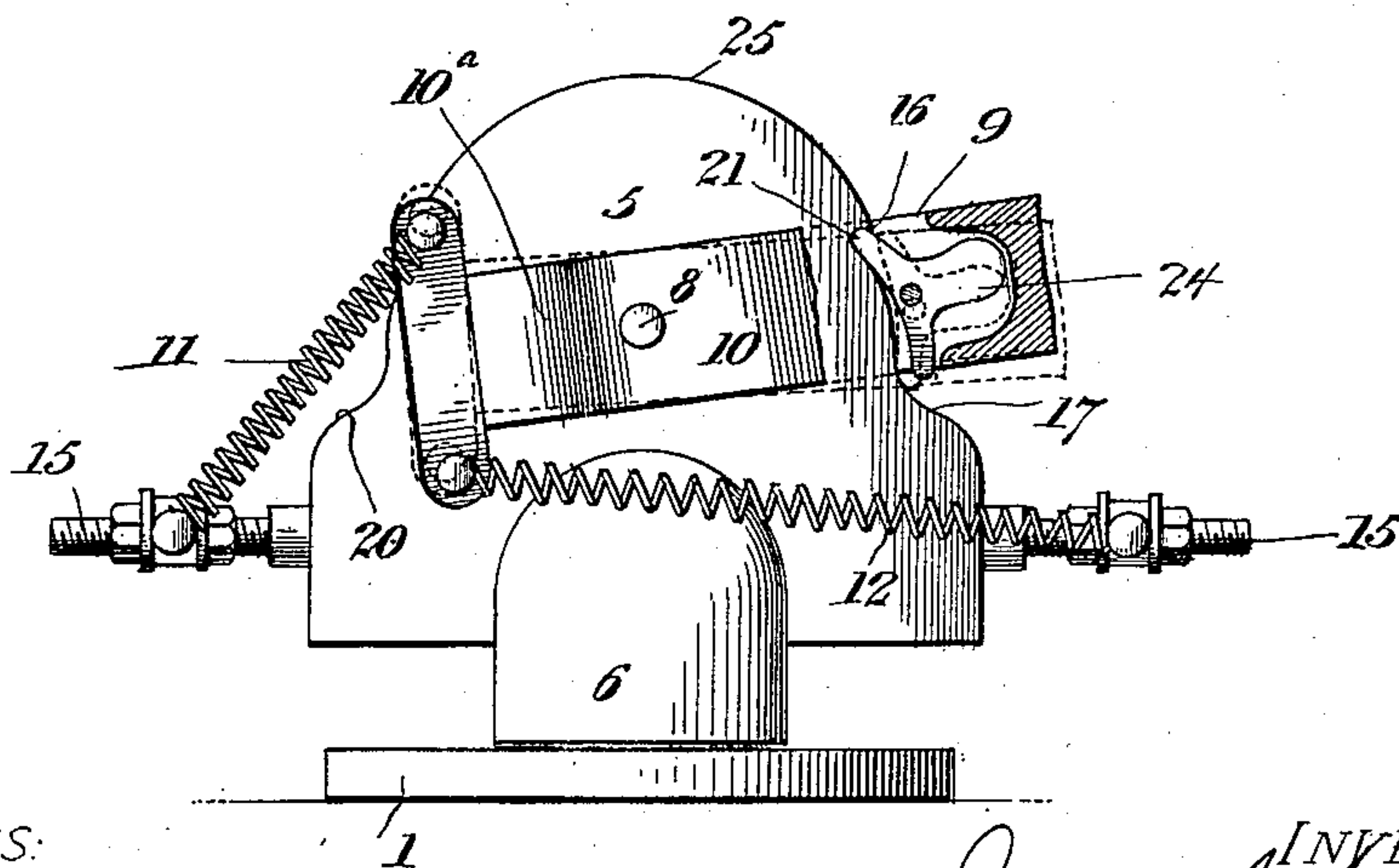


Fig. 4.



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UNITED STATES PATENT OFFICE.

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TROLLEY-POLE CATCH.

SPECIFICATION forming part of Letters Patent No. 706,092, dated August 5, 1902.

Application filed November 19, 1901. Serial No. 82,829. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. NORTON, a citizen of the United States, residing at Wilkesbarre, in the county of Luzerne, State of Pennsylvania, have invented certain new and useful Improvements in Trolley-Pole Catches, of which the following is a specification.

The purpose of this invention is to provide means for automatically locking the trolley-pole of an electrically-operated car in its depressed position when the trolley-wheel leaves the conducting-wire and the pole is thrown downward by coming in contact with a trolley-wire support or by any other means. The locking devices are so constructed and arranged as to permit the trolley-pole to swing through the entire range of its vertical movement without operating so long as the movements of the pole are normal, as when the trolley-wheel bears against the conductor or is withdrawn from the conductor in the ordinary way by the hand-rope; but should the trolley-pole be thrown suddenly downward in either direction by any means, as by striking a cross-wire, the locking devices will automatically operate to hold the pole in its depressed position, and thus prevent it from striking successive cross wires or supports. The pole may be released from the lock by simply pulling downward upon the hand-rope, or when desired it may be locked in its depressed position by pulling downward upon the hand-rope and then suddenly slacking the rope.

In the accompanying drawings, Figure 1 is a perspective view of a trolley-pole stand provided with my improvements. Fig. 2 is a central sectional view through the same; and Figs. 3 and 4 are side views illustrating the operation of the invention, the trolley-pole being shown in full and dotted lines in several positions.

Referring to the drawings, 1 indicates a base adapted to be secured to the top of a trolley-car and having a central upwardly-projecting step-bearing 2 and ball-races 3 and 4, containing balls, upon which is supported a standard 5, having a hollow circular base 6, which fits over the step-bearing and bears upon the balls in the ball-races. The stand-

ard 5, as shown, comprises a flat metal plate formed integrally with its base or bearing portion 6, and to this standard the socket-arm 7, which constitutes the lower end of the trolley-pole, is pivotally secured centrally over the ball-bearing by means of a pivot pin or bolt 8, passing through the standard and the forked arms 9 and 10 of the trolley-pole. The lower ends 9^a and 10^a of these arms, as shown, are curved outwardly, so as not to interfere with the base 6 of the standard when the trolley-pole moves in a vertical plane, and to said lower ends are connected in any suitable manner the two pairs of oppositely-acting springs 11 and 12, said springs being attached to the cross-arms 13 and 14, respectively, which are adjustably secured upon studs 15 upon the standard 5. The top of the standard is curved in the arc of a circle whose center is the pivot-pin 8. A notch 16, having a slight upward trend, is formed in the edge of the standard at one end of the curved portion 25, and below said notch the edge of the standard curves outwardly, as shown at 17, to form a deflecting-surface for giving direction to a pawl 18, pivoted between the arms of the trolley-pole. Similarly a notch or catch 19 and a deflecting-surface 20 are formed in the opposite edge of the standard. The pawl 18, as shown in Figs. 3 and 4, is formed with two arms 21 and 22, projecting in opposite directions from the pivot-pin 23, and with a heavy portion 24, projecting outwardly from the pivot at right angles from the arms 21 and 22. The arms 21 and 22 are preferably rounded at the ends, as shown.

In Fig. 3 the parts are shown in full lines in the position which they occupy when the trolley is bearing against the wire, in which position the pawl rides upon the curved surface 25. The weighted arm 24 of the pawl tends to swing the latter about its pivot and being radially outward from the pivot always tends to hold the lower arm of the pawl in engagement with the edge of the standard and the upper arm out of engagement with the standard whether the trolley-pole be swung to one side or the other. When, however, the trolley-pole swings downward to its lowest position, the lower arm of the pawl engages

ing the curved deflecting-surface throws said lower arm outward and directs the upper arm inward. As shown in dotted lines in Fig. 3, for instance, the lower arm 22, engaging the deflecting-surface 17, is turned outwardly, while the upper arm 21 is turned inwardly in the direction to engage the catch 16. If the trolley-pole is thrown downward by coming in contact with a cross-wire or any other obstruction until the pawl engages the deflecting-surface, the sudden return movement of the pole will force the upper arm 21 of the pawl into the catch 16 before the pawl can be tilted by gravity so that the arm 21 will clear the catch 16. The pawl is shown in its locked position in full lines in Fig. 4. If, however, the trolley-arm should move downward into its lowermost position and then move upward gradually, as when the pole is depressed by a low section of trolley-wire or is pulled downward by the hand-rope and allowed to return naturally to its more vertical position, the pawl in moving away from the surface 17 will be tilted by gravity into a position (shown in dotted lines in Fig. 4) where the upper arm of the pawl cannot engage the notch or catch 16. It will therefore be seen that the trolley-pole may in ordinary usage be moved from the vertical position to its lowermost position without becoming locked, but that it will become automatically locked in its lowermost position when thrown downward into said position and suddenly released. As the two arms of the pawl are alike and the catch 19 and deflecting-surface 20 upon the opposite edge of the standard are similar to the catch and deflecting-surfaces 16 and 17, it will be apparent that the operation when the trolley-pole is inclined in the opposite direction will be the same as when inclined in the direction shown in the drawings. When the pole is inclined to the left in Fig. 3, of course the arm 22, being the upper arm, will be held away from the standard by gravity and the arm 21 will be held in contact with the standard.

The standard is preferably mounted upon ball-bearings, as shown; but any suitable bearing may be provided for the purpose of permitting the stand to rotate.

Without, therefore, limiting myself to the exact construction shown, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a pivoted vertically-swinging trolley-pole, of means operated by the downward movement of the pole for automatically locking the pole in its depressed position when the pole is thrown downward, said locking means being normally inoperative during the ordinary movements of the pole throughout the range of movement of the pole.

2. The combination with a vertically-swinging trolley-pole of a relatively movable pawl and catch arranged to hold said pole in its depressed position, means for normally hold-

ing said pawl out of engagement with the catch throughout the range of movement of the pole, and means operated by the downward movement of the pole for deflecting said pawl into a direction to engage the catch.

3. The combination with a pivoted vertically-swinging trolley-pole, of a catch fixed relatively to the pole, a pawl carried by the pole, means for normally holding said pawl in a direction to pass by the catch, and means for automatically deflecting the pawl in a direction to engage the catch when the trolley-pole is depressed.

4. The combination with a pivoted vertically-swinging trolley-pole, of a catch fixed relatively to the pole, a gravity-pawl carried by the pole and arranged to normally swing in a direction away from the catch, and means for automatically deflecting the pawl into a direction to engage the catch when the trolley-pole is depressed.

5. The combination with a pivoted vertically-swinging trolley-pole, of a catch at each side of said pole, and a pawl carried by the pole and having two oppositely-projecting arms, means for normally holding the arm which is uppermost out of engagement with the catch during the normal movement of the trolley-pole, and means for deflecting said uppermost arm in a direction to engage the catch when the trolley-pole is thrown downwardly.

6. The combination with a pivoted vertically-swinging trolley-pole, of a catch at each side of said pole, and a pawl pivotally carried by said pole, said pawl having two arms projecting in opposite directions from its pivotal point, and a central weighted portion adapted to swing the arm which is uppermost away from the adjacent catch.

7. The combination with a standard comprising a plate having a catch at one of its lateral edges and a deflecting-surface below said catch, of a vertically-swinging trolley-pole pivotally mounted upon the standard, and a pawl pivoted to the pole and normally extending in a direction to pass by the catch without engaging, and said deflecting-surface being arranged to deflect the pawl into a position to engage the catch.

8. The combination with a standard comprising a plate having a catch at one of its lateral edges, of a trolley-pole pivotally mounted upon the standard, a pawl pivoted to the pole and normally extending in a direction to pass by the catch without engaging, and a deflecting-surface arranged to tilt the pawl into the direction to engage the catch when the pole is depressed.

9. The combination with a standard comprising a plate having a catch at each lateral edge, of a trolley-pole pivotally mounted upon the standard, a pawl pivoted to the pole and having two oppositely-projecting arms, means for holding the arm which is uppermost out of engagement with the adjacent catch, and a deflecting-surface below each catch arranged to tilt said uppermost arm

into the direction to engage the adjacent catch.

- 5 10. The combination with a standard comprising a plate having a catch at each lateral edge, and deflecting-surfaces upon said edges below the catches, of a trolley-pole pivotally mounted upon the standard, a pawl pivoted to the pole and having two oppositely-projecting arms, and means for holding the arm
10 which is uppermost out of engagement with the adjacent catch, said deflecting-surfaces being arranged to be engaged by the pawl and deflected thereby into the proper direction to engage the adjacent catch.
- 15 11. The combination with a standard com-

prising a plate having an upper curved surface, catches at each lateral edge and deflecting-surface below said catches, of a forked trolley-pole pivoted to said plate, and a gravity-pawl pivoted between the arms of the fork, 20 said pawl being arranged to engage the deflecting-surfaces when the trolley-pole is depressed.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES A. NORTON.

Witnesses:

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D. O. COUGHLIN.