

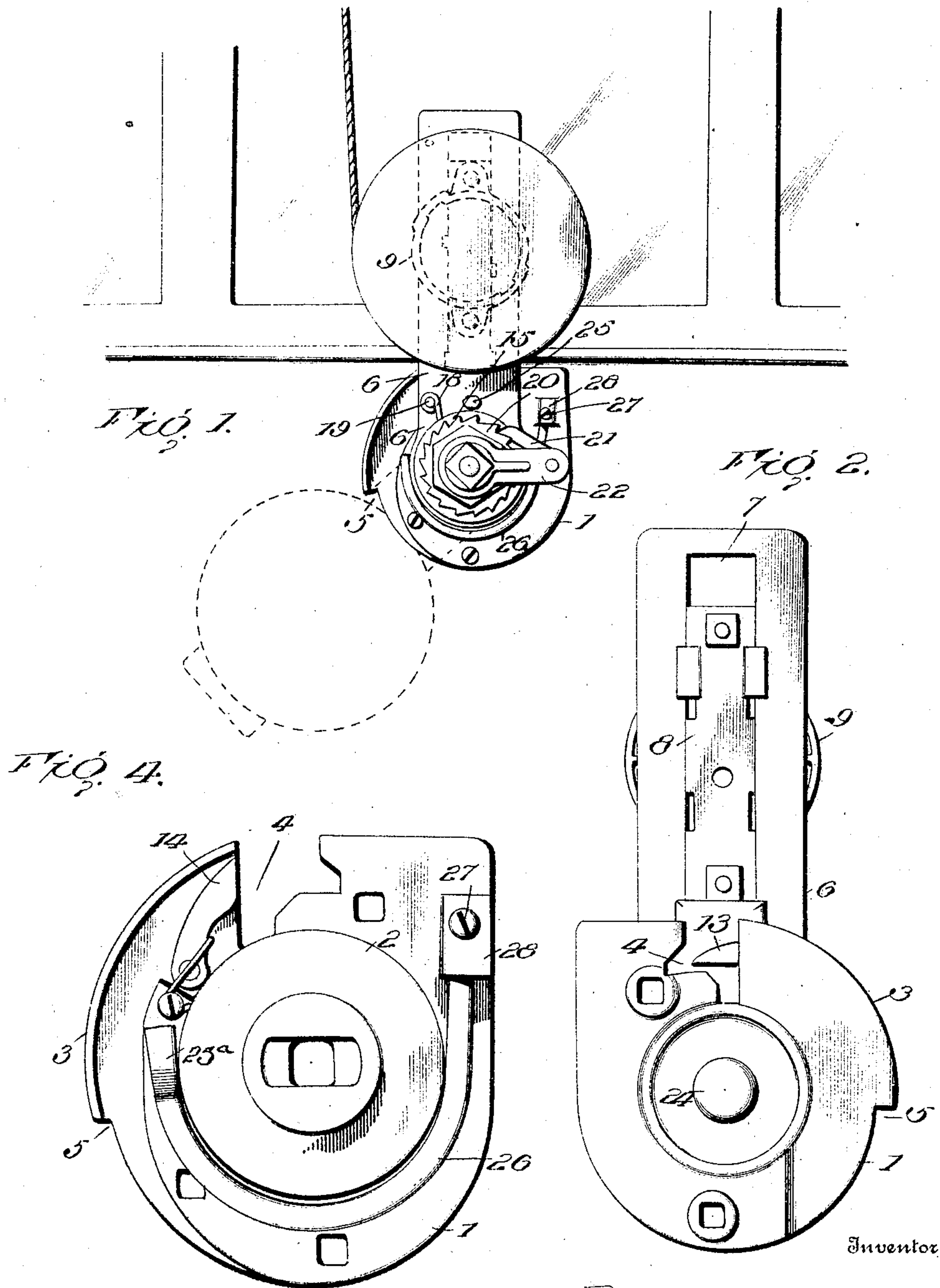
No. 764,807.

PATENTED JULY 12, 1904.

R. H. HAM.  
TROLLEY RETRACTOR.  
APPLICATION FILED SEPT. 29, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

*Francis S. Maguire*

By

*Richard H. Ham*

*J. H. Ham*  
Attorney

No. 764,807.

PATENTED JULY 12, 1904.

R. H. HAM.  
TROLLEY RETRACTOR.

APPLICATION FILED SEPT. 29, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

FIG. 3.

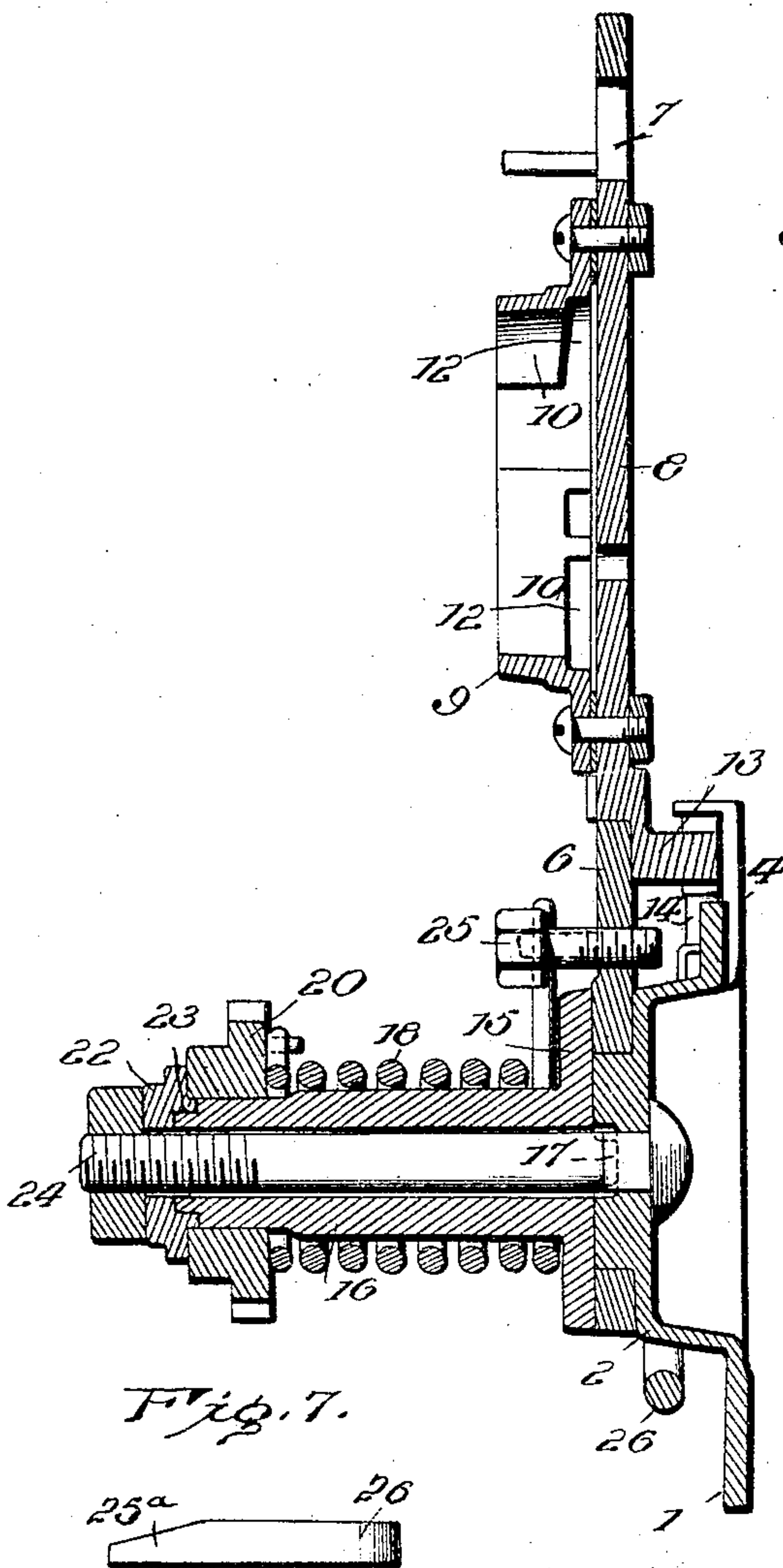


FIG. 7.

FIG. 5.

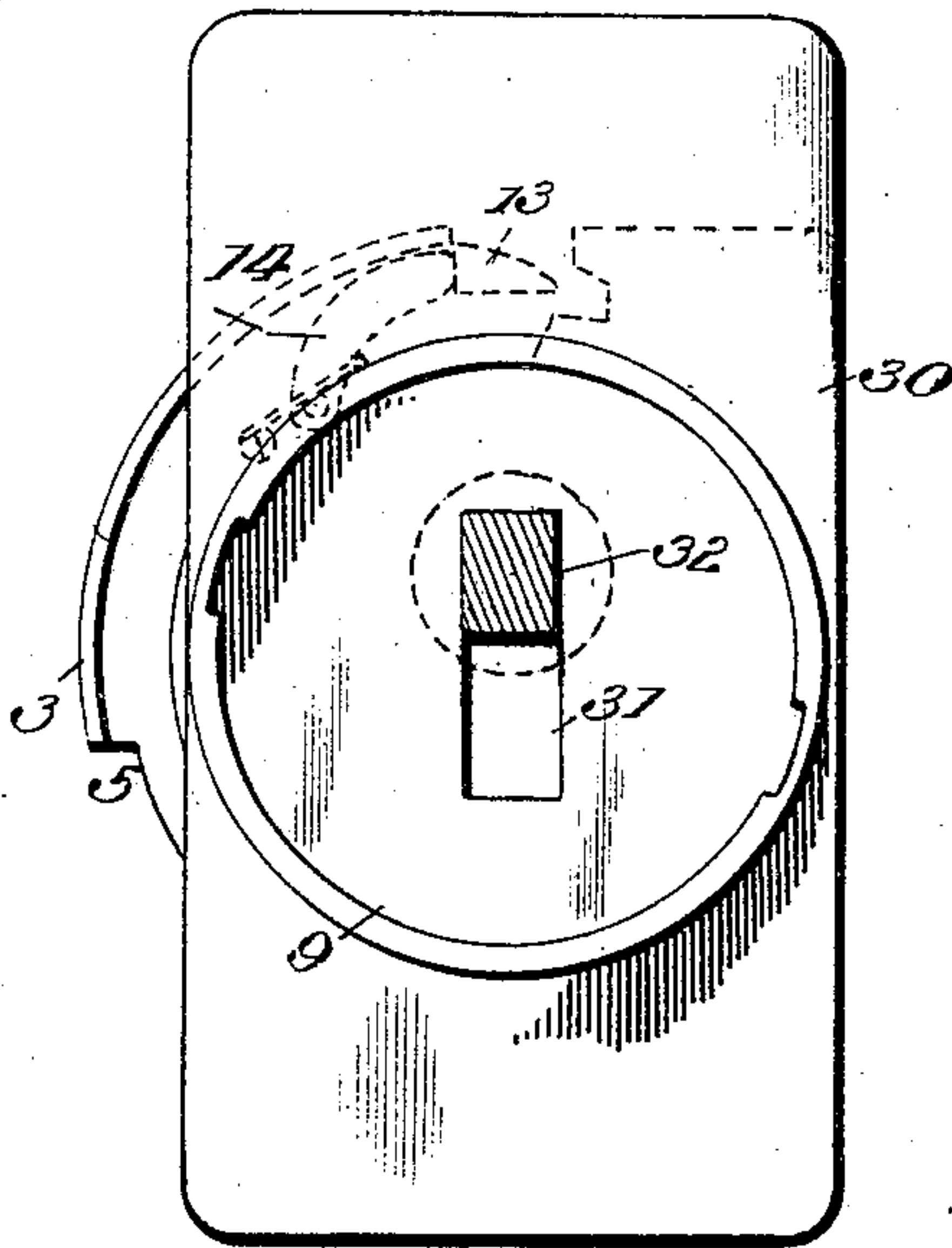
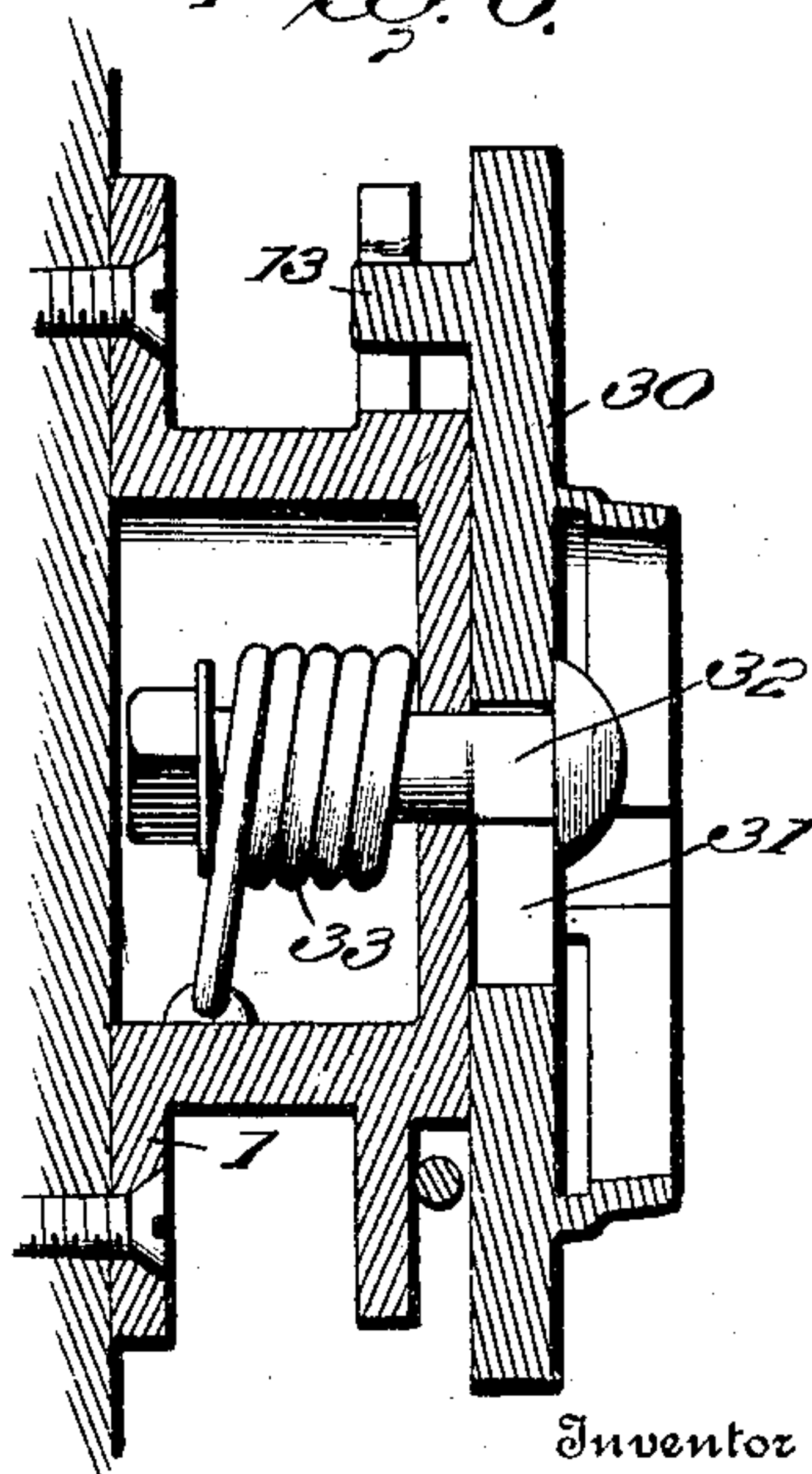


FIG. 6.



Inventor

Richard H. Ham

By

*[Signature]*

Attorney

Witnesses

*[Signature]*  
Francis S. Maguire



# UNITED STATES PATENT OFFICE.

RICHARD H. HAM, OF STOCKPORT, NEW YORK.

## TROLLEY-RETRACTOR.

SPECIFICATION forming part of Letters Patent No. 764,807, dated July 12, 1904.

Application filed September 29, 1903. Serial No. 175,080. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD H. HAM, of Stockport, in the county of Columbia and State of New York, have invented certain new and  
5 useful Improvements in Trolley-Retractors; 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  
10 same.

In Letters Patent of the United States No. 738,676, issued to me September 8, 1903, I disclosed a form of combined trolley-retractor and trolley-catcher, the latter being mounted  
15 on the former, which when freed of its lock by a pull on the catcher is free to swing to effect a downward pull on the trolley-pole. The particular means shown in said patent for carrying out my invention comprehended an  
20 outwardly-swinging retractor-arm carrying the catcher. The form of trolley-catcher now generally favored comprehends a spring-actuated device inclosed in a casing which is removably secured to the dash on either end  
25 of a car, such catcher being designed to check the upward flight of the trolley when the wheel jumps the conductor-wire. Aside from several general improvements on the construction so disclosed by my said Letters Patent,  
30 the primary object of my present invention is to so mount the retaining-socket of the catcher that when a pull is exerted on the latter the socket will be freed of means by which it is normally held locked and caused to rotate or move in approximate parallelism to  
35 the dash, so as to exert a downward pull on the trolley-rope. This may be accomplished in various ways—that is to say, the catcher-socket may be caused to turn axially or to  
40 swing or turn laterally, as on an arm pivoted at one end.

A further object is to provide for automatically guiding the locking means back into its normal position without any great exertion  
45 on the part of the conductor or operator.

The present invention also contemplates means for limiting the extent of movement of the socket-carrying member.

The invention will be hereinafter fully set

forth, and particularly pointed out in the 50 claims.

In the accompanying drawings, Figure 1 is an elevation with the retractor shown lowered in dotted lines. Fig. 2 is a rear elevation. Fig. 3 is a central longitudinal sectional view. 55 Fig. 4 is a face view of the stationary casting. Figs. 5 and 6 show a slight modification. Fig. 7 is a view of a portion of the stop-rod by which the movement of the retractor is limited. 60

In the preferred form of embodiment of my invention I employ a plate or casting 1, designed to be permanently bolted to a car-dash, such plate having on its front face a boss 2 and a curved guiding-flange 3, the ends of 65 which terminate at two cut-outs 4 and 5. Upon this boss is mounted a swinging arm 6, formed with a longitudinal opening 7, wherein fits a movable plate or member 8, upon which is mounted a socket 9, by which the ordinary 70 trolley-catcher is secured in position. This socket is formed with opposite grooves 10 and inclined guides 12, with which ears or lugs of the catcher are designed to engage, such catcher being indicated in Fig. 1 both in full 75 and dotted lines. On its inner face the plate or member 8 carries a lug or tooth 13, which when the device is in its normal position is located in the cut-out 4, its passage within the plane inclosed by the curved flange 3 being 80 prevented by a spring-pressed dog 14. When, however, the plate or member is pulled outwardly on the arm 6 sufficiently far to free the lug 13 of engagement with flange 3 and such arm is caused to swing axially, such lug 85 will travel outside the plane of the flange until it reaches the cut-out 5, the pull exerted on the trolley-rope serving thereupon to again move the socket-plate longitudinally of the arm, so as to bring the lug 13 within the plane 90 inclosed by the flange 3. Then the operator may move the arm back to its normal position, the lug 13 traveling over the plane within the flange 3 and forcing the dog 14 aside, such dog immediately resuming its normal position 95 and retaining the lug within cut-out 4.

Immediately adjacent the pivoted end of the swinging arm is a disk 15 on the inner



end of a hollow boss 16, whose lugs 17 by fitting in a recess in the outer end of boss 2 prevent the boss 16 from turning. Surrounding this latter boss is a coil-spring 18, one end of which engages a lug 19 of arm 6, while the other end engages a lug of a ratchet-wheel 20. This ratchet-wheel is designed to be engaged and held by a pawl 21, mounted on an arm 22, formed with a recess 23 on its inner face, into which extends the outer shouldered end of boss 16. A bolt 24 is passed centrally through the two bosses and the end of arm 22, and the several parts are held assembled by the nut binding against said arm.

The socket-carrying arm is preferably equipped with an adjustable bolt 25 for limiting the extent of movement of such arm under the recoil of the spring, such bolt engaging the tapered end 25<sup>a</sup> of a bent stop-rod 26, extended over a portion of the face of the boss, such rod being shown as held by a screw 27 in a socket 28. By this means the movement of the arm is ordinarily arrested as soon as the tooth of the socket-carrying member is free of the curved guide-flange 3, and hence coincident with cut-out 5.

In practice the socket-carrying arm normally occupies an upright position, with the tooth 13 within the cut-out 4. As soon, however, as a trolley-wheel slips the trolley-wire a pull is exerted on the trolley-rope, which latter is secured to the catcher. Although the catcher may revolve to a slight extent, it will instantly check the upward flight of the trolley, and being mounted in the socket the plate to which the latter is secured having the tension of the rope thrown thereon is caused to move longitudinally of the arm, thus removing its locking-lug from cut-out 4. Once the lug is free of the cut-out the retractor is caused to swing axially parallel to the dash under the recoil of spring 18, the lug 13 moving over the outside of the curved guide-flange; but when the movement of the retractor-arm is arrested the position of the trolley-catcher is sufficiently reversed to allow the tension of the trolley-rope (which partially encircles the catcher) to move it and its carrying member longitudinally of the swinging arm in the opposite direction to its previous movement thereon. This will place the locking-lug inside the plane of the curved flange 3, so that the conductor or operator in resetting the retractor need only turn it on its axis, the lug traveling on the inner plane of the flange and again entering the cut-out 4 after turning the dog 14 as against the tension of its retaining-spring. This avoids the necessity of any manipulation of the lock on the part of the operator when the swinging arm is strongly under the tension of the actuating-spring. It is obvious that as the retractor-arm is being returned to its normal position the spring is being placed under tension by reason of the ratchet-wheel being held by its pawl.

The means so far described for carrying out the main object of my invention are believed to possess advantages over any other means that might be devised; but it is obvious that the same results may be secured by so mounting the catcher-socket that instead of swinging it laterally, as hereinbefore pointed out, it may be given an axial movement, so as to effect the winding of the trolley-rope on the outside of the catcher and still have a movement substantially parallel to the dash. I have illustrated an arrangement of this kind in Figs. 5 and 6, wherein I have shown the socket-carrying member 30 capable of being axially rotated as soon as released from its holding means under the impetus of the pull of the trolley-rope on the catcher—that is to say, the socket-carrying member is equipped with a longitudinal slot 31, with opposite straight walls of which engage the squared portion of a bolt 32, to which bolt is secured one end of a spring 33, mounted in a recess in the rear face of casting 1, the other end of such spring being secured to such casting. In all other respects the socket-carrying member is substantially the same as that hereinbefore described and is normally locked in place and automatically guided on its return in the manner stated. It is obvious from what has been said as to this adaptation of the invention that as soon as the socket-carrying member is moved so that its tooth or lug is beyond the cut-out 4, as occurs upon a pull being exerted upon the catcher, such member will be caused to rapidly rotate under the recoil of the spring, and thereby quickly wind the trolley-rope around the exterior of the catcher-casing sufficient to retract the pole to a point beneath the trolley-wire.

The advantages of my invention are apparent. It will be seen that by means thereof socket-plates wherein the trolley-catchers are removably locked are so mounted in relation to a car-dash that they may be actuated upon the operation of the catcher to effect a downward pull or retraction on the trolley-pole. As stated, this may be effected by mounting the socket-carrying member in a spring-impelled swinging arm or so mounting such member itself as to have the spring-pressure applied directly thereto to effect an axial rotation when once released of the locking mechanism, the retractor moving in approximate parallelism to the car-dash.

I claim as my invention—

1. In combination, a trolley-catcher, a support therefor, a trolley-rope secured to such catcher, and means for axially moving said support in the direction the reverse of the movement of the catcher effected by a pull on such rope, whereby the latter will be caused to partially or wholly encircle the catcher.

2. In combination, a trolley-catcher, a socket wherein the catcher is removably located, a spring-impelled axially-movable member



whereon the socket is mounted, and means tending to normally hold such member locked, such means releasing said member under the exertion of a pull on the trolley-rope secured to the catcher, whereby the catcher will move in a plane to cause the rope to partially or wholly encircle it.

3. In combination, a trolley-catcher, a socket wherein the catcher is removably located, a spring-impelled retractor whereon the socket is mounted, and means tending to normally hold such retractor locked, such means releasing said retractor under the exertion of a pull on the catcher, as set forth.

4. In combination, a trolley-catcher, a socket wherein the catcher is removably located, a spring-impelled retractor mounted on a car-dash and movable in approximate parallelism thereto, such socket being carried by said retractor, and locking means for automatically releasing such retractor upon a pull on the catcher, as set forth.

5. In combination, a trolley-catcher of cylindrical formation, a circular socket wherein the catcher is removably held, a spring-impelled member carrying the socket and movable in a plane parallel to the car-dash whereon it is mounted, and locking means for automatically releasing such member upon a pull on the catcher, as set forth.

6. In combination, the base-plate designed to be secured to a car-dash, the arm or member axially mounted thereon, a spring for moving such arm or member in a plane parallel to such dash, the trolley-catcher socket mounted on such arm or member and having a locking-lug for engaging said base-plate, such lug being released to permit the turning of the arm or member under a pull exerted on the catcher mounted in said socket, as set forth.

7. The combination with the base-plate having a cut-out and a curved flange extending therefrom, of the spring-impelled retractor mounted on such base-plate having a movable member provided with a lug for fitting in said cut-out, a spring-held dog adjacent to such

cut-out, a trolley-catcher, and a socket therefor mounted on such member, as set forth.

8. The combination with the base-plate having a curved flange and cut-outs at the ends thereof, of a dog adjacent one of said cut-outs, a retractor mounted on such base-plate, having a movable member equipped with a lug designed to normally extend into one of said cut-outs, and a trolley-catcher designed to be mounted on said movable member, which latter under a pull on the catcher is moved to throw its lug out of said cut-out beyond said flange and capable of being automatically again moved within the plane of such flange in rear of the dog, as set forth.

9. The combination with the base-plate and the spring-impelled retractor, of the adjustable bolt carried by the latter and the tapered stop with which said bolt is designed to engage, as set forth.

10. The combination with the base-plate having a curved flange and cut-outs at the ends thereof, and a dog adjacent one of said cut-outs, of the spring-impelled retractor mounted on said base-plate, a movable member thereon for carrying a trolley-catcher, said member having a tooth normally located in one of said cut-outs, an adjustable bolt carried by said retractor, and the tapered stop extended on a plane concentric with said flange near one of said cut-outs, as set forth.

11. In combination, a spring-impelled retractor rotatable in a plane parallel to the car-dash whereon it is mounted, means mounted thereon to which a trolley-rope may be secured, and means tending to normally hold such retractor locked, such latter means releasing the retractor under the exertion of a pull on the trolley-rope.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

RICHARD H. HAM.

Witnesses:

C. H. VAN DE CORR,  
J. MYERS VAN BUREN.