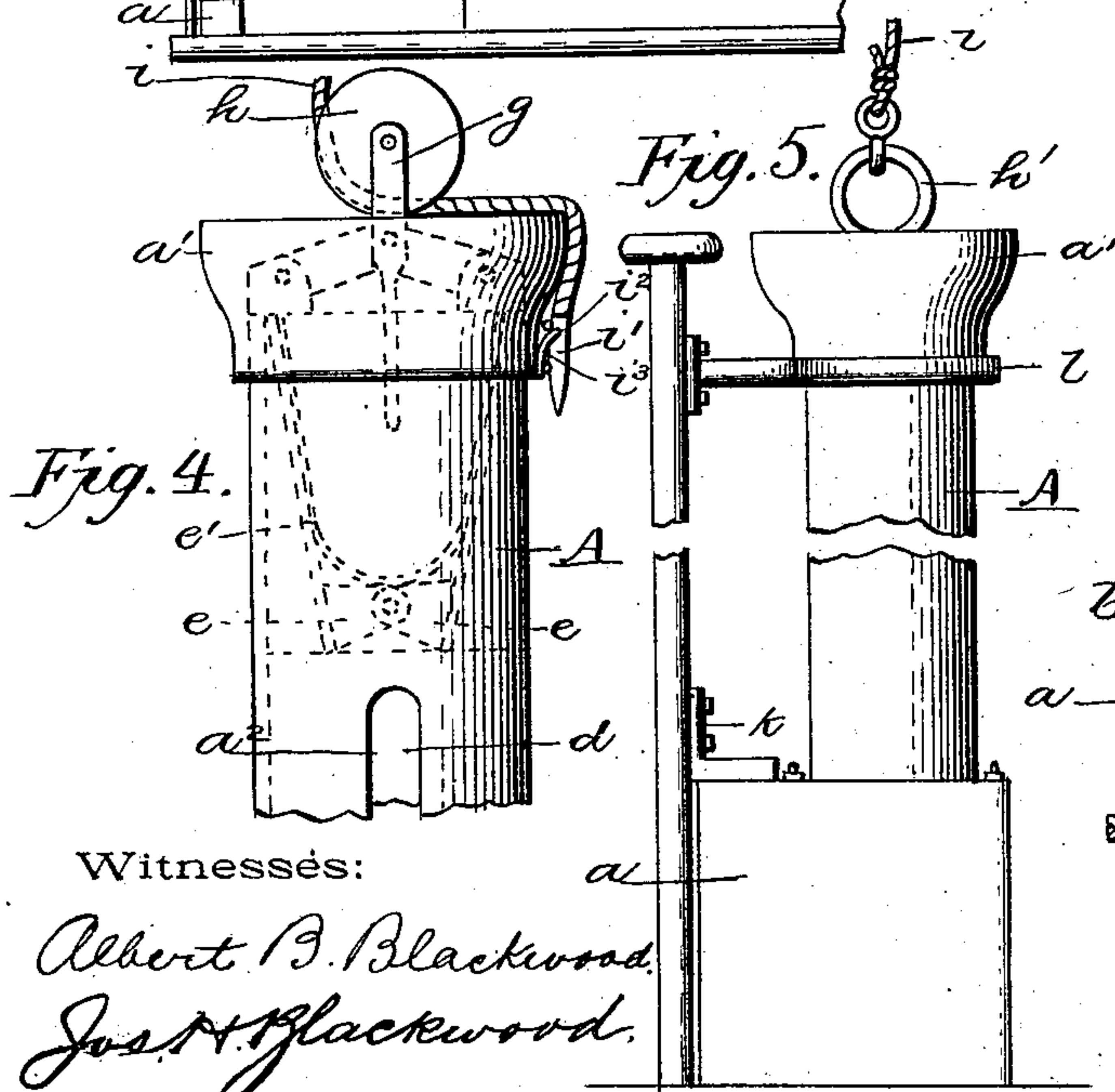
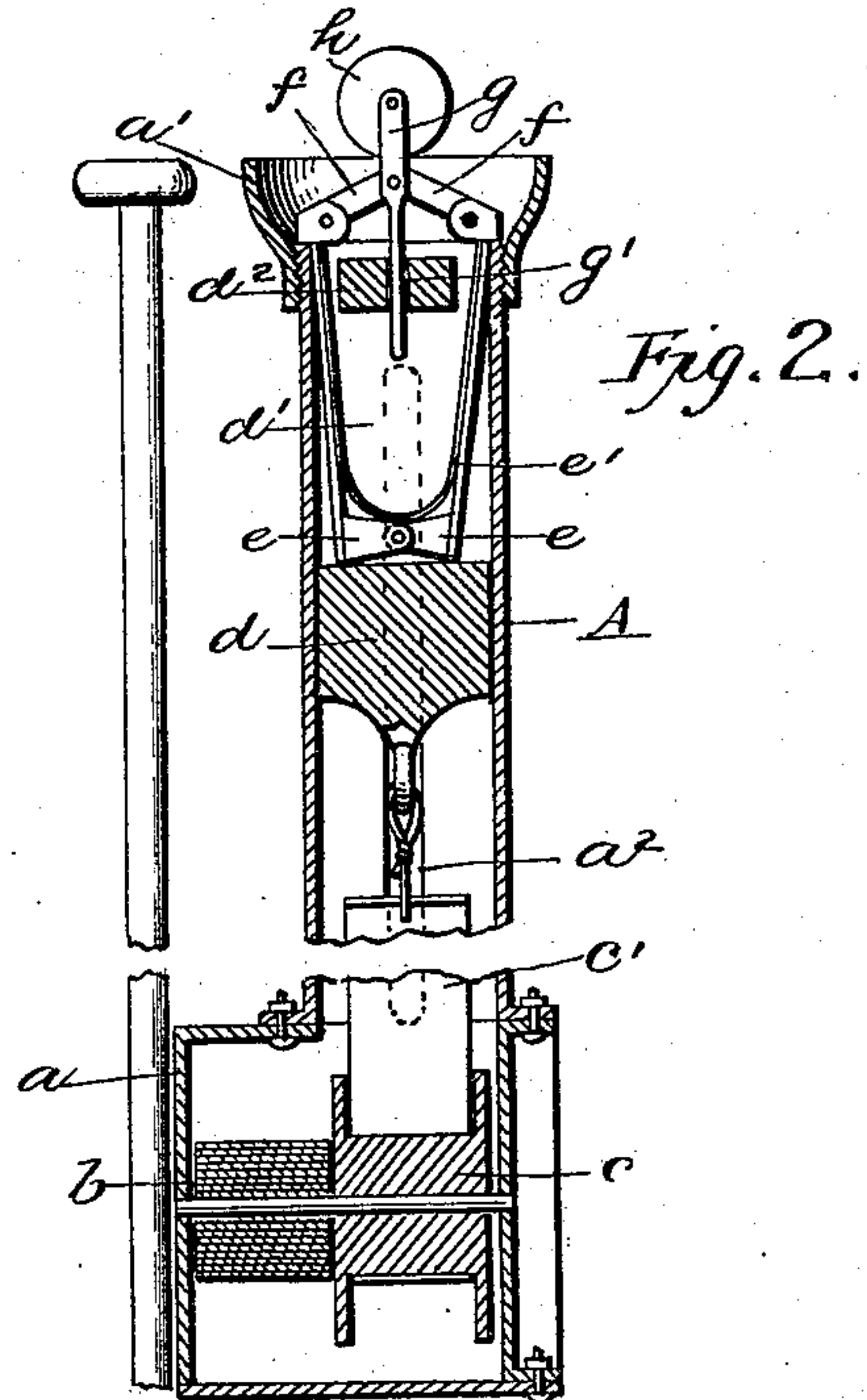
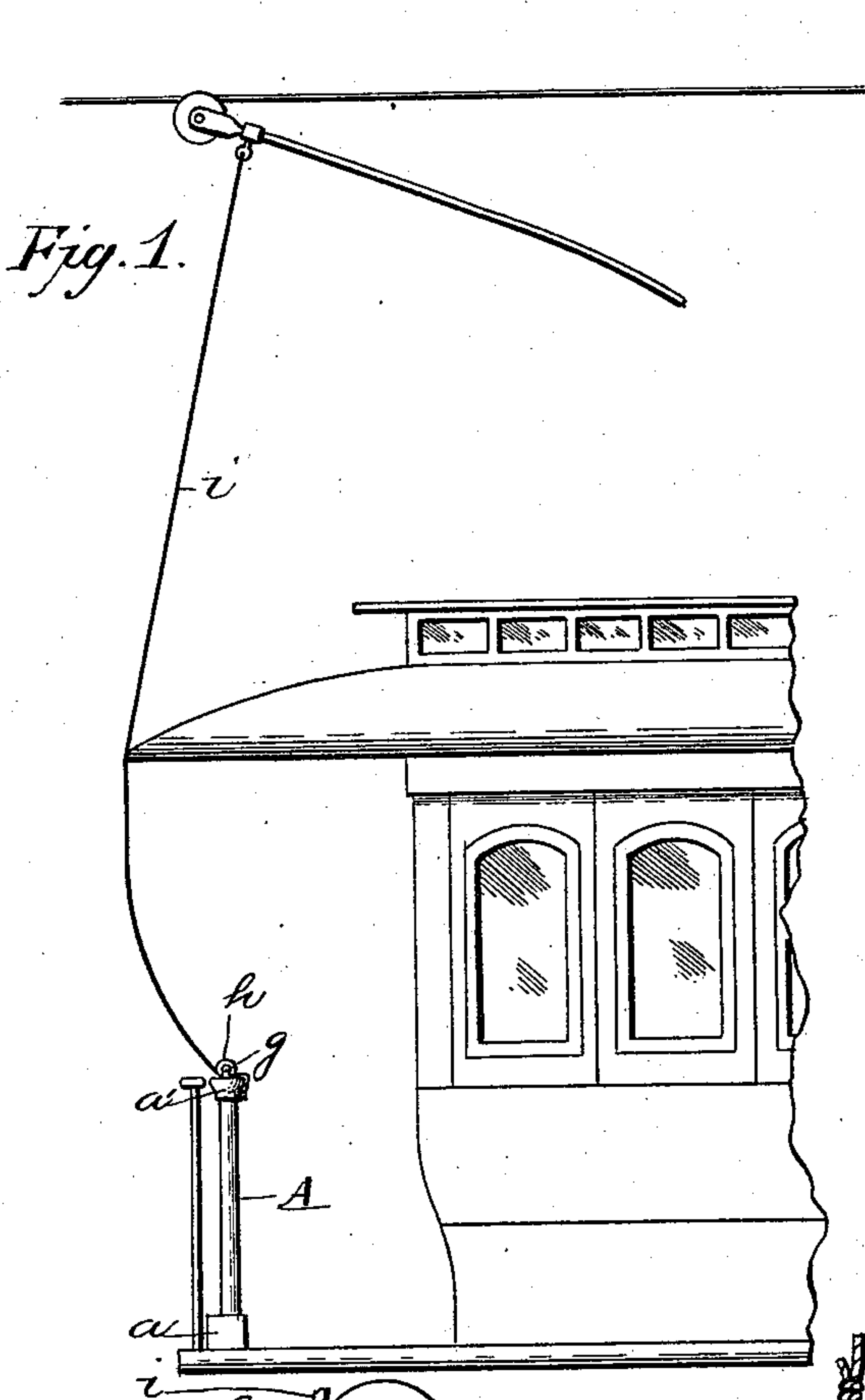


(No Model.)

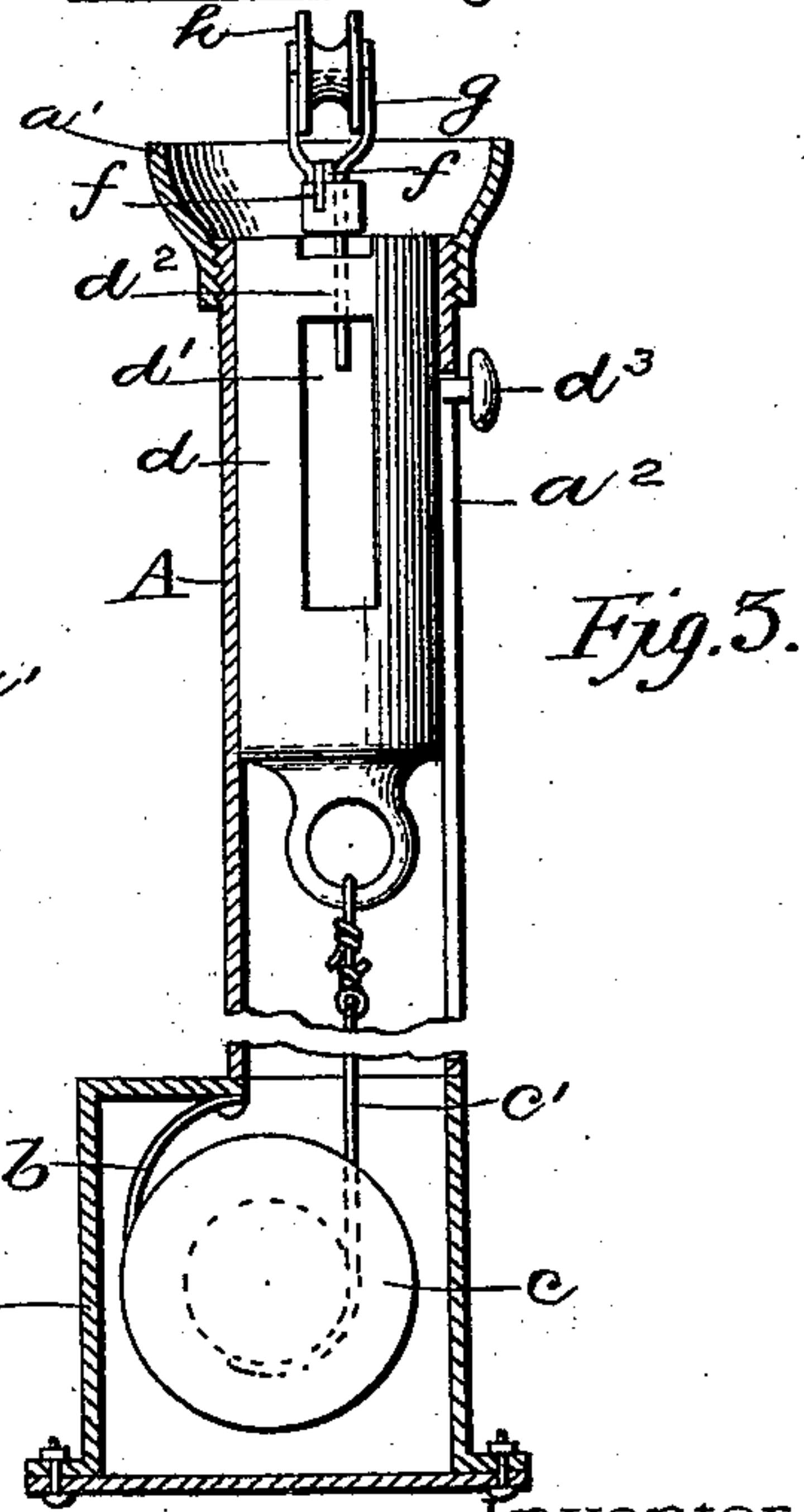
F. WHEELER.  
TROLLEY POLE RESTRAINER.

No. 538,569.

Patented Apr. 30, 1895.



*Fig. 5.*



Witnesses:

Albert B. Blackwood.  
Jos. H. Blackwood.

Inventor.

FRANK WHEELER  
by Arthur W. Harrison  
Attorney.



# UNITED STATES PATENT OFFICE.

FRANK WHEELER, OF MERIDEN, CONNECTICUT.

## TROLLEY-POLE RESTRAINER.

SPECIFICATION forming part of Letters Patent No. 538,569, dated April 30, 1895.

Application filed February 8, 1895. Serial No. 537,703. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK WHEELER, of Meriden, in the county of New Haven and State of Connecticut, have invented new and  
5 useful Improvements in Trolley-Pole Restrainers; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of  
10 reference marked thereon, which form a part of this specification.

This invention relates to appliances for preventing damage by an electric-car trolley pole when it leaves the conducting wire, as often  
15 occurs at switches and elsewhere along the line. As is well known, when the trolley jumps the wire, the spring which presses the pole upward causes the trolley to move past and above the wire, and since the cord that  
20 usually depends from the pole near the trolley must have considerable slack in order to allow for variations in the height of the wire above the track, the pole is thrown upward by its spring when the trolley jumps the wire,  
25 often to a distance that will result in damage to the supports for the conducting wire or other overhead work.

The object of my invention is the production of a simple attachment for a car, which  
30 attachment will be quickly and certainly operated automatically to pull down the trolley pole immediately upon the trolley leaving the wire and the pulling taut of the cord; and my invention consists in the features of construction, and in the combinations of parts,  
35 substantially as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my attachment and of so  
40 much of a car and trolley-pole as is necessary to illustrate one way in which my invention may be applied to use. Fig. 2 is a detail vertical sectional view of the attachment on a larger scale than in Fig. 1 and with a portion  
45 of the central part broken out to reduce the height of the figure. Fig. 3 is a view similar to Fig. 2, but at a right angle thereto. Fig. 4 is a detail, further enlarged, showing the upper end of the attachment and illustrating

means for securing the end of the pole-cord. 50  
Fig. 5 is a detail view illustrating a modification hereinafter described.

Each part represented in several views is indicated by its individual reference letter.

The car platform has secured to it, preferably inside of and close to the dash-board, a  
55 vertical tube A containing the spring and trip mechanism. This tube has a slot in one side and the lower end of the tube is enlarged, as at *a*, or the enlargement may consist, as shown, 60  
of a casing separate from but connected with the tube. This enlargement forms a casing for a spring *b* and a drum or reel *c* mounted on a spindle having bearings in the walls of the casing, said drum having a cord, strap or  
65 chain *c'* secured to it and connected at its other end with a piston-like head or block *d* adapted to slide freely in the tube which forms a guideway therefor.

The spring *b* is of a strength or power in excess of that of the spring ordinarily used to  
70 keep a trolley in contact with a conducting wire, and said spring *b* is connected to the casing and to the spindle so as to cause the drum to exert a constant downward pull on  
75 the head *d* through the medium of the strap *c'*.

The head *d* is cut away or recessed as at *d'*, but a portion of the metal is left at *d<sup>2</sup>* uniting the sides at the upper end of the head, which portion may be termed a web. In the  
80 lower part of the recess two pawls, hooks or detents *e e* are pivoted, the upper ends of which are adapted to hook over the upper end of the tube which forms a shoulder for this purpose. The pawls or detents are  
85 pressed apart by a spring *e'* and their upper ends are pivotally connected with two links *f f* which in turn are pivoted together and to a vertically movable pin *g* the lower end of which enters a hole *g'* in the web *d<sup>2</sup>*, which  
90 hole serves to guide the pin so that it can move only in a straight line and so insure the simultaneous and equal lateral play of the two pawls. The upper end of the pin carries a pulley *h* as shown in Figs. 2, 3 and 4, or it  
95 may be a simple eye or ring *h'* as in Fig. 5.

The trolley pole cord *i* is shown in Fig. 4 as having a metal tip *i'* in which is a hole or eye



$i^2$  adapted to be engaged with a spring hook  $i^3$  secured to the outside of the tube. Other means for securing the end of the cord at a fixed point may be employed.

5 A cup-shaped guard  $a'$  is formed on or secured to the upper end of the tube in order to protect the detents from accidental or mischievous disengagement or release. When the tip  $i'$  is slipped under the pulley and  
10 passed over the edge of the guard and held at a fixed point, the attachment is ready for operation. If the trolley now leaves the conducting wire, the cord is pulled taut by the action of the pole spring, and this, through  
15 the links  $f f$ , draws the pawls or hooks  $e e$  inward and disengages them from the shoulder or top of the tube. The spring  $b$  is now free to operate and the head is immediately pulled down, the trolley being given double the  
20 amount of motion of the head, owing to the pulley acting on the double cord. Therefore if the travel of the head is eighteen or twenty-four inches, the down-haul of the trolley will be three or four feet from the point at which  
25 it pulled the cord taut.

Secured to the head and extending through a slot  $a^2$  in the tube, is a handle  $d^3$  by means of which the head may be moved up in the tube, against the stress of spring  $b$ , until the  
30 pawls have re-engaged the shoulder of the tube. The upper end of the slot forms a stop to prevent an excessive lift of the head or a strain on the spring  $b$ .

It is obvious that the strap  $c'$  might extend  
35 around a pulley located at the bottom of the tube, and thence to a spring located under the floor of the car; and it is also obvious that in some cases, where the length of the tube is equal to whatever down-haul of the trolley  
40 is necessary, the pulley  $h$  may be dispensed with and the cord simply hooked to an eye as shown in Fig. 5, which eye is connected to the links and guide pin.

The attachment may be bolted to the platform of a car, in which case two attachments will be necessary, one at each end of the car; or the attachment may be portable and transferred from one platform to the other at the end of the line.

50 In Fig. 5 I have illustrated one way of detachably securing an attachment to the platform,  $k$  indicating a bracket projecting from the dash-board and over the casing  $a$  to resist vertical displacement, and  $l$  indicating  
55 one of a pair of spring arms embracing the upper end of the tube to prevent lateral movement.

Having now described my invention, what I claim is—

60 1. Mechanism for automatically exerting a retracting tension on a trolley pole rope, comprising a spring having a power in excess of the trolley pole spring, a slotted tube having a block or head movable therein, a connection between said block or head and the spring,  
65 a handle or projection extending from said

head through the said slot, a catch or detent for holding said head with its spring under tension, said catch or detent being adapted to be released by a pull on the trolley pole  
70 rope, and means for detachably connecting the trolley pole rope with the said head and detent mechanism.

2. Mechanism for automatically exerting a retracting tension on a trolley pole rope, comprising a movable block or head and a guide-way therefor, said head having a suitable handle or projection for enabling it to be moved by hand, a spring for moving said head in a direction away from the trolley pole, a  
75 catch or detent for normally holding the head with said spring under tension, and means for detachably connecting the trolley pole rope with the said head and detent mechanism.

3. Means for automatically lowering a trolley pole, comprising a head or block having a spring connected thereto and a handle, and carrying a pulley, a guide-way for said head or block, a detent for holding the head with its spring under tension and adapted to be  
80 released by a pull on the cord, and means for attaching the end of the cord at an accessible fixed point outside the guide-way, whereby, when the end of the cord is passed around said pulley and fixed, movement of the head  
85 is adapted to multiply the movement of the trolley.

4. A portable trolley pole restrainer comprising a tube or casing containing a movable head having detents and a spring connected  
90 with the head, the said head having means extending outside the tube or casing for enabling it to be moved by hand, in combination with means at each end of the car for engaging portions of the casing to hold it in  
95 place.

5. The combination with the slotted tube A of the spring-depressed head or block  $d$  having a handle projecting through the slot of the tube and having also the spring hooks or  
100 detents  $e e$ , the links  $f f$  permanently connected to each other and to the hooks, means connected with the links for the attachment of a trolley pole cord, and a shoulder near the upper end of the tube for engagement by the  
105 hooks.

6. The combination with the tube A of the spring-depressed head or block  $d$  having spring hooks or detents  $e e$ , the links  $f f$  permanently connected to each other and to the  
110 hooks, a pulley pivotally connected with the inner ends of the links, a shoulder near the upper end of the tube for engagement by the hooks, and means for securing the end of the trolley pole cord at a fixed point.

7. The combination with the tube A of the spring-depressed head or block  $d$  having spring hooks or detents  $e e$ , the links  $f f$  connected to each other and to the hooks, a pin pivotally connected with the inner ends of the  
115 links and carrying a pulley end extending down into a guide hole in the head or block,



a shoulder for engagement by the hooks, and means for securing the end of the trolley pole cord at a fixed point.

5 8. A trolley pole restrainer comprising in its construction the tube A having a shoulder, the spring-operated head *d* having detents *e*, the links *f f* permanently connected to each other and to the detents, means connected with the links for the attachment of a trolley

pole cord, and the guard *a'* projecting above the detents and the shoulder of the tube.

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

FRANK WHEELER.

Witnesses:

A. CHAMBERLAIN,  
C. H. WOOD.