

No. 640,560.

Patented Jan. 2, 1900.

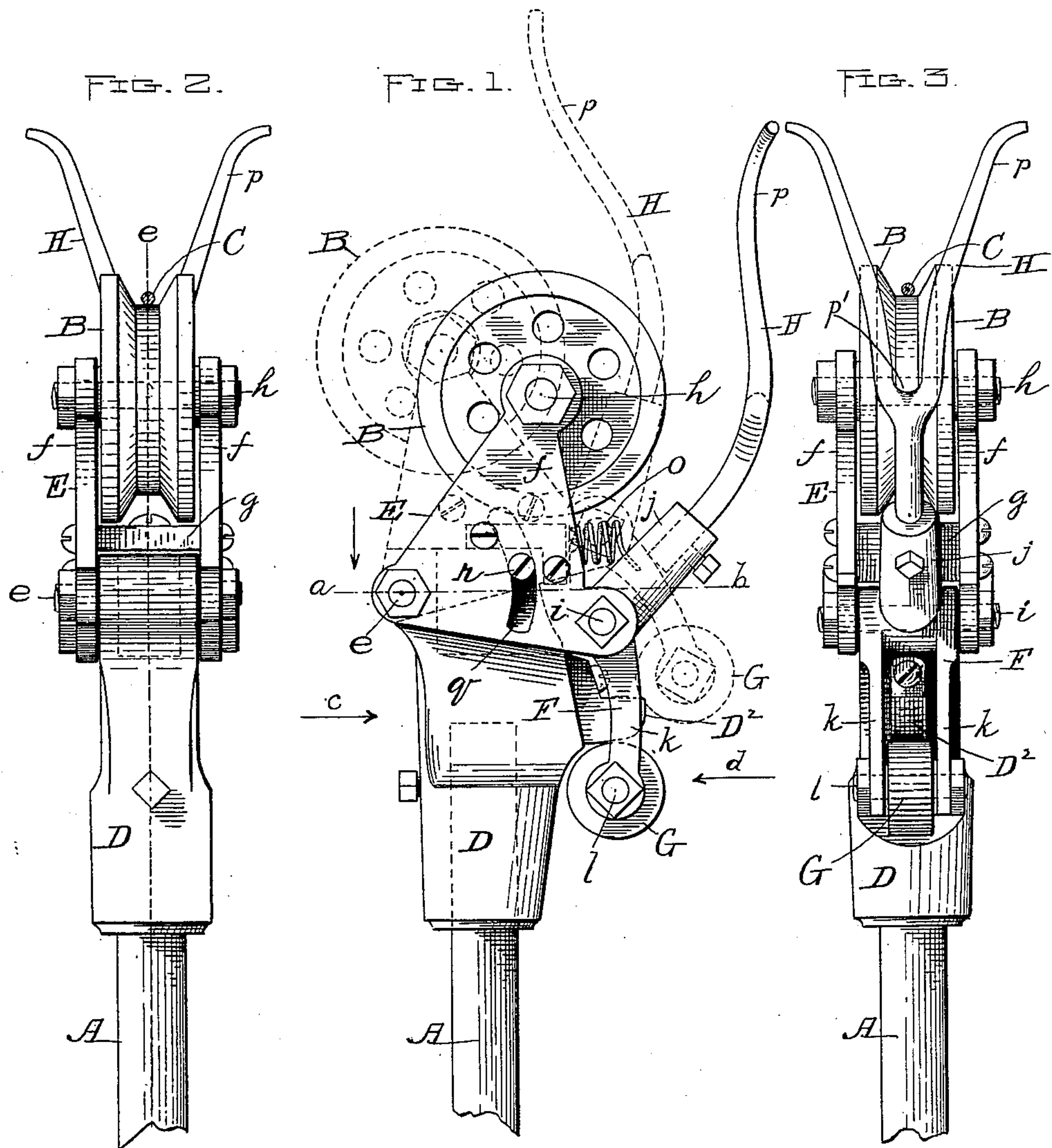
A. N. HAUVER.

TROLLEY.

(Application filed May 31, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses;

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FIG. 4.

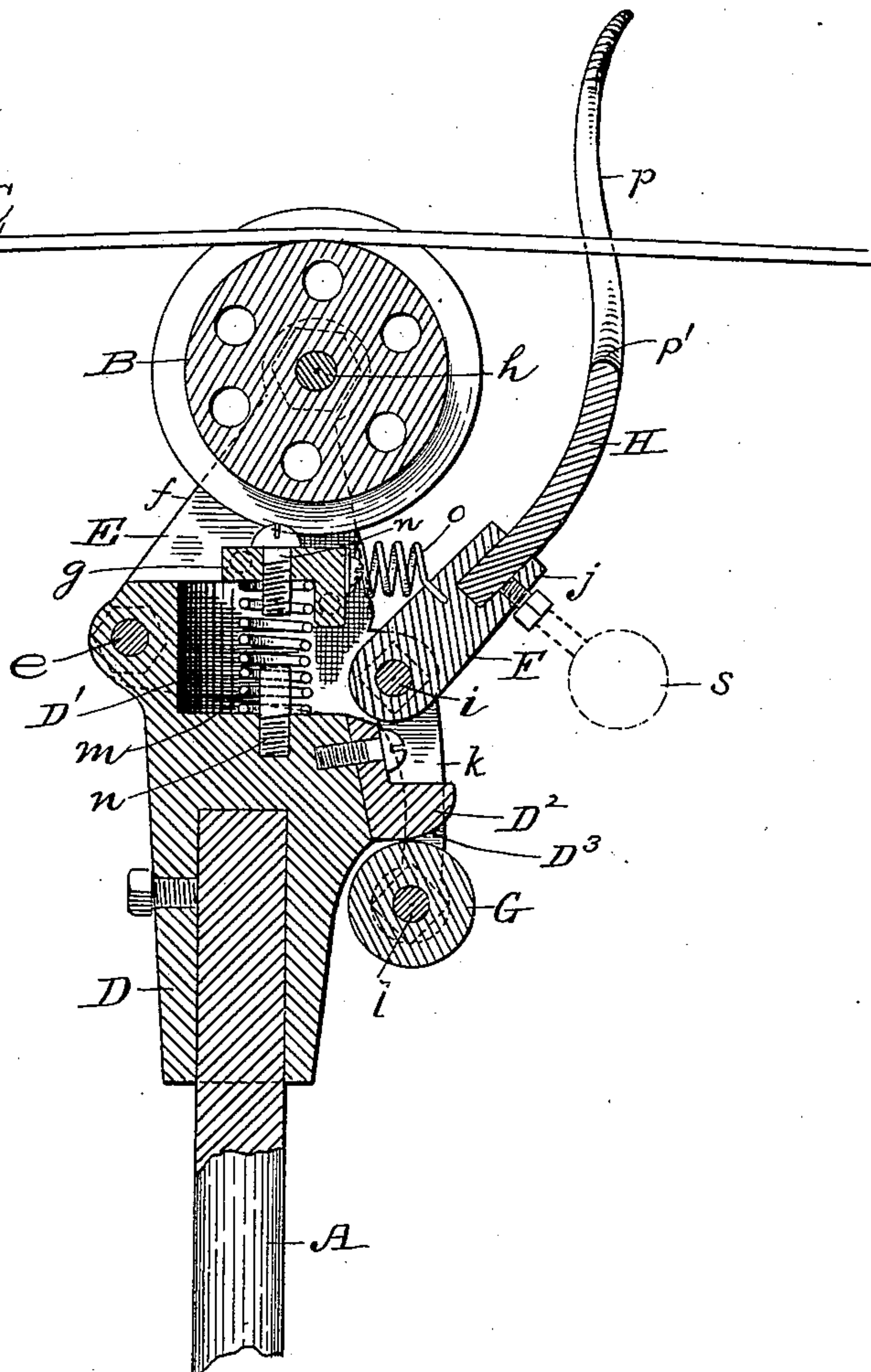


FIG. 5.

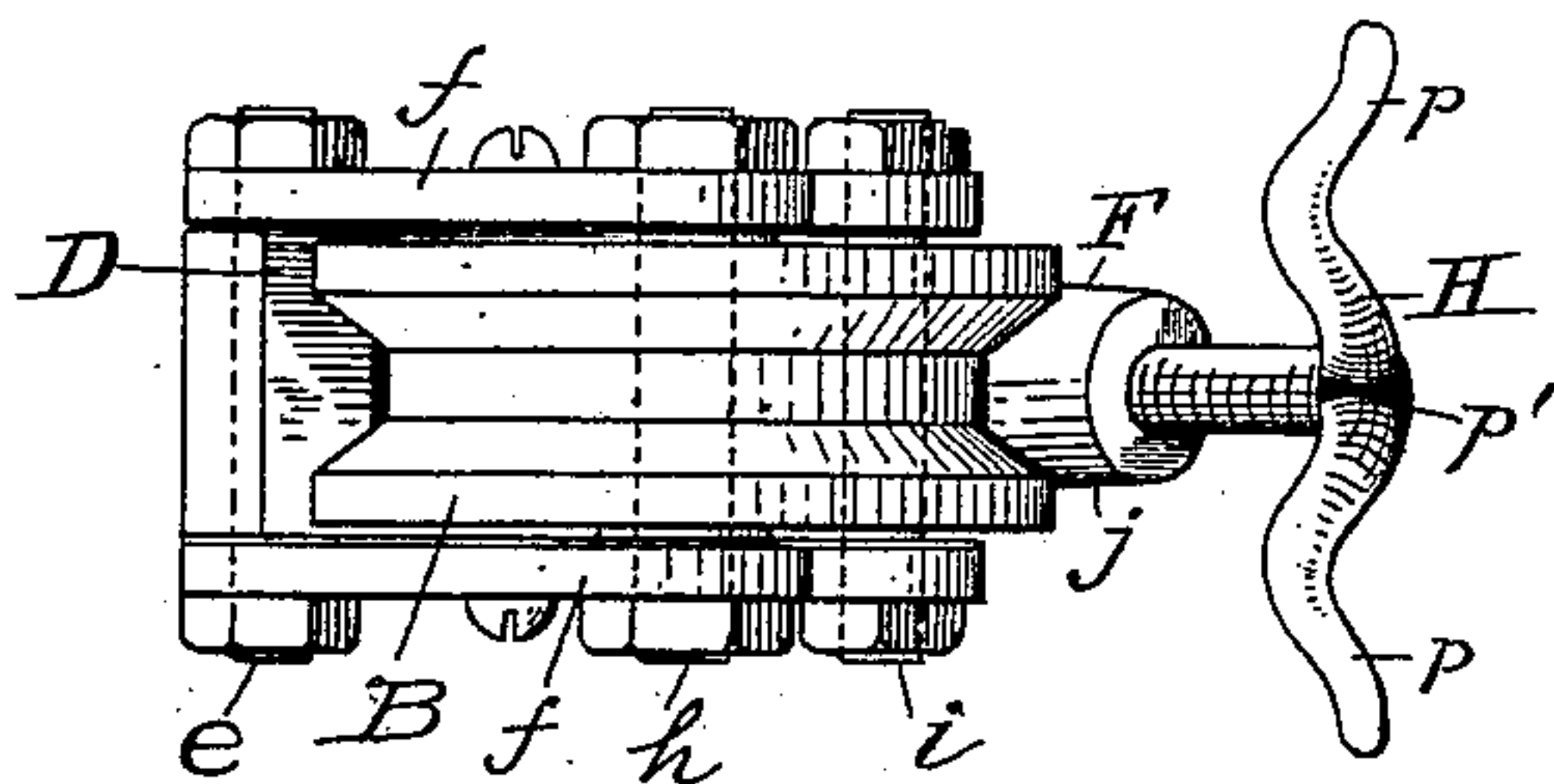
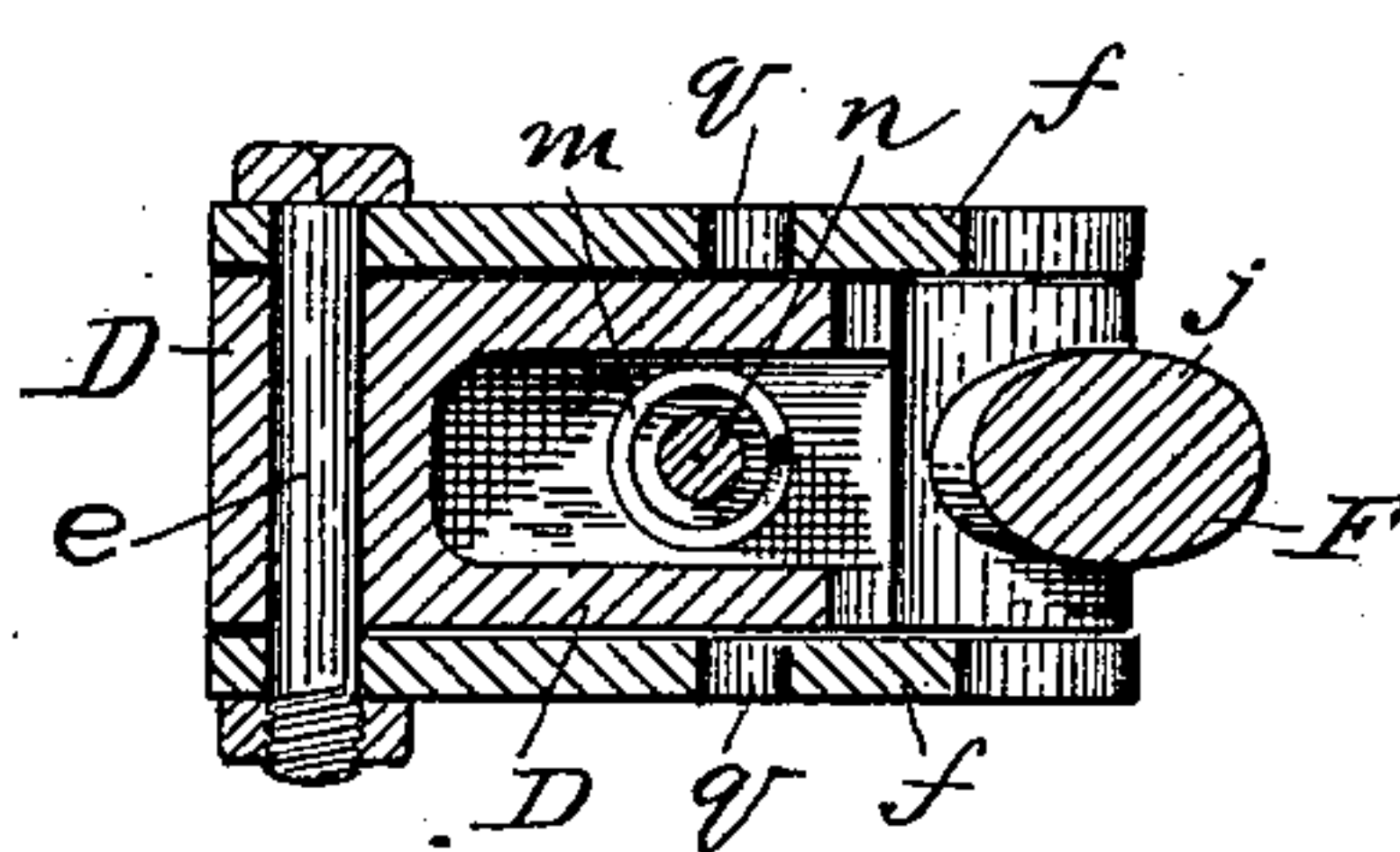


FIG. 6.



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UNITED STATES PATENT OFFICE.

ALFRED N. HAUVER, OF FITCHBURG, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HERBERT E. JENNISON, OF SAME PLACE.

TROLLEY.

SPECIFICATION forming part of Letters Patent No. 640,560, dated January 2, 1900.

Application filed May 31, 1899. Serial No. 718,800. (No model.)

To all whom it may concern:

Be it known that I, ALFRED N. HAUVER, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented certain
5 new and useful Improvements in Trolley-Wheel Attachments for Electric Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and
10 in which—

Figure 1 represents a side view of my said improved trolley-wheel attachment and part of the upper end of the trolley-pole upon which
15 it is mounted. Fig. 2 is an edge view of the parts shown in Fig. 1 looking in the direction of arrow *c*. Fig. 3 is an opposite edge view thereof looking in the direction of arrow *d*. Fig. 4 is a central vertical longitudinal section taken on line *e*, Fig. 2. Fig. 5 is a top or
20 plan view of the device; and Fig. 6 is a horizontal section therethrough, taken on line *a b*, Fig. 1.

The object of my invention is to provide an
25 attachment or device mounted on the top of the usual trolley-pole of an electric car and connected with the trolley-wheel thereof, whereby when said wheel accidentally leaves the feed-wire it may be automatically sprung
30 back into place again without retarding the progress of the car.

Said invention consists in combining with a fixed bearing or holding block on the top of said trolley-pole and with the trolley-wheel
35 a swinging frame pivoted to said block and upon which said wheel is mounted and fitted to turn, means for swinging said frame upward and for controlling its movements, and an upward-extending forked tilting frame
40 pivoted to said swinging frame and adapted to be carried upward and its forked end tilted inward by the upward movement of said swinging frame when the trolley-wheel accidentally leaves the feed-wire, as aforesaid, and
45 whose forked end when thus operated is adapted to catch and guide the feed-wire, so that said trolley-wheel may be automatically sprung back into its proper normal position thereon, as will be hereinafter more fully set
50 forth.

In order that others may better understand

the nature and purpose of my said invention, I will now proceed to describe it more in detail.

Referring to the drawings, A represents 55 the upper end of the trolley-pole, and B the trolley-wheel, of an electric car. Ordinarily, as is well known, said trolley-wheel is fitted to turn in a rigid bearing at the upper end of said pole, and when the wheel becomes accidentally detached or "jumps" from the feed-
60 wire C the conductor of the car is obliged to draw down the pole by means of a connecting-cord and adjust the wheel to the feed-wire by working the upper end of said pole back
65 and forth until he brings the wheel in proper engagement with the wire. This often occupies considerable time, and consequently causes a corresponding delay in the progress of the car. To overcome the above objections
70 is the main purpose of my invention. By said invention when the trolley-wheel accidentally becomes disengaged from the feed-wire it is immediately reengaged therewith automatically, as previously stated. There-
75 fore no delay occurs, and the car continues on its way without interruption or inconvenience to the conductor and passengers.

My said improved device is constructed and
80 arranged to operate as follows:

To the upper end of the trolley-pole A is secured in any convenient manner the bearing or holding block D, previously alluded to, for supporting the operating parts. To
85 said holding-block is pivoted, by means of the transverse bolt *e*, the swinging frame E, comprising in this instance the side plates *ff*, the transverse separating-plate *g*, and suitable transverse bolts and screws for fasten-
90 ing the parts together. This construction, however, I do not of course limit myself to in practice, as it may be made in various forms to perform its office of serving as a movable support for the trolley-wheel B and other
95 operating parts hereinafter described. Said trolley-wheel is fitted to turn on the transverse pivot-bolt *h*, passed through the upper ends of the side plates *ff*, and to another transverse pivot-bolt *i* is pivoted an angular-shaped
100 tilting frame F, carrying the antifriction-roll G at its lower end and the upward-extending fork H at its upper end, the latter in this in-

stance being made separate from arm F and fastened thereto, as is best shown in Fig. 4. Said tilting frame F comprises in this instance the upturned arm *j*, which supports the fork H, and the downward-extending parallel arms *k k*, between the lower ends of which the antifriction-roll G is arranged, said roll being fitted to turn on a pivot-bolt *l*, passed transversely through said parallel arms. Although it is preferable to use said roll G on the lower end of the tilting frame, since it is not an essential feature I reserve the right to employ the same or not, as desired, the essential point only being to obtain a bearing of the lower end of the frame on the cam projection D² to force its upper end inward for the purpose described.

The three pivots *e*, *h*, and *i* are arranged in triangular positions, as is shown in Figs. 1 and 4, pivots *e* and *i* being about upon a level and pivot *h* about central over the same when the parts are in their normal positions, as is shown in the above figures, with the trolley-wheel in proper contact with the feed-wire, as is shown in Fig. 4. A constant upward force is imparted to the swinging frame to keep the trolley-wheel in contact with the feed-wire by a strong spring *m*, arranged in a recess D' in the upper end of the holding-block D, said spring being interposed between said holding-block and the transverse plate *g* of swinging frame E, as is shown in Fig. 4. In this instance a spiral spring is shown, the same being held in position laterally by studs *n n*, projecting into the ends thereof. The tilting frame F, as previously stated, is pivoted to the swinging frame E, and consequently when said swinging frame is forced up by its spring *m* said tilting frame is carried up with it. While the trolley-wheel is in its proper normal position against the feed-wire, with said feed-wire in the annular peripheral groove of said wheel, as is shown in Figs. 2, 3, and 4, the swinging frame is in its compressed or lowest position, with the antifriction-roll G of the tilting frame F under the cam projection D², formed upon or secured to the holding-block D, said swinging frame being thus held down by the pressure of the trolley-wheel against the feed-wire and the tilting frame held in said tilted position by a spring *o*, interposed between the transverse plate *g* and arm *i*. The parts occupy said positions until the contact is broken by the wheel leaving the wire, when the spring *m* at once forces up the swinging frame E, and with it is carried the tilting frame F. This operation causes the roll G to travel out and up over the cam-surface D³ of the projection D², and thereby forces the upper forked end of said tilting frame in toward the trolley-wheel. Therefore, as will be seen, said forked end has not only an upward, but an inward, movement, and said movements being performed very quickly by the action of spring *m*, as aforesaid, the feed-wire as it leaves the trolley-wheel is at once caught against one of the prongs *p* of fork H and,

sliding down thereon toward the crotch P' thereof, is guided back onto the wheel, as is shown in Figs. 2, 3, and 4. Said wheel being thus readjusted to the wire, the upward pressure of the pole A toward the wire now causes the swinging frame E to be forced down again, with its tilting frame F, the latter being tilted, as previously described, with the roll G under cam projection D². The above operations, it will be understood, are in practice performed almost instantaneously—that is, when the trolley-wheel leaves the wire it is readjusted thereto so quickly that it is in contact practically all the time. Therefore the progress of the car is not materially interrupted. This, it is obvious, results in a large saving in time over the old way and also removes an objection which has heretofore been a source of considerable trouble and annoyance to both the railroad employees and the traveling public.

The upward swinging movements of frame E on its pivot *e* may be controlled in various ways. In this instance I have shown said result as being effected by forming a curved slot *q* in each side plate *f*, (with said pivot as the axis of said curves,) in each of which fits a fixed or stop pin *r*, secured in the holding-block D, against which said side plates strike when arriving at the ends of said curved slots in the operation of frame E by its spring *m*, as previously described.

Only a light pressure or power is required to tilt the frame F outward to bring its roll G under the cam projection D², and therefore a light spring *o* may be employed therefor, as previously described, or, if preferred, the upper end of the frame may be provided with a weight *s*, as is shown by dotted lines in Fig. 4, to accomplish the same result.

Having described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of the trolley-pole, wheel and feed-wire, with a holding-block secured to the top of said pole, and provided with a cam projection; a swinging frame pivoted to said holding-block at the opposite side from said cam projection, having means for controlling its movements, and upon the upper end of which the trolley-wheel is mounted; means for forcing said swinging frame upward; a tilting frame pivoted to said swinging frame above the cam projection, extending downward and adapted to engage with said cam projection, also having an upward-extending arm carrying a fork adapted to engage with the feed-wire, and means for forcing said upper forked end outward and its lower end inward, substantially as and for the purpose set forth.

2. The combination of the holding-block secured to the top of the trolley-pole and provided with a cam projection, with a swinging frame pivoted to said holding-block at the opposite side from said cam projection, and having means for controlling its move-

ments; means for forcing said swinging frame upward; a tilting frame pivoted to said swinging frame above said cam projection, extending downward and having mounted thereon
5 an antifriction-roll adapted to engage with the cam projection, also having an upward-extending arm carrying a fork adapted to engage with the feed-wire; means for forcing said upper, forked end outward and its lower
10 end inward; the trolley-wheel mounted and fitted to turn on the upper end of the afore-said swinging frame, and the feed-wire, substantially as and for the purpose set forth.

15 3. The combination of the pivoted swinging frame having means for forcing it up-

ward and for controlling its movements; the trolley-wheel mounted in the top end thereof, and the feed-wire, with a tilting frame, pivoted to said swinging frame, and having an upward-extending fork adapted to engage
20 with said feed-wire and means for tilting said upper forked end inward when the swinging frame ascends and for tilting it outward when said swinging frame descends, substantially as and for the purpose set forth.

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Witnesses:

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