

No. 859,667.

PATENTED JULY 9, 1907.

H. A. KENNEDY.
AUTOMATIC TROLLEY GUARD.
APPLICATION FILED JAN. 29, 1907.

FIG. 1.

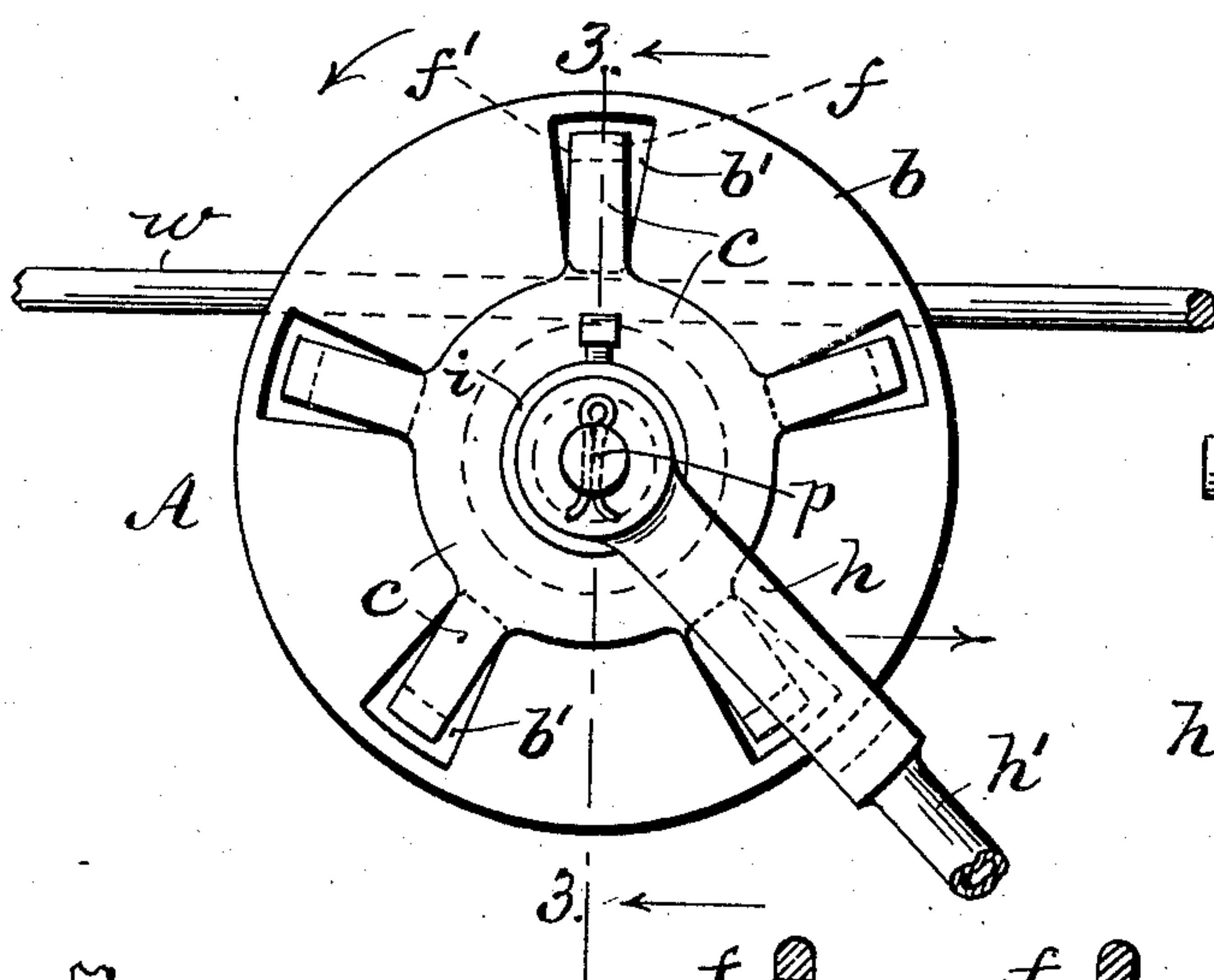


FIG. 2.

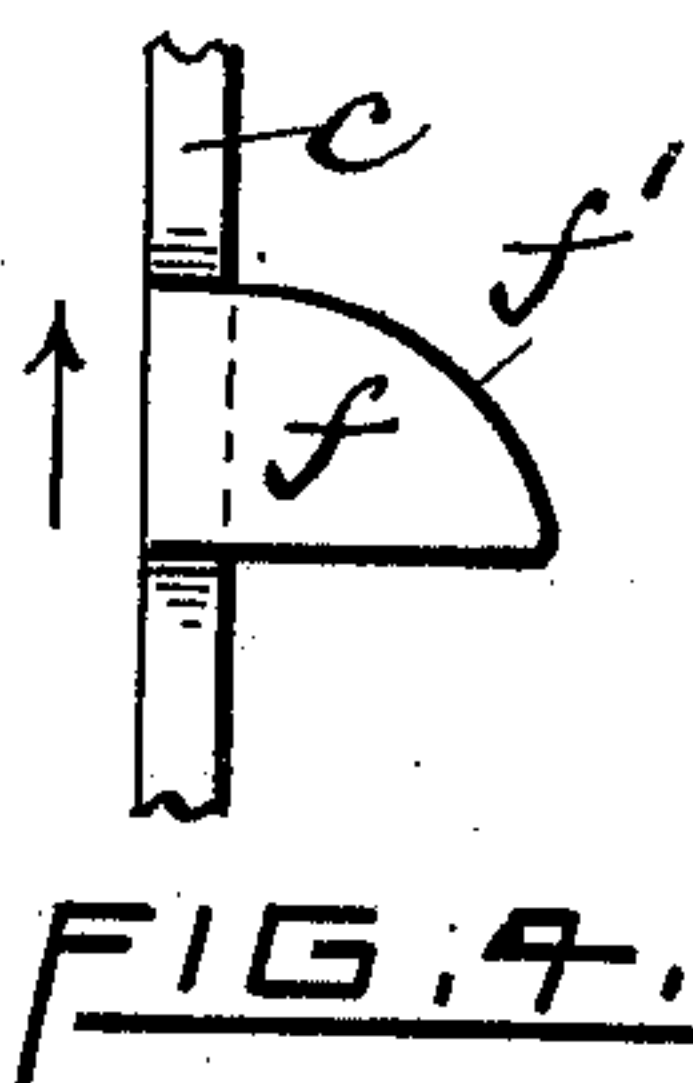
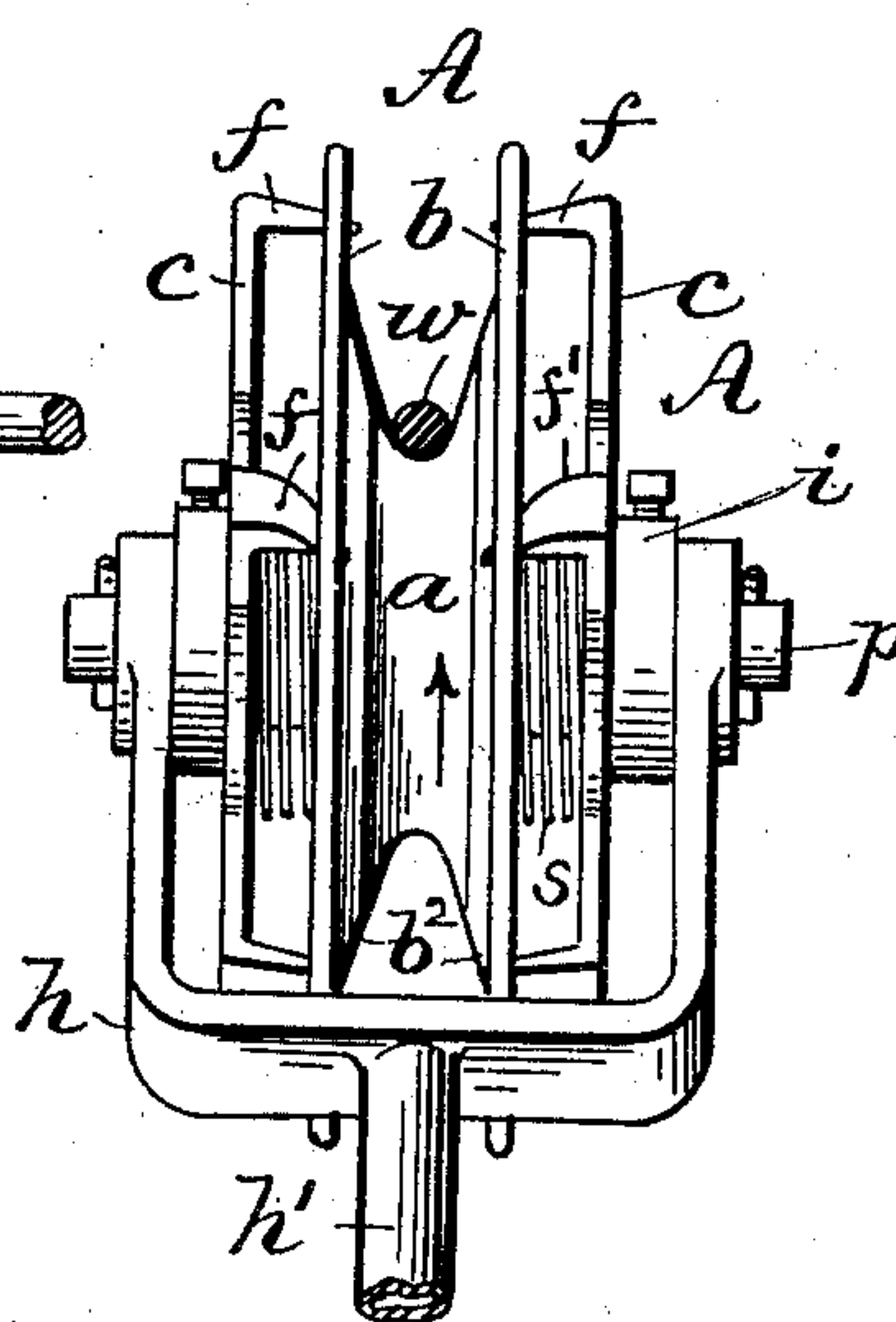


FIG. 4.

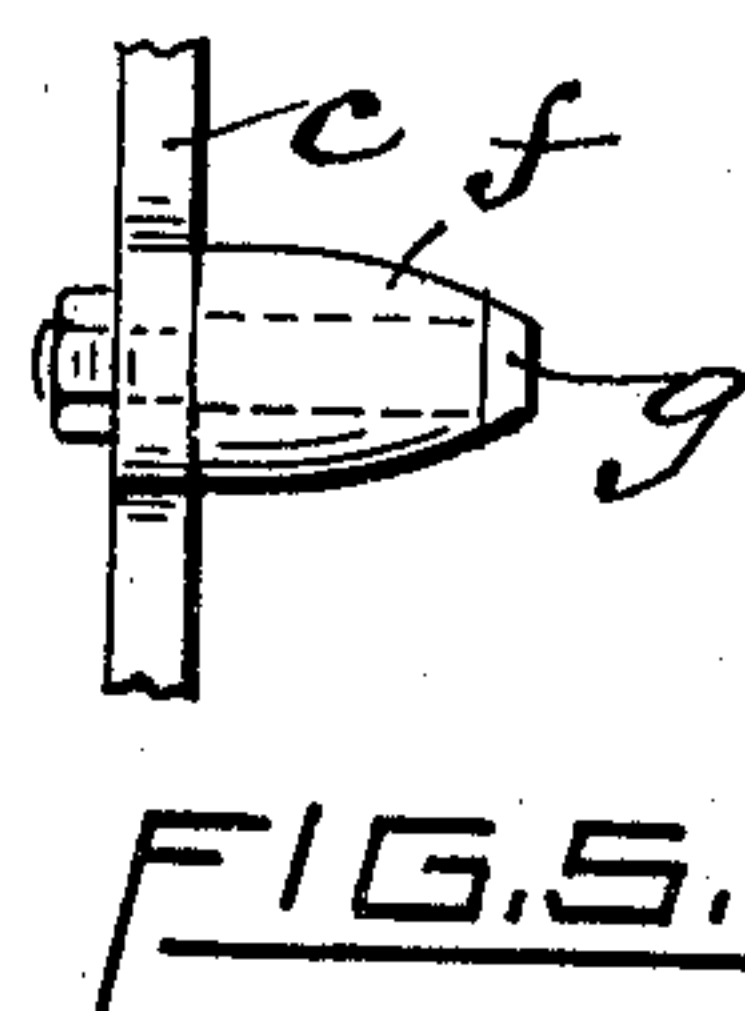


FIG. 5.

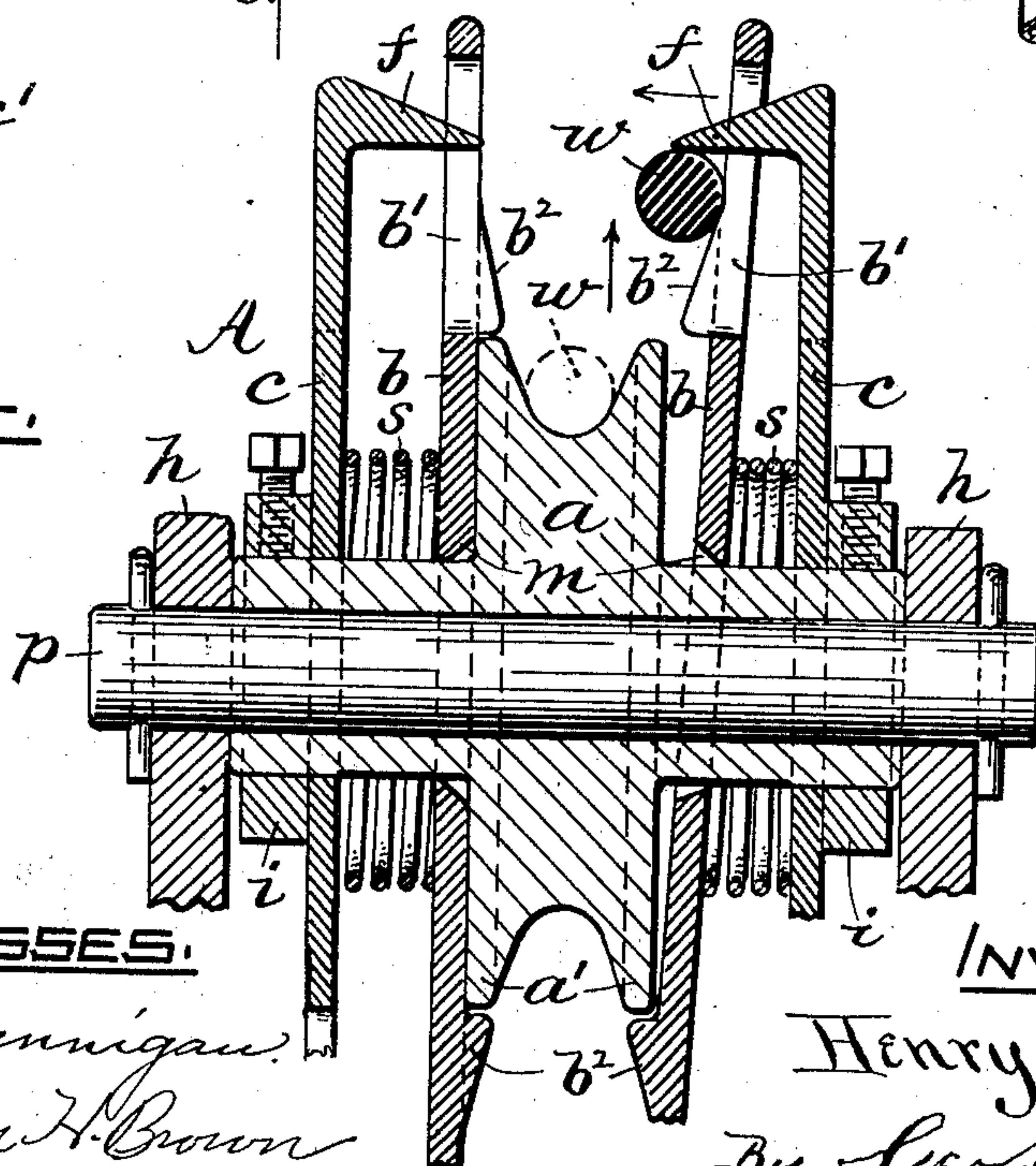


FIG. 3.

WITNESSES.

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AUTOMATIC TROLLEY-GUARD.

No. 859,667.

Specification of Letters Patent.

Patented July 9, 1907.

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To all whom it may concern:

Be it known that I, HENRY A. KENNEDY, a citizen of the United States of America, and a resident of Natick, in the county of Kent and State of Rhode Island, have invented certain new and useful Improvements in Automatic Trolley-Guards, of which the following is a specification.

My present invention relates to improvements in car trolley-wheels adapted to electrically contact with the overhead feed-wires of railway systems, the electric current being employed for propelling passenger and other traction cars.

The object I have in view is to provide wheels of the class referred to with a simple, efficient, reliable and comparatively inexpensive device adapted to automatically replace or reposition the wheel against the underside of the relatively stationary main feed-wire in case the wheel from some abnormal or accidental cause becomes unseated or disengaged from the wire.

To that end my invention consists, essentially, in providing at each end of the revolubly mounted grooved wheel proper a perforated yieldingly supported revoluble and endwise movable guard-flange, its inner face being beveled or adapted to form practically a continuation of the adjacent flaring face of the wheel and also extending radially beyond it.

It further consists in providing each of said flanges with an outer or front spider-like member revoluble in unison with the flange and having arms terminating in lateral inwardly facing projections disposed parallel with the wheel's axis and normally extending into the said perforations formed in the flange, all constructed, arranged and adapted so that in case the trolley-wheel is accidentally disarranged with respect to the feed-wire and at the same time pressed endwise or longitudinally to one side or the other the corresponding flange of the non-revolving trolley will thereby be brought in contact with and resisted by the wire, the lateral force or pressure due to such contact then causing the flange to quickly slide toward the said outer member thereby increasing the space between the flanges at that point and causing the adjacent lugs to project through the respective openings a corresponding extent, the lugs then forming what may be termed hooks under or in which the feed-wire is temporarily engaged, thus arresting the wheel and preventing it from further movement in vertical planes. As thus arranged the coöperation of the upward force of the usual trolley-pole springs and the beveled face of the laterally moved flange immediately operate to press the wheel both upwardly and laterally until it finds the wire; the bottom of the wheel's groove then being in normal working contact again with the underside of the wire. At the same time, too, the spring-pressed

flange automatically moves back to its perpendicular parallel normal position, thus closing or concealing the previously exposed hooks.

In the accompanying sheet of drawings, Figure 1 represents a front elevation of my improved self-adjusting trolley-wheel in the normal operative position. Fig. 2 is a corresponding side elevation. Fig. 3 represents a transverse sectional view, in enlarged scale, taken substantially on line 3 3 of Fig. 1. In this figure, however, the wheel is shown as having swerved to the left of and dropped away from the feed-wire and arrested by the combined action of the adjacent hook exposed by the lateral movement of the corresponding flange. Fig. 4 shows a top view of one of the hooks or lugs, and Fig. 5 is a similar view, showing a modification.

The general arrangement and manner of mounting the scored or peripherally grooved freely revoluble trolley-wheel proper *a*, the pin or shaft *p* on which the wheel is revolubly supported and the trolley-harp or head *h* carrying the said wheel, &c., and the swinging trolley-pole *h'*, all are or may be constructed substantially as usual and to which I make no specific claim. It may be added that the trolley-pole is usually spring-pressed so as to maintain the trolley-wheel in normal yielding contact with the trolley or feed-wire *w*.

Again referring to the drawings, *A* designates the self-adjusting wire-finding trolley-wheel as a whole and including my present invention. The hubs of the said freely revoluble current-conducting wheel member *a* may be extended to support thereon the parts about to be described.

At each side or end of the wheel member *a* and concentric with it is located a revoluble outer guide-flange or disk *b*, the same having its inner face turned out or recessed to freely receive therein the corresponding flanged portion *a'* of the wheel. The said face of the flange member *b* extends beyond the periphery of the wheel and is made flaring or beveled transversely, see *b'*, its lower edge coinciding with and forming a continuation of the flaring side of the main or center groove formed in the wheel. The flange member *b* has a plurality of radially disposed openings *b'* there-through for the reception of the lugs *f*, soon to be described. The members *b* are constructed and mounted so as to both slide endwise and revolve on the wheel's hub. They may be bored slightly conical, as indicated at *m*, thereby adapting them to readily swing or tip at an angle within certain limits, substantially as represented in Fig. 3.

The two outer plates or spider-like members *c* are revolubly supported on the wheel's hub, each plate having a plurality of radially extending arms terminating in inwardly facing lugs *f* arranged with respect to and projecting into the respective openings *b'* of the fellow flange *b*.

Between the adjacent faces of each pair of movable members, *b* and *c*, is located a helically-wound expansion spring *s*, the ends of which are or may be secured to the respective members, *b*, *c*. The function of the
5 springs is both to keep said movable members laterally separated and also assist in returning the flanges *b* back to the normal working position while the wheel is finding the feed-wire.

The position of the plates *c* longitudinally of the wheel's hub may be changed with respect to the flanges *b* by means of the outer set-screwed adjusting collars *i*. The complete device *A* is mounted on the spindle or pin *p*, in turn mounted in the U-shaped head or trolley-harp *h* of the usual trolley-pole.

15 In normal action the improved automatic trolley-wheel device *A* appears substantially as represented in Figs. 1 and 2. In case the trolley becomes accidentally disengaged from the feed-wire, as for example, when it is rounding a curve and liable to swerve or
20 vibrate to the right or left, or when the traveling trolley encounters an obstruction, the device may be deflected downwardly, the lateral pressure of the latter (indicated by the horizontal arrow in Fig. 3) at the same time maintaining the adjacent lateral side of the
25 members *a* and *b* of the then non-revolving trolley in sliding contact with the relatively stationary wires, the result being that when the beveled or flaring face *b*² of the flange *b* engages the wire the flange will yield outwardly in a lateral direction, and usually at an
30 angle, (see Fig. 3) thereby quickly exposing or protruding the free end of the adjacent lug *f* of the plate *c* through the corresponding hole *b*¹ and forming a hook or stop above and in advance of its being engaged and arrested by the wire. As the lateral pressure upon the
35 trolley is relaxed the continuous lifting pressure (indicated by the vertical arrow, Fig. 3) upon the trolley-pole forces the trolley upwardly, thereby in coöperation with the spring *s* automatically returning the guard-flange *b* to its normal or vertical position,
40 its beveled face at the same time moving upwardly past the still contacting wire until the latter is again properly seated or reëngaged in the center groove, the hook member *f* then being closed or non-operative. Fig. 2 shows the corresponding normal position of the
45 trolley, &c.

The trolley may be readily removed or disengaged from the wire and readily reëngaged with it at will in the usual manner through the medium of a manually controlled cord attached to the trolley-pole.

50 I prefer to curve or bevel the advance side *f*¹ of the several lugs or hooks *f* of the members *c* with respect to the direction of rotation of the forwardly traveling trolley, see Figs. 1, 2 and 4.

In Fig. 5 is represented a modified construction of
55 the lug *f*. In this case the latter is slightly cone-shaped and mounted to revolve on a bolt *g* fixed in the corresponding arm of the member *c*.

While the drawings represent specific forms of construction and arrangement of the several members or
60 parts entering into my improved self-adjusting trolley-

wheel, I do not desire to limit the same to such exact construction as changes or variations may be made therein without departing from the spirit of the invention.

I claim as my invention:—

1. As a new and improved article of manufacture an automatic or self-positioning guard for trolley-wheels, the same consisting in the combination with an axle member adapted to be mounted in a trolley-harp or holder, and a trolley or current-conducting wheel proper mounted on
65 said axle, of a pair of independent oppositely disposed yieldingly supported laterally movable and revoluble guard-flanges having said wheel located between them, and a pair of outer concentric members or plates, each provided with peripheral lugs adapted to extend inwardly past the
70 adjacent guard-flange and form hooks or stops for receiving the feed-wire thereunder when the said flange is forced or deflected outwardly.

2. As an improved article of manufacture a trolley device of the character described, the same consisting of a
75 freely revoluble circumferentially grooved current-conducting trolley-wheel member, a pair of laterally separated independent self-positioning endwise movable and revoluble guard-flanges normally registering with and forming a peripheral continuation of the adjacent end
80 portions of said wheel, and oppositely disposed outer members provided with lugs continuously interlocking with and also revoluble in unison with said flanges, each of the latter and its fellow outer member constructed and adapted to protrude one or more lugs transversely through the
85 flange whenever it is deflected outwardly from its normal or true position, for the purpose hereinbefore set forth.

3. In a trolley-wheel of the character described, the combination of the revolubly mounted grooved wheel member proper, a revoluble and laterally slidable spring-pressed perforated guard-flange, and a plate member revoluble in unison with said flange provided with lugs extending into said perforations located at each end portion of the said wheel member and concentric with it, substantially as described.

4. In a device of the character described, the combination with the revoluble current-conducting wheel member having a peripheral groove terminating in oppositely beveled or divergent sides, of a pair of revoluble reversely arranged duplicate guard-flanges having their inner faces
90 normally registering with and forming a continuation of the said sides of the wheel member, a revoluble outer member located in front of each of the guard-flanges, resilient means interposed between each pair of said flange and outer members for maintaining them in the normal separated position, and means extending inwardly from the outer members in continuous engagement with the respective flanges, adapted when brought into action to project through the flanges and form stops for temporarily retaining the feed-wire thereunder.

5. In a device of the character described, the combination with the trolley-wheel member proper having integral flanges, and independent laterally movable spring-pressed guard-flanges forming a continuation of and circumscribing the flanges of said wheel, of suitably supported lugs or
95 short lateral members in continuous frictional contact with the adjacent sides of openings formed in said guard-flanges, so that when either of the latter is forced outwardly away from the wheel the corresponding lugs become exposed and form in conjunction with the inner face of the flange stops or hooks, for the purpose hereinbefore set forth.

Signed at Natick, R. I., this 26th day of January, 1907.

HENRY A. KENNEDY.

Witnesses:

DANIEL A. KENNEDY,
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