

(No Model.)

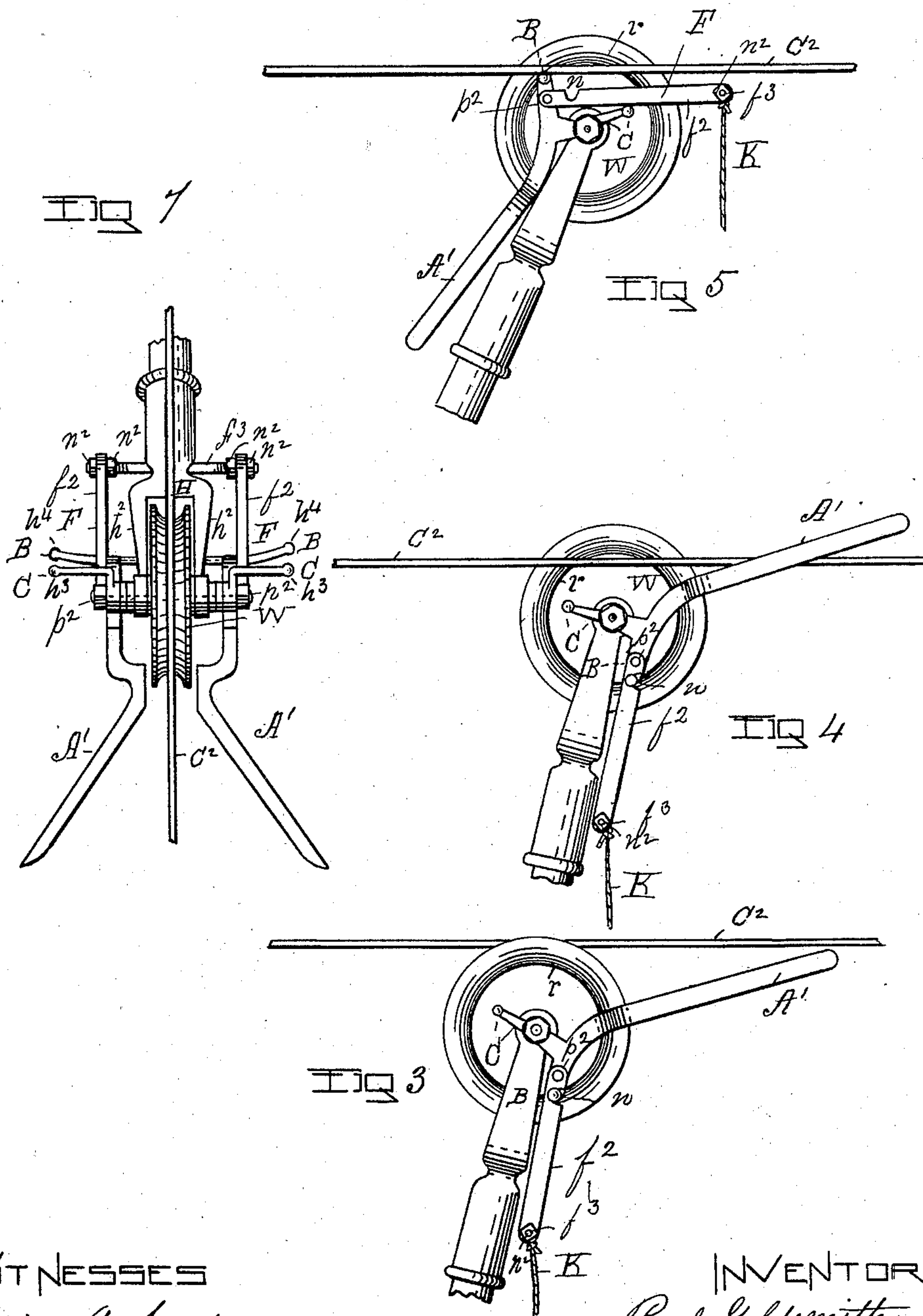
3 Sheets—Sheet 1.

P. GOLDSMITH.

TROLLEY FINDER FOR ELECTRICAL RAILROADS.

No. 591,251.

Patented Oct. 5, 1897.



WITNESSES

William A. Sweet

Charles S. Brintnell

INVENTOR

Paul Goldsmith

by W. E. Hagan atty

(No Model.)

3 Sheets—Sheet 2.

P. GOLDSMITH.
TROLLEY FINDER FOR ELECTRICAL RAILROADS.

No. 591,251.

Patented Oct. 5, 1897.

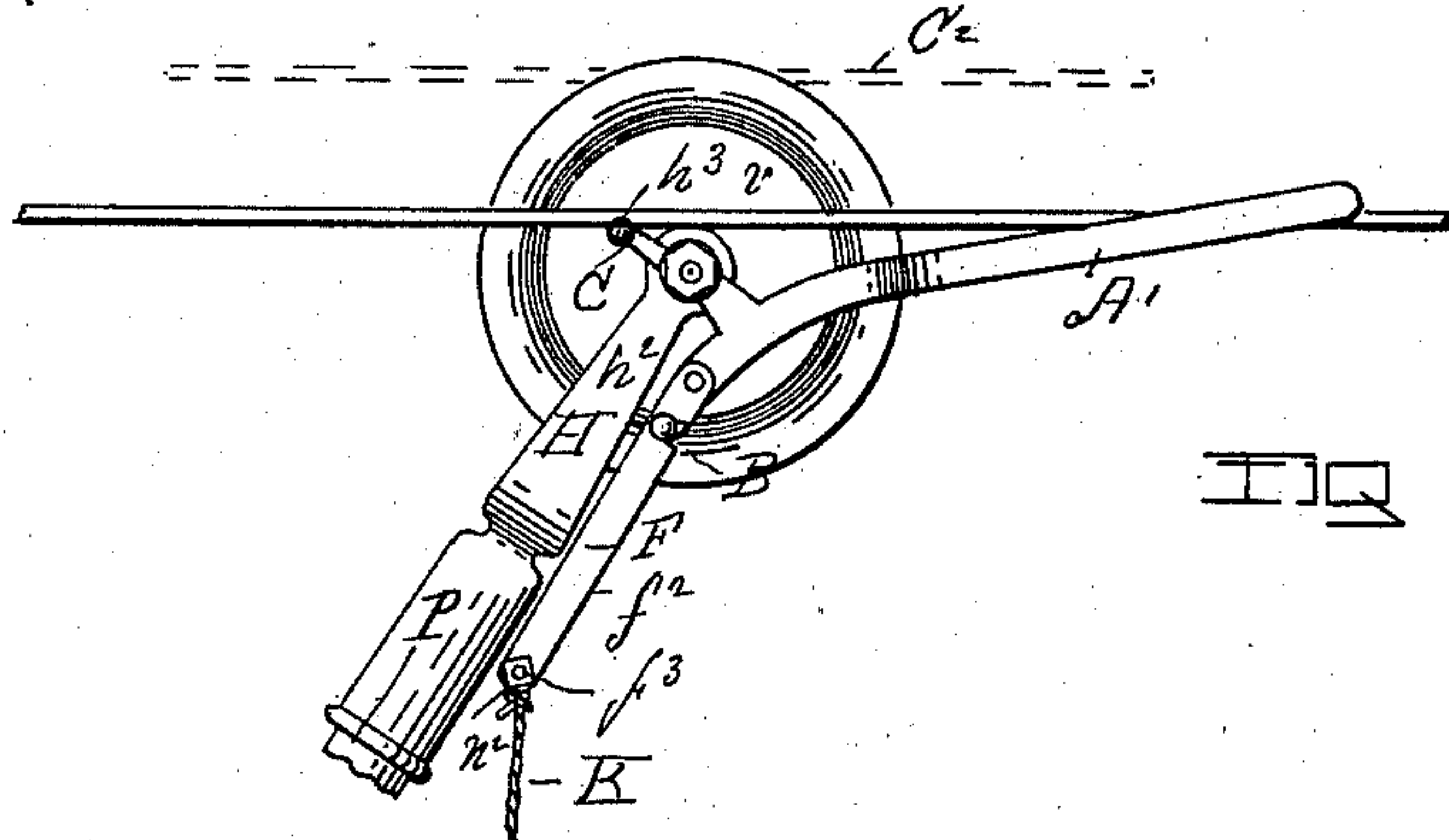


Fig 6

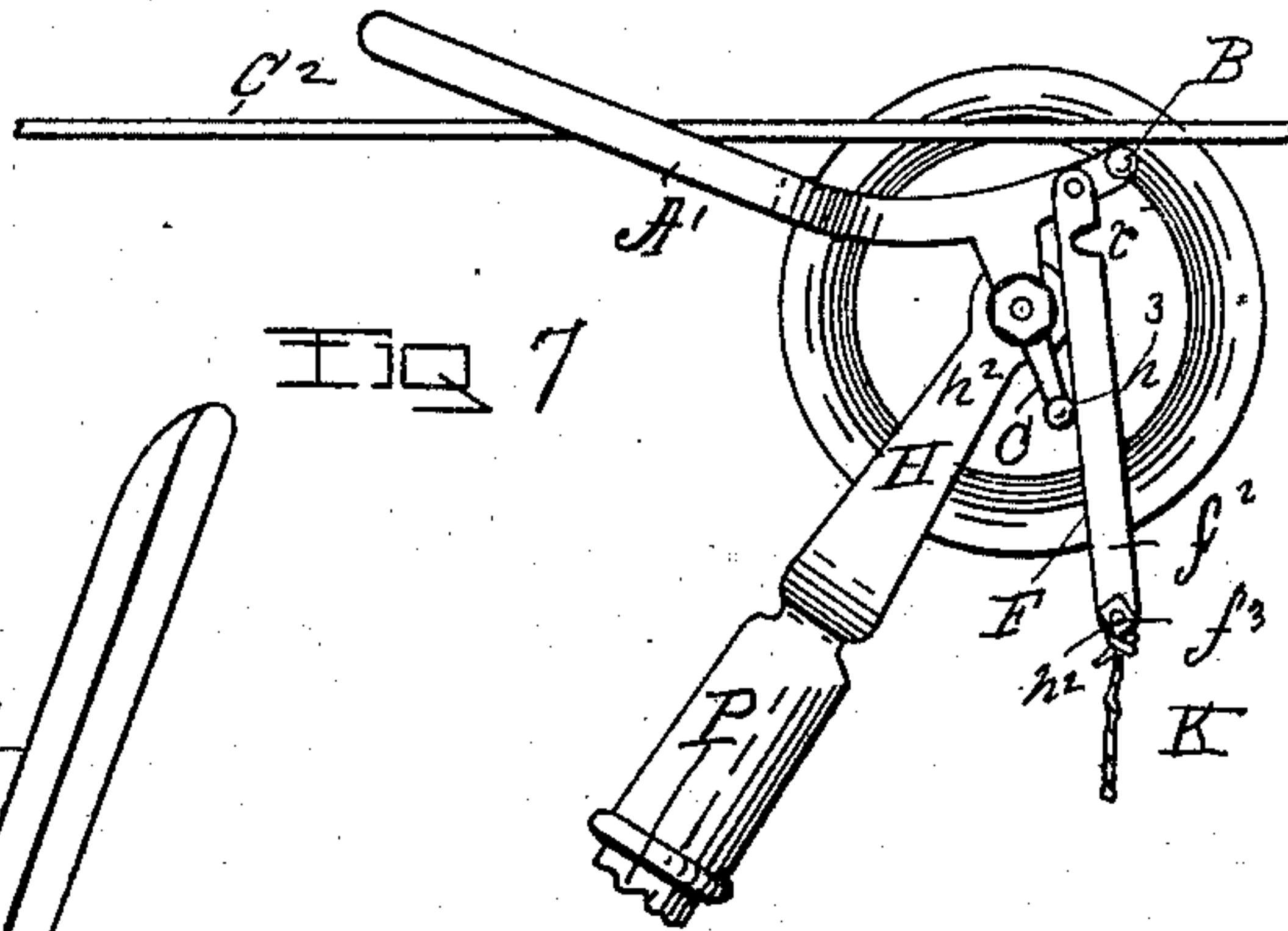


Fig 7

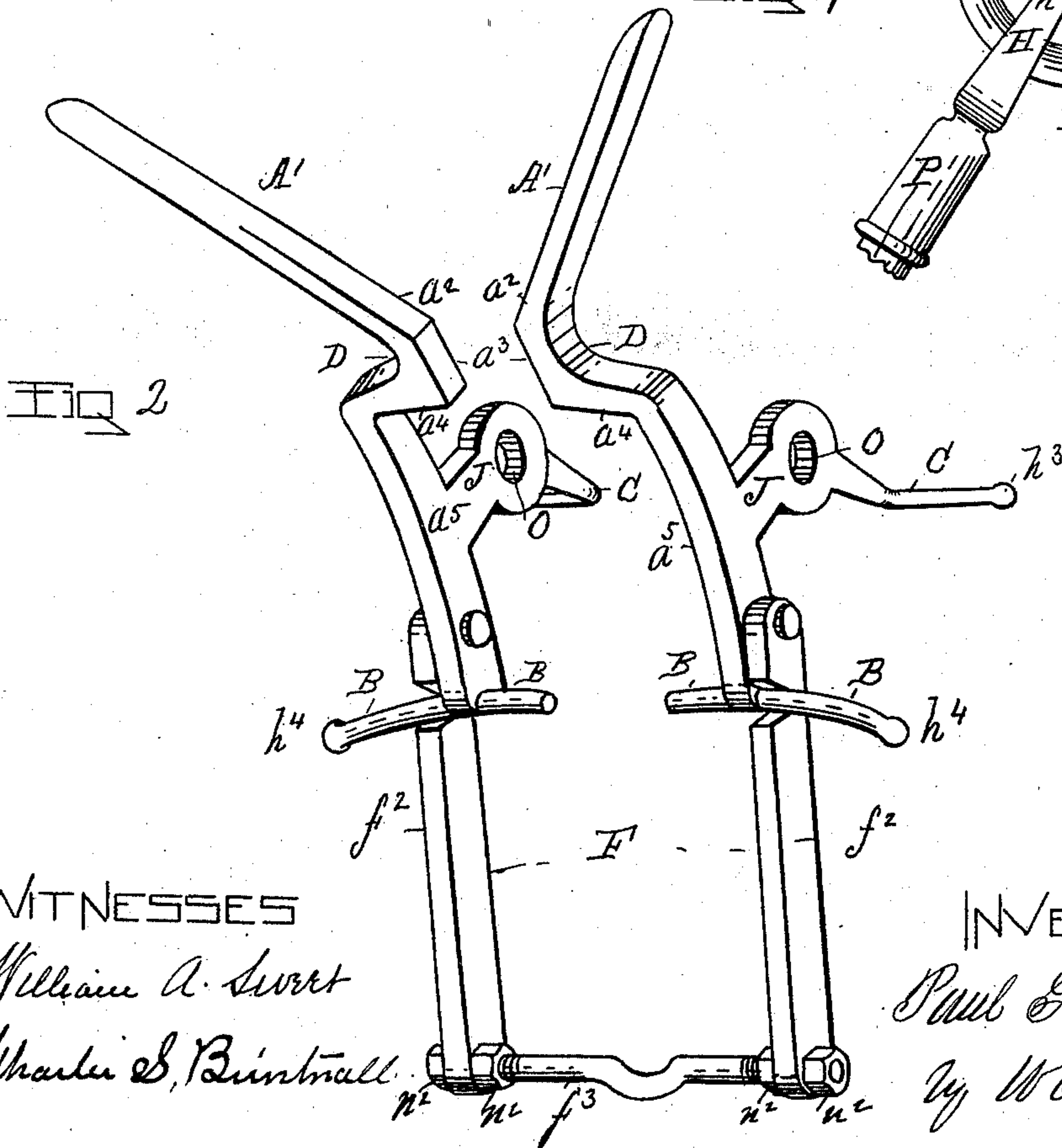


Fig 2

WITNESSES

William A. Sweet

Charles S. Brintall

INVENTOR

Paul Goldsmith

By W. C. Hagan
att'y

(No Model.)

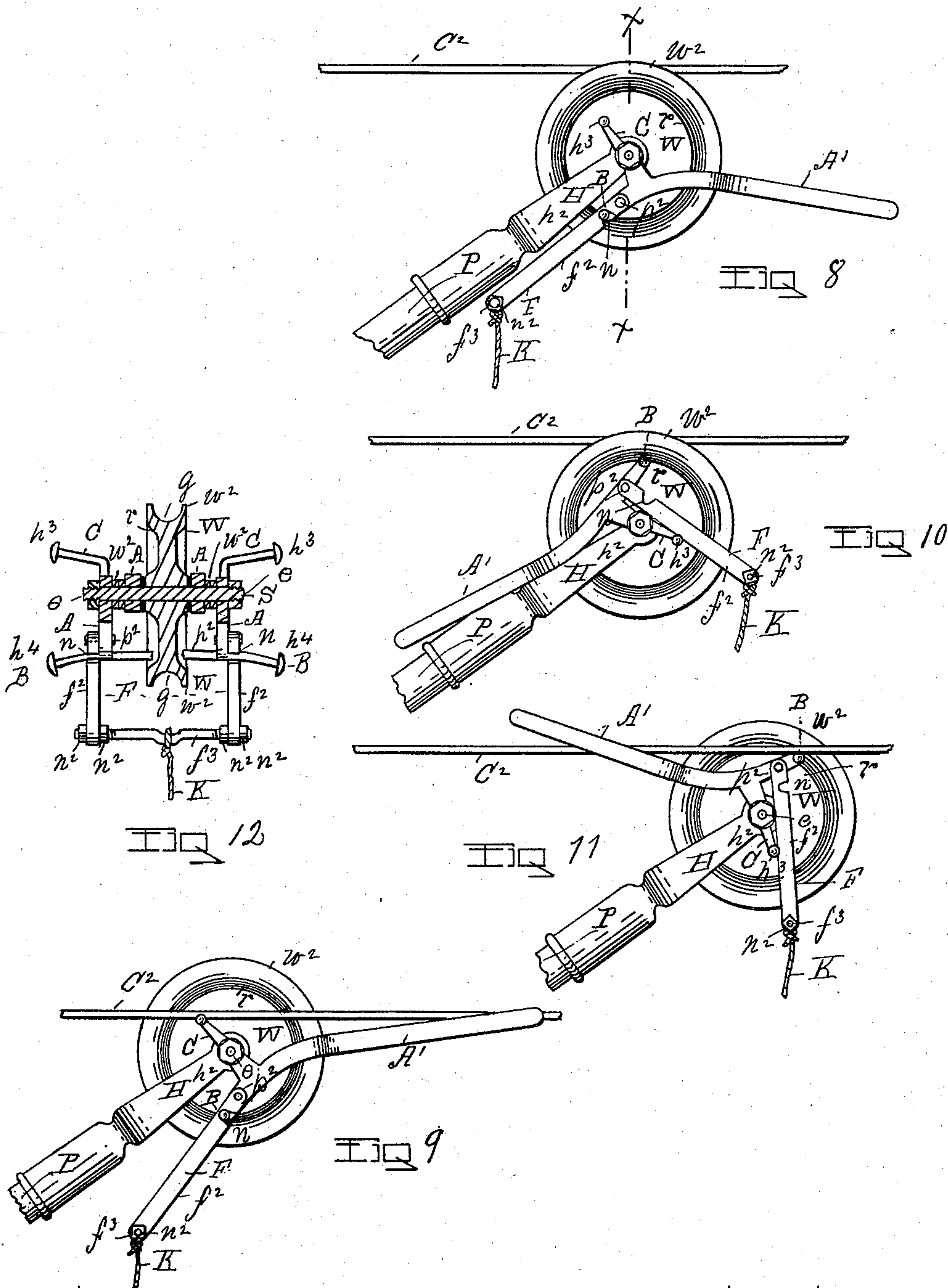
3 Sheets—Sheet 3.

P. GOLDSMITH.

TROLLEY FINDER FOR ELECTRICAL RAILROADS.

No. 591,251.

Patented Oct. 5, 1897.



WITNESSES
William A. Sweet
Abner S. Brintnall

INVENTOR
Paul Goldsmith
By W. E. Hogan
att'y

UNITED STATES PATENT OFFICE.

PAUL GOLDSMITH, OF TROY, NEW YORK.

TROLLEY-FINDER FOR ELECTRICAL RAILROADS.

SPECIFICATION forming part of Letters Patent No. 591,251, dated October 5, 1897.

Application filed February 10, 1897. Serial No. 622,804. (No model.)

To all whom it may concern:

Be it known that I, PAUL GOLDSMITH, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Trolley-Finders for Electrical Railroads, of which the following is a specification.

My invention relates to that class of devices which are used to return the electric-circuit wires of trolley-actuated cars to the trolley-wheels when they have been caused to leave the latter by the movement of the cars to which they are connected.

My improvements upon this class of apparatus more particularly relate to a construction whereby the trolley-finder may be used in connection with a trolley-pole slightly inclined from a perpendicular and to one but slightly inclined upwardly from a horizontal position, as when used to pass over covered bridges; and it also relates to such a construction as will allow the car to be backed on curves without having the finder catch into and pull down the guard or brace wires of the circuit-wire; and my improvements also relate to certain other features of construction, whereby devices of this class are better adapted to the uses for which they are designed, which will be more fully set forth hereinafter, and explained in connection with their illustration.

Accompanying this specification to form a part of it there are three plates of drawings containing twelve figures illustrating my invention, with the same designation of parts by letter reference used in all of them.

Of the illustrations, Figure 1 is a top view of my improved trolley-finder, showing also a part of the trolley-pole with the circuit-wire illustrated as within the groove of the trolley-wheel. Fig. 2 is a perspective of the trolley-finder, shown as removed from the trolley-wheel shaft. Figs. 3, 4, and 5 show my trolley-finder as used in connection with a trolley-pole slightly inclined from a perpendicular; and Fig. 3 is a side elevation of the trolley with my improved trolley-finder attached and with the latter in a condition to catch the wire should it leave the wheel. Fig. 4 shows a side elevation of the same parts that are

shown at Fig. 3, but illustrated with the wire as having left the trolley-wheel and as resting on one of the finder-arms; and Fig. 5 also illustrates the same parts that are shown at Figs. 3 and 4, but with the finder having been reversed by being caught in a brace-wire by the backing up of the car on a curve. Figs. 6 and 7 illustrate my improved trolley-finder as used in connection with a trolley-pole that inclines more from a perpendicular than that illustrated in Figs. 3, 4, and 5; and Fig. 6 shows, by means of a dotted line, the circuit-wire as in position in the trolley-wheel groove, and in full lines as having left the trolley-wheel to rest on one of the finder-arms and in a position to be returned by pulling downwardly and outwardly on the finder. Fig. 7 is also a side elevation of the trolley apparatus, showing part of the pole with my finder attached thereto and with the wire as having left the wheel and the finder as having been reversed on its hinged connection by coming in contact with a circuit brace-wire by backing the car on a curve and with the trolley-finder in a position to return the wire to the wheel when pulled downwardly. Figs. 8, 9, 10, 11, and 12 show the same apparatus that is illustrated in the other figures, but with the trolley-pole but slightly inclined from a horizontal to adapt the car to pass under bridges or viaducts. Fig. 8 is a side elevation of the apparatus with the wire within the trolley-wheel groove. Fig. 9 shows the circuit-wire as having left the trolley-wheel and as resting on one of the finder-arms. Fig. 10 shows the finder as reversed on its hinged connection. Fig. 11 shows the same parts that are shown in the other figures, with the wire as having been caused to leave the trolley-wheel by the backing of the car on a curve and the engagement of the finder with a cross-brace wire by which the finder has been reversed and in a position to restore the wire to the trolley-groove by pulling it downwardly. Fig. 12 is a section taken on the line $x x$ of Fig. 8.

The several parts of the apparatus thus illustrated are designated by letter reference, and the function of the parts is described as follows:

The letter P designates the trolley-pole, which at its lower end is hinged to the car-top by a mechanism not shown, and at its upper end it is provided with a forked head H, the arms h^2 of which are projected upwardly, and between which arms, on a shaft S, passing through them, the trolley-wheel W, having the perimetral groove g , journals, all of which parts are of the usual and ordinary form, excepting the shaft S, which is made to pass through so as to extend beyond the sides of the head H for the attachment thereto of my improved trolley-finder. The trolley-finder proper consists of two outwardly-flaring arms A' A', which approach each other at their inner ends at a^2 , so as to inclose a V-form angle, with the perimeter of the wheel w^2 between them where thus approaching each other, and where thus approaching the wheel perimeter the inner ends of the arms A' are each formed with inside surfaces a^3 , parallel to the trolley-wheel sides, and at the inner ends of each of the inwardly-inclined arms A' where at each side of the wheel W they have their inside surfaces a^3 arranged to be parallel to the wheel sides, and at the inner end of these inside surfaces a^3 each of the arms A' are extended outwardly and laterally at a^4 and then downwardly at a^5 , so as to be parallel to the wheel sides and to each other, with the outer face of the arms A' and the outer face of the outward extension a^4 where connecting forming the curve D.

The letter J designates a bearing-arm, of which there is one projected from the side edge of each of the arms A' in parallel projection, and each of these bearing-arms is provided with a bearing-passage O, adapted to journal upon one of the ends e of the shaft S where passing beyond the sides h^2 of the head H.

The letter C designates a crank-form arm, projected from each of the bearing-arms J in parallel extension, and each of these crank-form arms is provided at its outer end with a head h^3 .

The letter B designates a bar, which is connected to each of the arms A' and adapted to pass through the lower end of the latter, so that where projecting inwardly it will extend far enough to be slightly under the edge of the rim r of the wheel W, and where extending outwardly beyond the arms A', with which it connects, to act as a latch-bar to connect the frame and arms, and to act as a guide-bar when the trolley-finder is reversed on its hinged connection, as will be more fully detailed hereinafter.

The letter h^4 designates heads formed on the ends of the bar B.

The letter F designates the frame of the trolley-finder, having the parallel sides $f^2 f^2$ and the bottom cross-bar f^3 . Each of these frame sides is pivoted at p^2 to the outer side face of the downward extension of one of the arms A' above the lower end of the latter.

Each of the frame parts f^2 is notched at n for the entrance of the bar B where extending outwardly beyond the lower end of the arm A', by which, when the trolley is operated without being reversed on its hinged connection with the frame, the latter and the arms A' move together.

The letters $w^2 w^2$ designate washers which are arranged upon the shaft S where projecting beyond the sides h^2 of the head H and the finder-arms A', and the function of these washers is to adapt the apparatus to use differing widths of trolley-wheels. The bottom f^3 of the frame F pivotally connects at each of its ends with the lower end of one of the frame sides between threaded nuts $n^2 n^2$, between which connection the lower ends of the arm A' may be moved outwardly and inwardly to narrow or widen out the frame.

As thus constructed the apparatus is operated as follows: With the circuit-wire C^2 within the trolley-wheel groove g and the car moving frontwardly with the trolley-pole nearly vertical, as shown at Fig. 3, and the wire leaves the trolley-wheel, the circuit-wire will rest on one of the arms A' of the finder, as shown at Fig. 4, and by pulling downwardly and rearwardly on the rope K the displaced wire will slide along downwardly on the arm A', with which it is in contact, into the groove g of the wheel W as the arm is caused to assume the position shown at Fig. 3. When the car is being backed on a curve with the pole slightly inclined from a perpendicular and with the arms A', either one or both, coming in contact with a cross-brace wire, the arms A' by such engagement will on their pivoted connection with the frame at p^2 be turned over and down, with the frame part raised to rest on the crank-form bar C, and the wire, if displaced from the groove, will rest on the bar B, with the parts appearing as shown at Fig. 5. When the trolley-finder is in this position and the rope R is operated to pull down the frame which causes the frame part and the arms A' to interlock, one of the arms will catch the wire on leaving the bar B, and the arm A', with which the wire is in contact, will slide along on its interior edge to reach the trolley-wheel groove, with the parts appearing as shown at Fig. 3.

When my improved trolley-finder is used upon a pole having an incline of about forty-five degrees, as shown at Figs. 6 and 7, and the wire leaves the trolley from the position shown by the dotted line of Fig. 6 to assume the position shown by the full lines of said Fig. 6, as resting on the crank-form arm C, by pulling downwardly and rearwardly on the rope K the wire will be returned to the trolley by the upward movement of the arm A', with which the wire engages. When the trolley-finder is caught by a cross-wire by the backing up of the car upon a curve and the wire leaves the wheel, the finder will be reversed on its hinged connection with the

frame at p^2 , with the wire resting on the bar B and the frame on the crank-form arm C. When the rope is pulled downwardly, it causes the frame and the arms A' to interlock, and the arm A', with which the wire is in contact, as the arm moves upwardly, will cause the wire to return to the position shown by the dotted line at Fig. 6.

When the trolley-pole has to be depressed to less incline from a horizontal position than as shown at Figs. 3, 4, 5, 6, and 7 to allow the car to pass under viaducts or the overhead timbers of bridges, as shown at Figs. 8, 9, 10, and 11, the finder operates as follows: When the wire leaves the wheel from the position shown at Fig. 8, it assumes the position shown at Fig. 9 as resting on the crank-form arm C, and in which position when the rope K is pulled upon the finder-arm A' as it rises lifts the wire from off the crank-arm and transfers it back to the position shown at Fig. 8. When the car backs up on a curve and the arms A' are caught by a cross-brace wire, the arms are reversed on their hinged connection to the frame at p^2 , with the parts appearing as shown at Fig. 10, and if the wire has left the trolley-wheel, as shown at Fig. 11, it rests on the bar B with the finder being operated to raise the wire from off the bar B to transfer it from the latter to the groove g as the upward movement of the arm A', with which the wire is in contact, is continued.

As the trolley-finder parts are all made of metal, the circuit is not broken by the transfer of the wire from the wheel to the bar B, crank-form arm C, or the finder-arms A'.

Thus constructed my improved trolley-finder is adapted to a varied condition as to inclination of the trolley-pole, and whether the car is moving forward or backward or passing a curve, or in backing up on the latter, when the wire leaves the wheel the finder can be operated to return it to the wheel, and when leaving the trolley-wheel the circuit is not broken.

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

1. In a trolley-finder the combination with two outwardly-flaring arms arranged to approach each other, and the trolley-wheel in close proximity to the rim of the latter at its top, and each journaled onto the trolley-wheel shaft where projecting beyond the wheel; of a frame part which at each of its two upper ends is hinged to the lower end of one of the trolley-finder arms, with the latter and said frame part constructed to lock and to be reversed on their hinged connection with the frame, substantially in the manner as and for the purposes set forth.

2. In a trolley-finder the combination with two outwardly-flaring side arms, which at their inner ends approach each other to be in close proximity to the rim of the trolley-wheel at its top, and each provided with a journaled

connection with the shaft of the wheel, where projecting beyond the latter, and each of said arms having at its lower end an outwardly and inwardly laterally-projecting bar; of a frame having each of its sides at its upper ends hinged to the lower end of one of said arms so as to lap past the latter, and each of said frame sides provided with a notch in its rear edge, whereby the bars of said arms are adapted to enter said notches to interlock the frame parts and arms, and to unlock when the frame parts and arms are reversed on their hinged connection, substantially as and for the purposes set forth.

3. In a trolley-finder, the combination with a trolley-wheel, mounted on a pole to turn therein, on a shaft provided with bearings and arranged to pass through, and beyond the wheel at each side thereof; of two outwardly-flaring arms which at their inner ends approach each other so as to be in close proximity to the trolley-wheel rim at the top of the latter, and journaled onto said shaft where projecting beyond the wheel at each side thereof, and each of said arms provided with a laterally and outwardly extended bar at its lower end; a frame part having each of its sides hinged to one of said arms near its lower end so as to lap past the latter, and each made with a notch in its rear edge, by which notch in the frame and bar on the arms, the latter and the frame may interlock, and on which hinged connection the arms may reverse, substantially as and for the purposes set forth.

4. In a trolley-finder the combination with a trolley-wheel mounted upon the upper end of a pole, and provided with a shaft on which to turn, with said shaft constructed to pass beyond the wheel at each side thereof; of two outwardly-flaring arms which at their inner ends are in close proximity to the rim-top of the trolley-wheel, and each journaled onto one of the projecting ends of said shaft, and each of said arms provided with a crank-form arm projected from its side where journaled to the shaft, with an outwardly and inwardly laterally-projecting bar, at its lower end; and a frame having each of its sides at its upper end hinged to one of the arms, near its lower end, so as to lap past the latter, and each of said frame sides notched at its rear edge by which said arms and frame part may lock and unlock to reverse, substantially as and for the purposes set forth.

5. The combination with the wheel W, mounted in the upper end of the pole P, upon the shaft S, with the latter at its ends projecting beyond the wheel; of the outwardly-flaring frame parts A', A', each having the straight sides a^3 , outwardly extended at a^4 , and then downwardly extended at a^5 , to form exteriorly the curve D, and each provided with the bar B, at its lower end, and the bearing-arm J, with the crank-form arm C, projected therefrom; and the frame F, having

each of its sides f^2 , hinged at p^2 , to the lower
end of one of the arms A' , to lap past the lat-
ter, and each of said frame parts made with
a notch n , constructed and arranged to oper-
5 ate, substantially in the manner as and for
the purposes set forth.

Signed at Troy, New York, this 21st day of

January, 1897, and in the presence of the two
witnesses whose names are hereto written.

PAUL GOLDSMITH.

Witnesses:

CHARLES S. BRINTNALL,
W. E. HAGAN.