

(Model.)

W. R. CLARKSON.

RATCHET MECHANISM FOR BIT BRACES, SCREW DRIVERS, &c.

No. 315,000.

Patented Apr. 7, 1885.

FIG. 1.

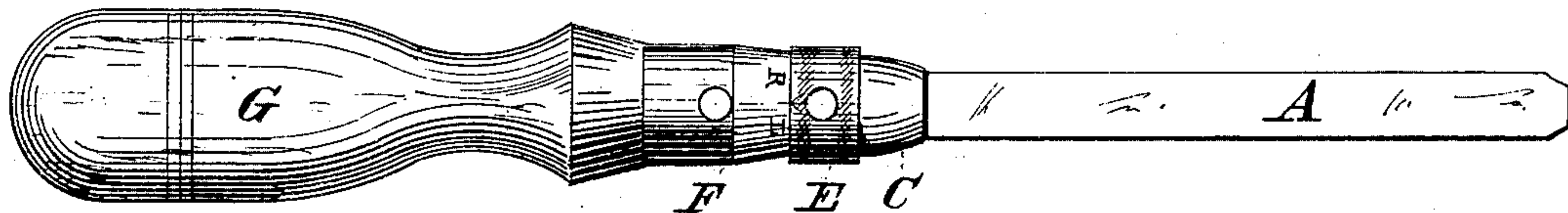


FIG. 3.

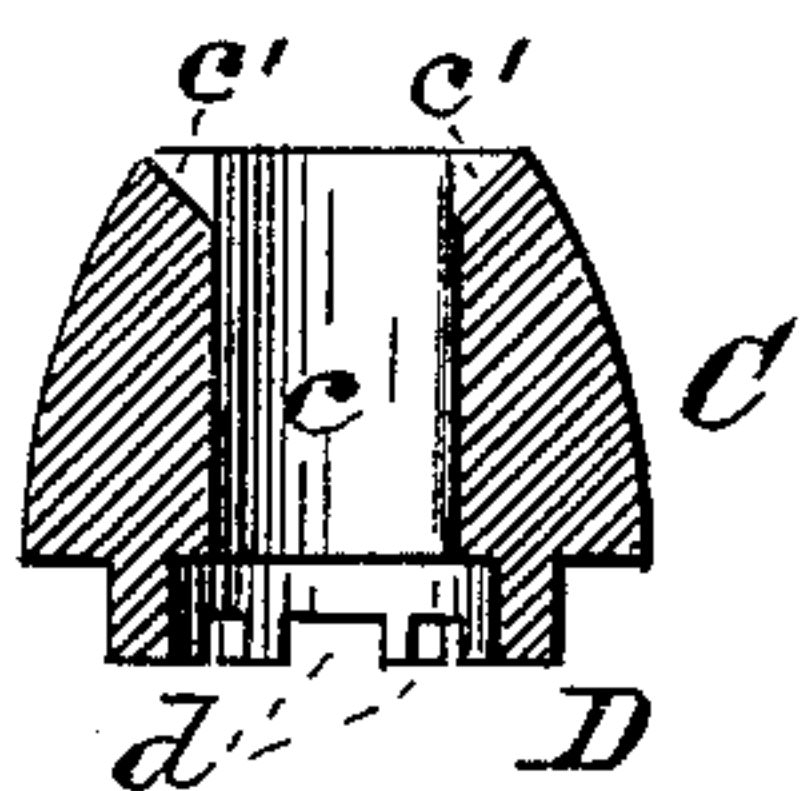


FIG. 4.

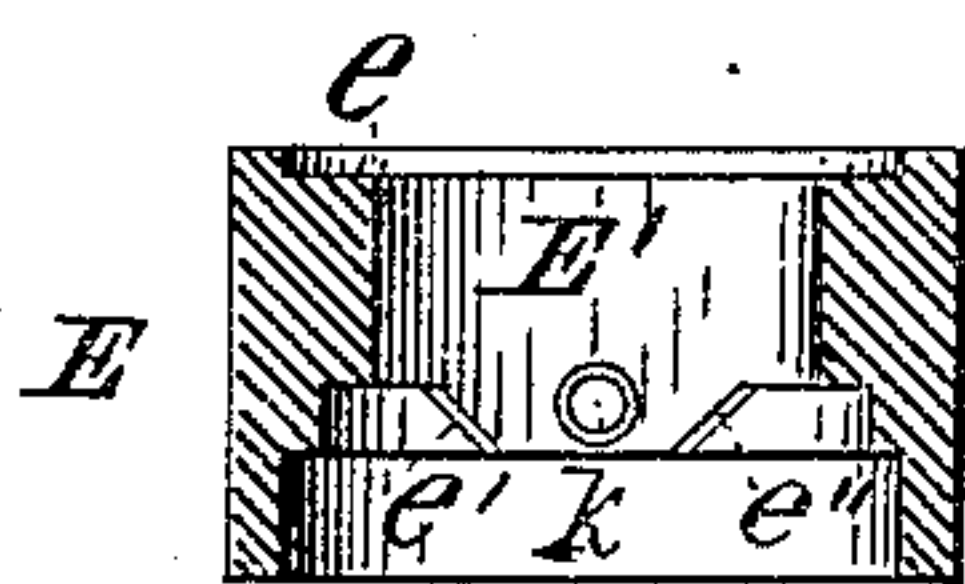
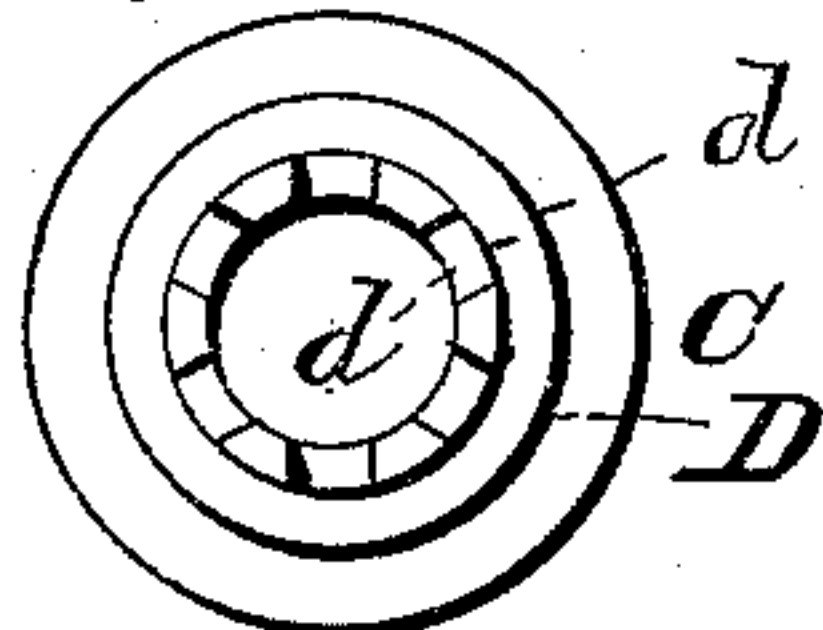


FIG. 5.

FIG. 6.

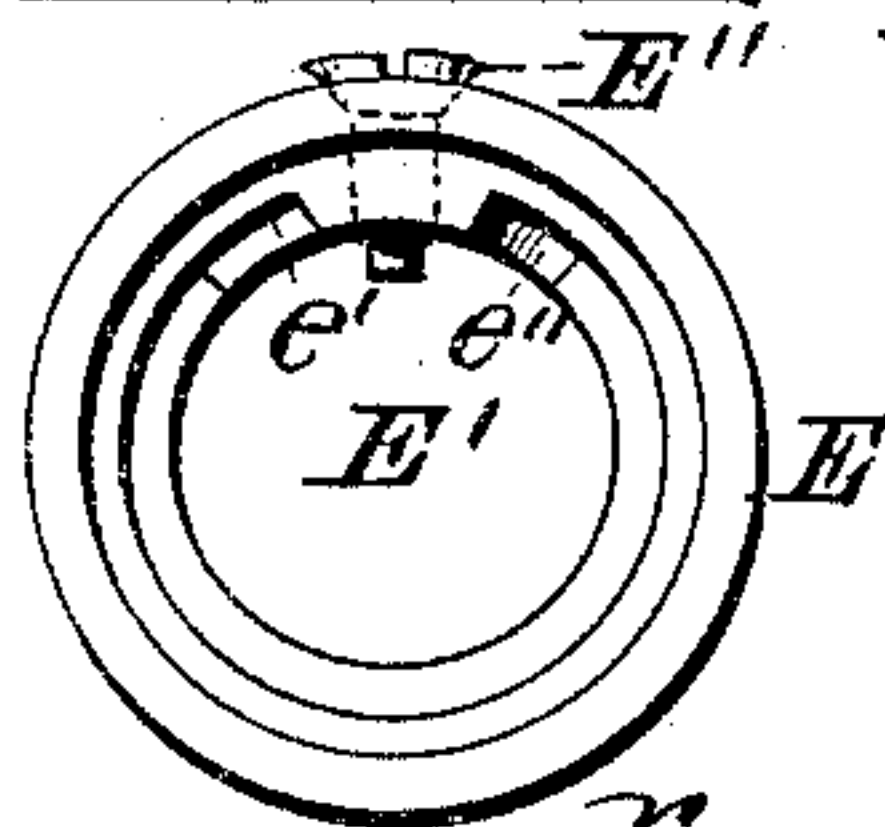
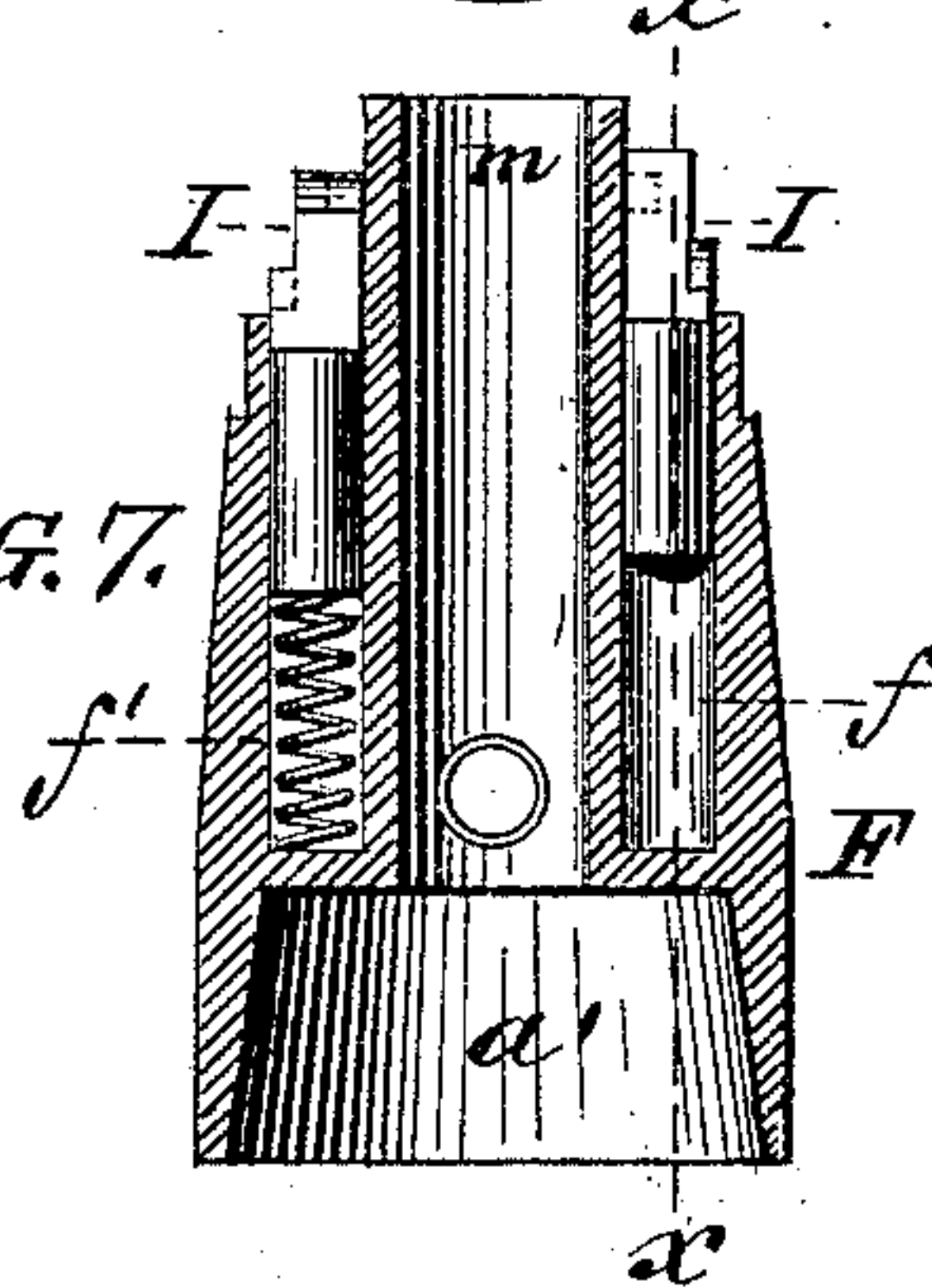


FIG. 7.



Witnesses:

At. Stark  
Willie O. Stark

FIG. 2.

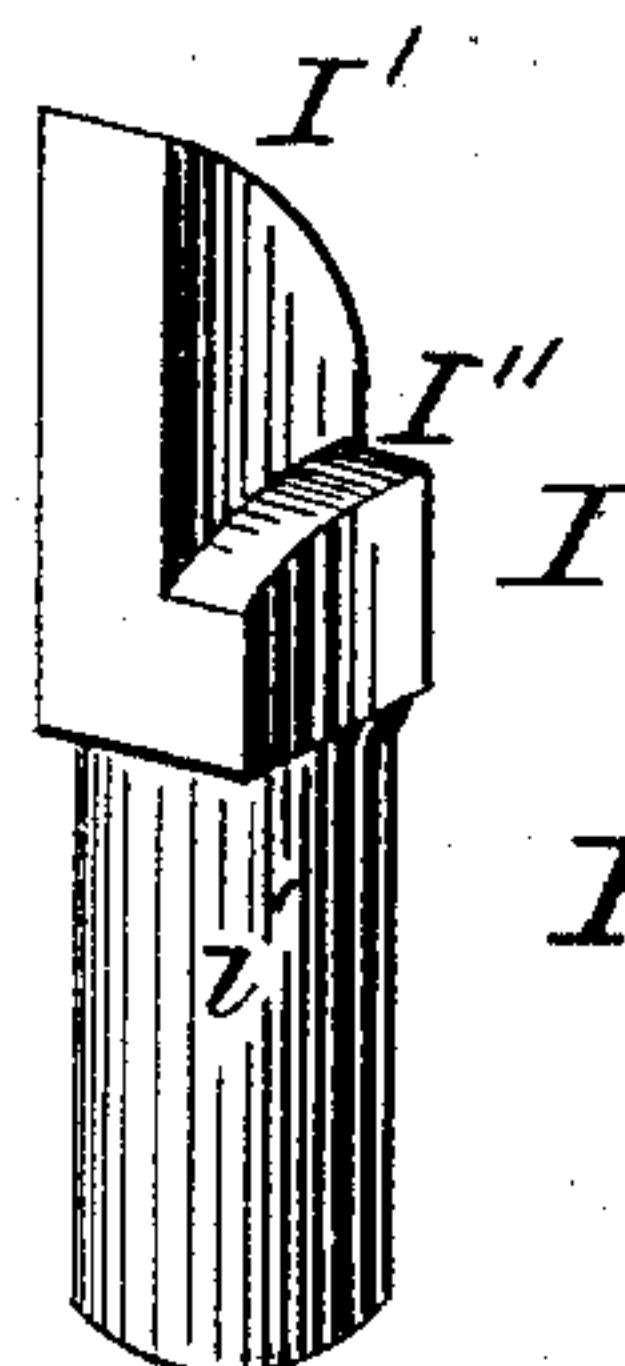
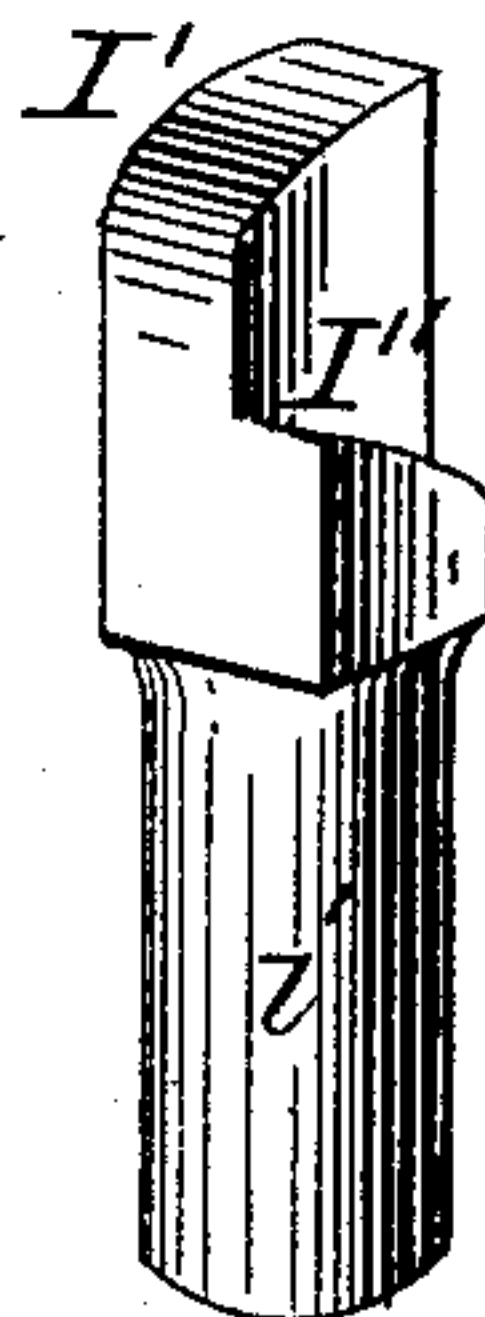
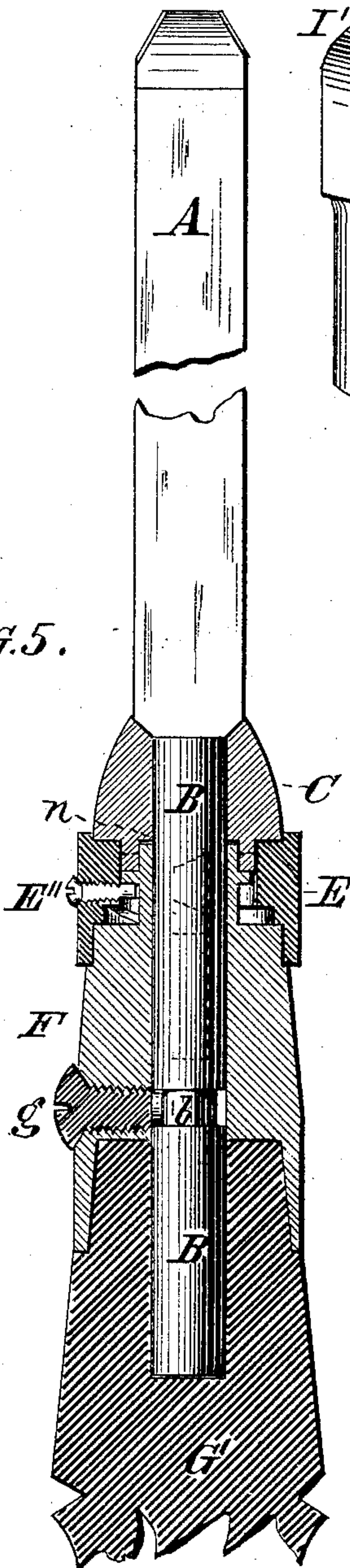


FIG. 10.

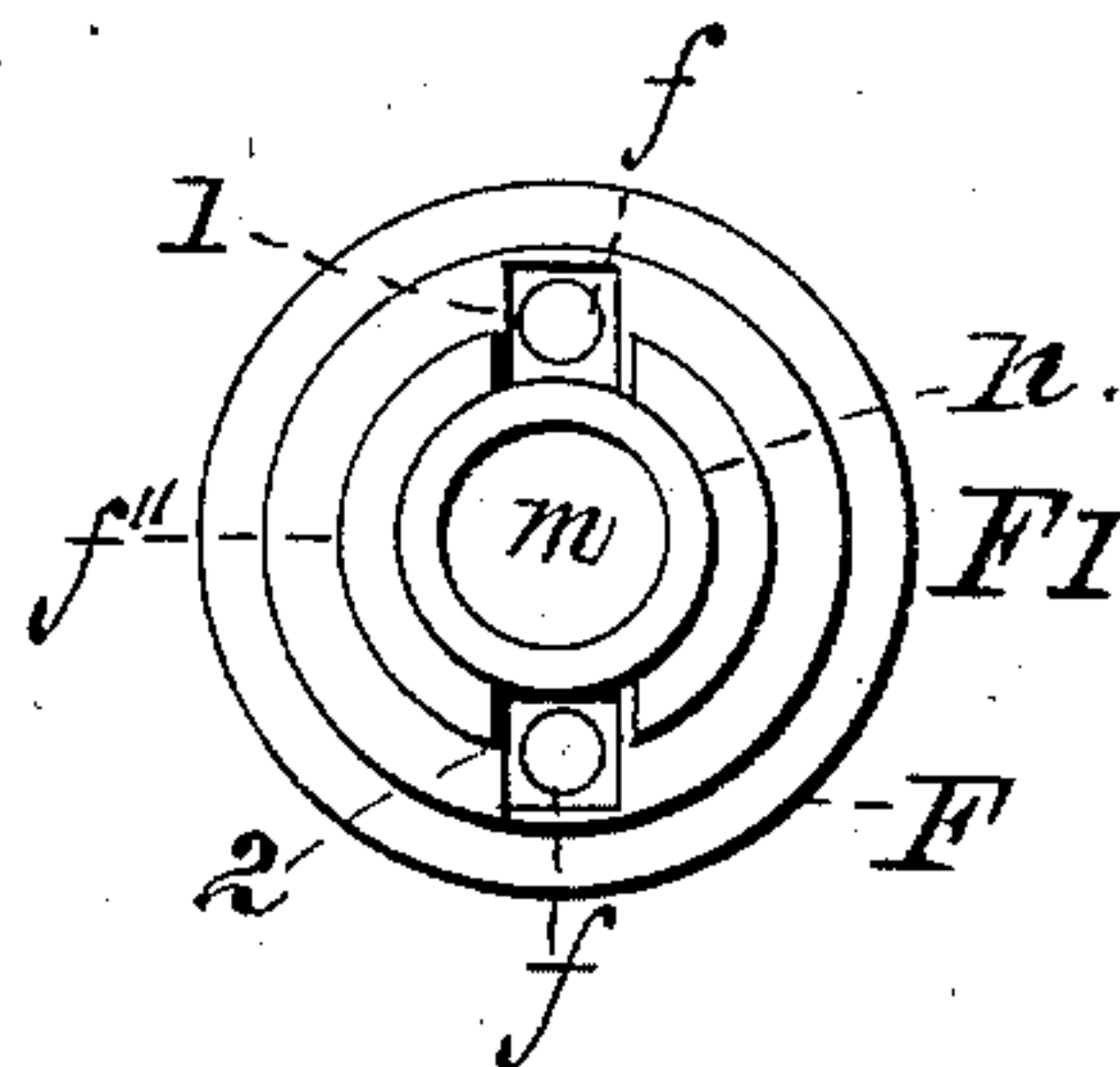


FIG. 9.

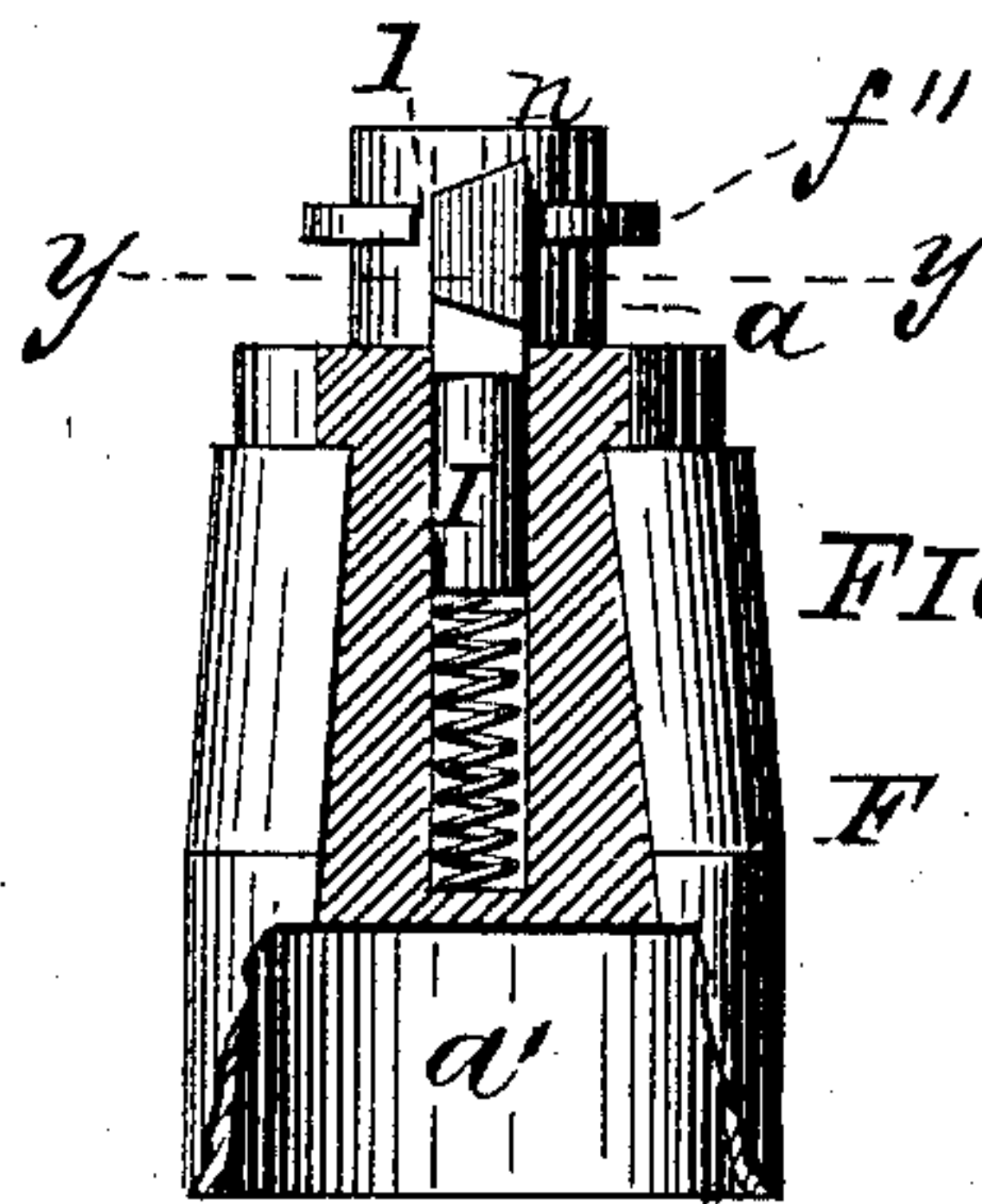


FIG. 8.

Inventor:

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# UNITED STATES PATENT OFFICE.

WILLIAM R. CLARKSON, OF BUFFALO, NEW YORK.

## RATCHET MECHANISM FOR BIT-BRACES, SCREW-DRIVERS, &c.

SPECIFICATION forming part of Letters Patent No. 315,000, dated April 7, 1885.

Application filed November 5, 1884. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM R. CLARKSON, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements on Ratchet Mechanism for Bit-Braces, Screw-Drivers, &c.; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

My present invention has general reference to improvements in ratchet mechanism for screw-drivers, bit-braces, ratchet-drills, and similar instruments and implements; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings already mentioned, which serve to illustrate my said invention more fully, Figure 1 is a plan of my improved ratchet mechanism as applied to a screw-driver. Fig. 2 is a longitudinal sectional elevation of the same on an enlarged scale. Fig. 3 is a longitudinal sectional elevation of the ratchet-collar detached. Fig. 4 is a plan of the same. Fig. 5 is a sectional elevation of the cam-sleeve detached. Fig. 6 is a plan of the same. Fig. 7 is a sectional elevation of the stock detached, and Fig. 8 is a similar view in line *xx* of Fig. 7. Fig. 9 is a plan of the stock, and Fig. 10 is a perspective view of the two dogs or pawls detached.

Like parts are designated by corresponding letters of reference in all the figures.

The object of my present invention is the production of simple mechanism for actuating ratchet-drills, bit-braces, screw-drivers, and analogous implements requiring the conversion of a vibratory motion into an intermittently-acting motion in one direction. To attain this object I construct the tool A (being in the present instance a screw-driver, but may also be a tool-holder of some improved construction) with a cylindrical shank, B, said tool being secured in a ratchet-collar or sleeve, C, in any desirable manner. When applied to a screw-driver, I provide in said sleeve notches *c' c'*, Fig. 3, into which the said screw-driver fits with its flat sides, as shown in Fig. 2.

On the under side of the ratchet-sleeve C, I provide an annular projection, D, and provide said projection with a series of notches, *d*, forming the ratchet proper. This sleeve fits the shank B nicely, and it rests upon the stock F at *n*, Figs. 8 and 9. This stock has a suitable distance below its edge *n* a collar, *f''*, provided with two notches, 1 2, respectively, and in its body two recesses, *f f*, Fig. 9, into which are placed the dogs I. (Shown in Fig. 10.) These dogs consist each of a cylindrical shank, *i*, an angular portion having a cam, *I'*, and the upper beveled edge, *I'*, said dogs being made right and left for obvious reasons. The angular portion of the dogs fits the notches 1 2 in the collar *f''*, while the cylindrical part fits the recess *f*, a coil-spring, *f'*, Figs. 7 and 8, being located in said recess below the dog to keep the same up projecting above the face of the collar *f''*.

Surrounding the collar *f''* is a sleeve, E, Fig. 5, having in its upper face a recess, *e*, fitting the sleeve C, and in its interior core, *E'*, (fitting the collar *f''* mentioned,) a double incline, *e' e''*, said double incline serving as a shifter for the dogs in the following manner: When in a normal position—that is to say, held up by the springs *f'*—the dogs I project with the portion *I'* above the collar *f''* on the stock and engage one or the other of the oppositely-located notches *d* in the ratchet-sleeve C. If now the sleeve D be revolved until one of the inclines *e' e''* comes in contact with the incline *I'* on the dog I, such incline will cause the respective dog to be pushed down below the face of the collar *f''*, thereby leaving the opposite dog only in contact with the ratchet D. Revolving the handle G, to which the stock F is attached in any desirable manner, in one direction causes the projecting dog to move the ratchet-sleeve along while turning it in an opposite direction. The incline *I'* on the dog causes the latter to move down, thereby producing the intermittent rotary motion of the screw-driver.

The operation of the ratchet-wheel as well as the cam-sleeve E being understood, I now call attention to the set-screw *E''* in the cam-sleeve E. This set-screw enters the groove *a*, Fig. 8, in the stock, and thereby limits the movement of the sleeve E to not fully one-half of a full turn, the point of said screw coming in



contact with either one or the other of the two dogs. This set-screw is so located that when midway between the two dogs the cam  $k$  (being composed of the double inclines  $e' e''$ ) is also midway between the two dogs, or coinciding with a central mark, as shown in Fig. 1. By now moving the sleeve E toward the letter L (left) in said Fig. 1 the corresponding dog will be depressed so as to cause the rotation of the tool A in the direction from right to left only, while moving it (said sleeve E) toward the letter R (right) produces a contrary result, it being always understood that when at the central mark both dogs are "up," and hence lock the ratchet to the stock.

In the shank B there is a groove,  $b$ , into which the point of a set-screw,  $g$ , engages to prevent the withdrawal of the tool A from the stock F in an obvious manner.

It will be readily observed that the mechanism heretofore described is extremely simple, and yet as positive in its action as any ratchet mechanism with which I am acquainted.

Having thus fully described my invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. In ratchet screw-drivers, the combination, with the ferrule F, having recess  $a'$  for the reception of the handle  $G'$ , and central passage,  $m$ , for the passage of the shank B of the screw-driver, of the ratchet-sleeve C, having annular projection D on its under side provided with serrations or notches  $d$ , and two oppositely-operating dogs, I, said dogs being located within parallel recesses placed diametrically opposite each other and in a line coinciding with the center line of the aperture  $m$ , and within the ferrule F, as and for the object specified.

2. The combined ferrule and dog-case here-

inbefore described, consisting of an annular sleeve having in its lower end a recess for the reception of the operating-handle, centrally a passage for the reception of the screw-driver shank, and at diametrically opposite or nearly opposite points recesses  $f$  for the reception of the dogs, said recesses  $f$  being arranged parallel with the central line of the central aperture,  $m$ , and the upwardly-projecting portion  $n$ , provided with a collar,  $f''$ , having notches 1 2, as and for the object stated.

3. The combination, with the combined stock and ferrule F, having the dogs I, of the cam-sleeve E, having the double inclines  $e' e''$  within its interior passage, E', said dogs being located within recesses in the stock F, the axial line of which is parallel with the central aperture for the reception of the shank B of the screw-driver, and the sleeve E, constructed to surround the stock F, whereby the revolution of said sleeve causes the depression of either one of the said dogs, substantially in the manner as and for the object specified.

4. The dogs I, having the cylindrical shank  $i$ , angular portion with cam  $I''$  and incline I, said dogs being located within the stock F in recesses the axial line of which is parallel with the central line of the stock, in combination with a sleeve surrounding said stock and engaging projections on the dogs, whereby by revolving said sleeve the dogs are depressed substantially in the manner as and for the object specified.

In testimony that I claim the foregoing as my invention I have hereto set my hand in the presence of two subscribing witnesses.

W. R. CLARKSON.

Attest:

MICHAEL J. STARK,  
MINNIE HEIM.