

(No Model.)

G. MERDIAN.

AUGER.

No. 369,020.

Patented Aug. 30, 1887.

FIG. 1.

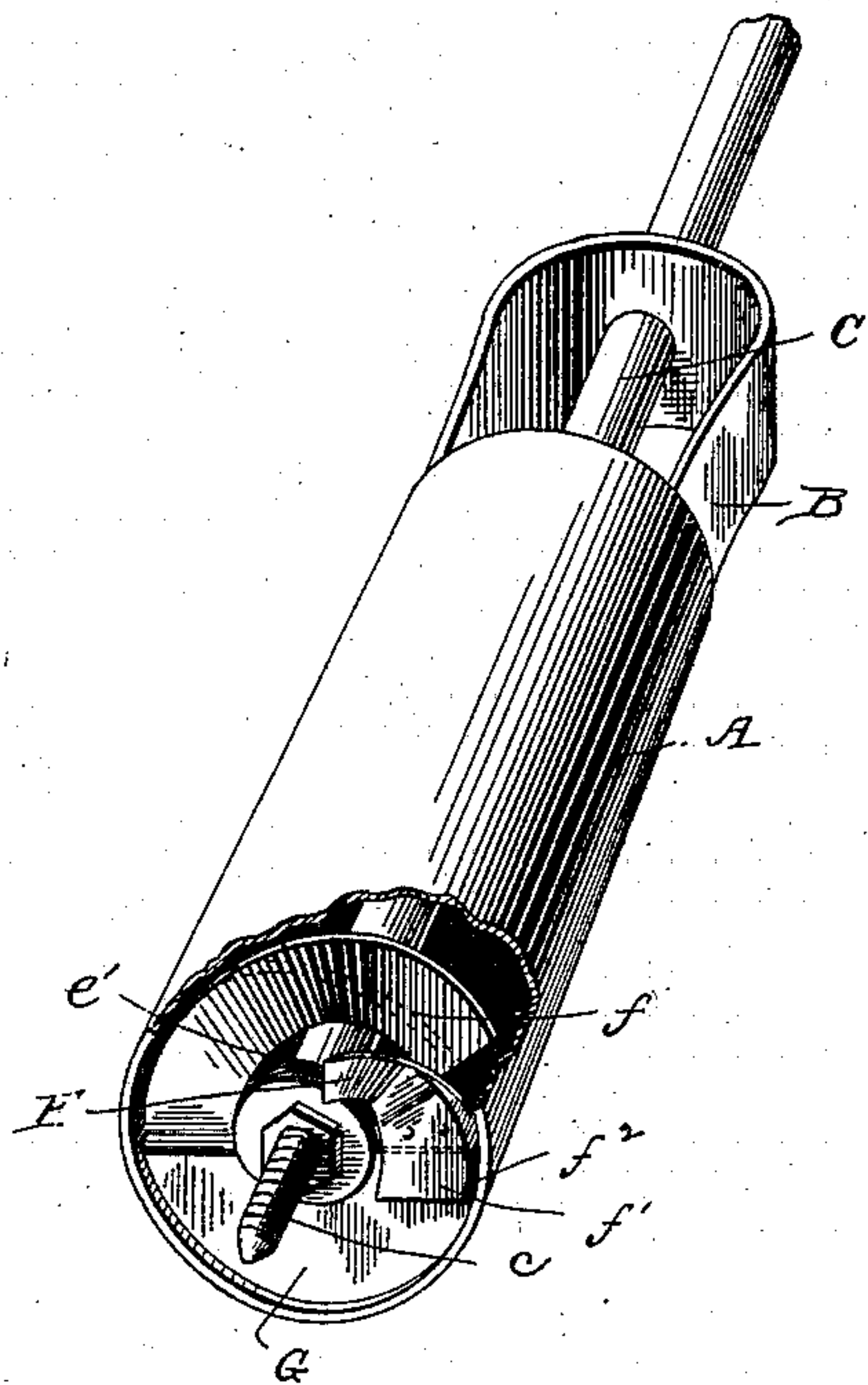


FIG. 2.

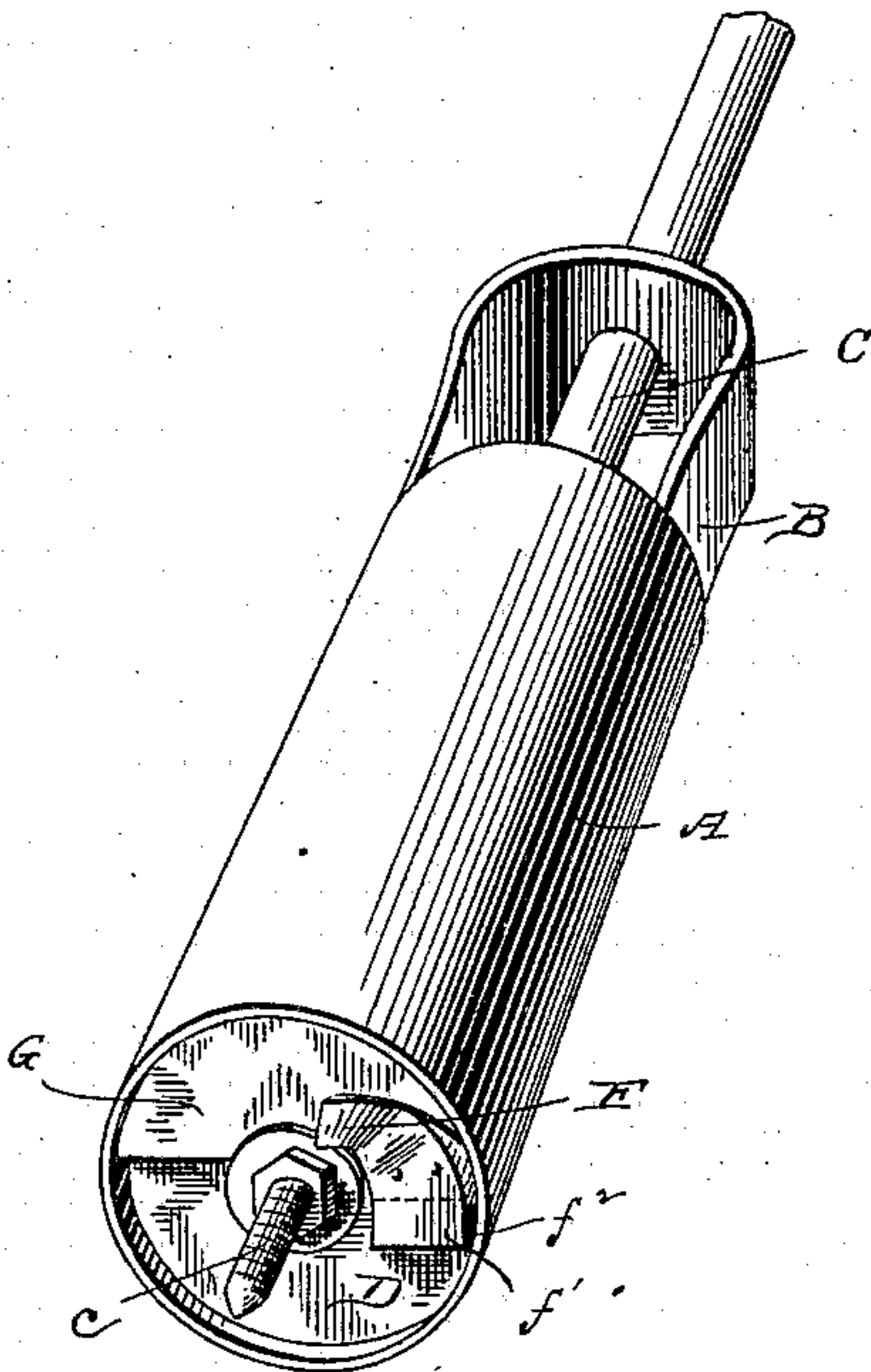


FIG. 3.

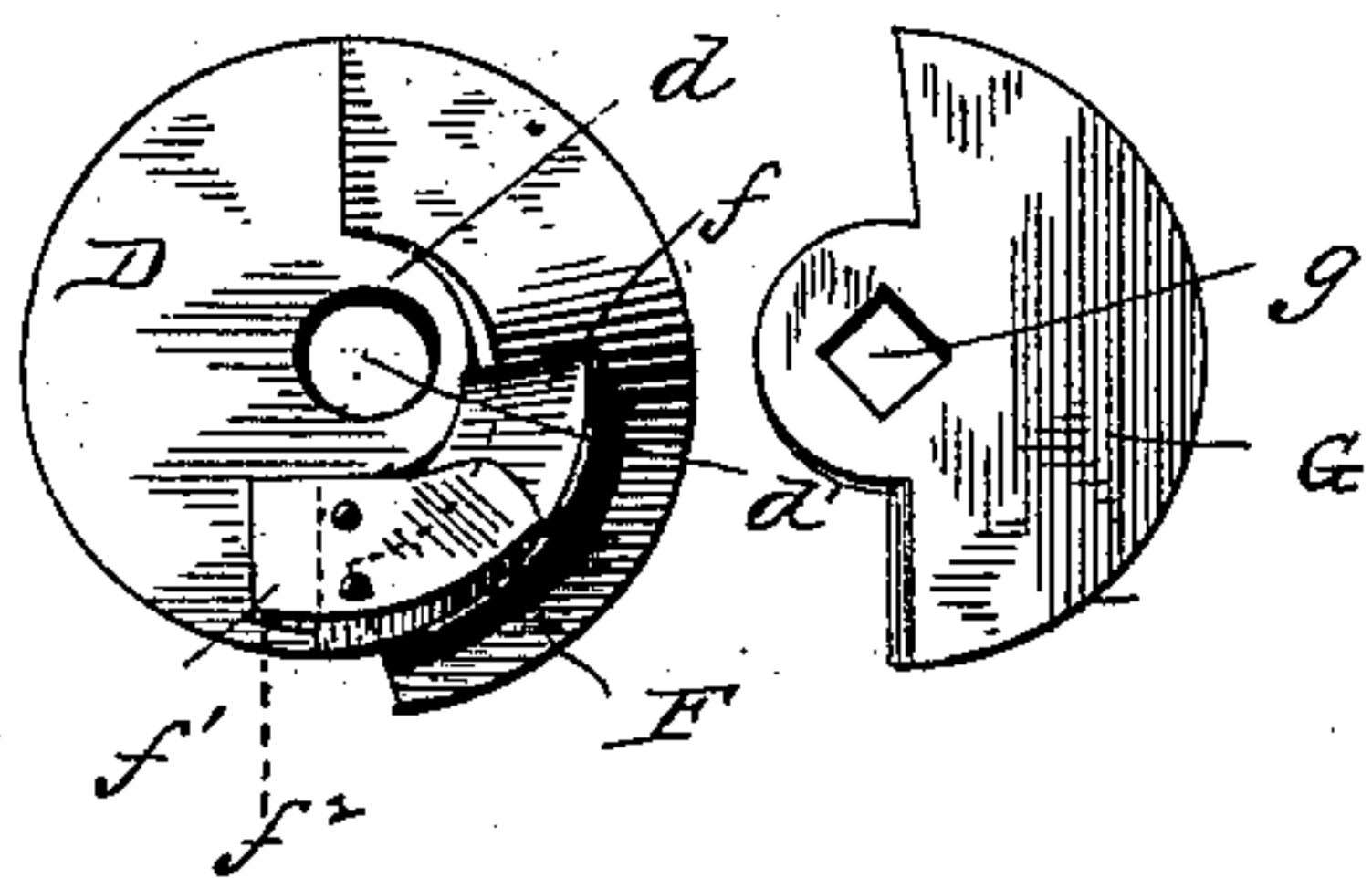
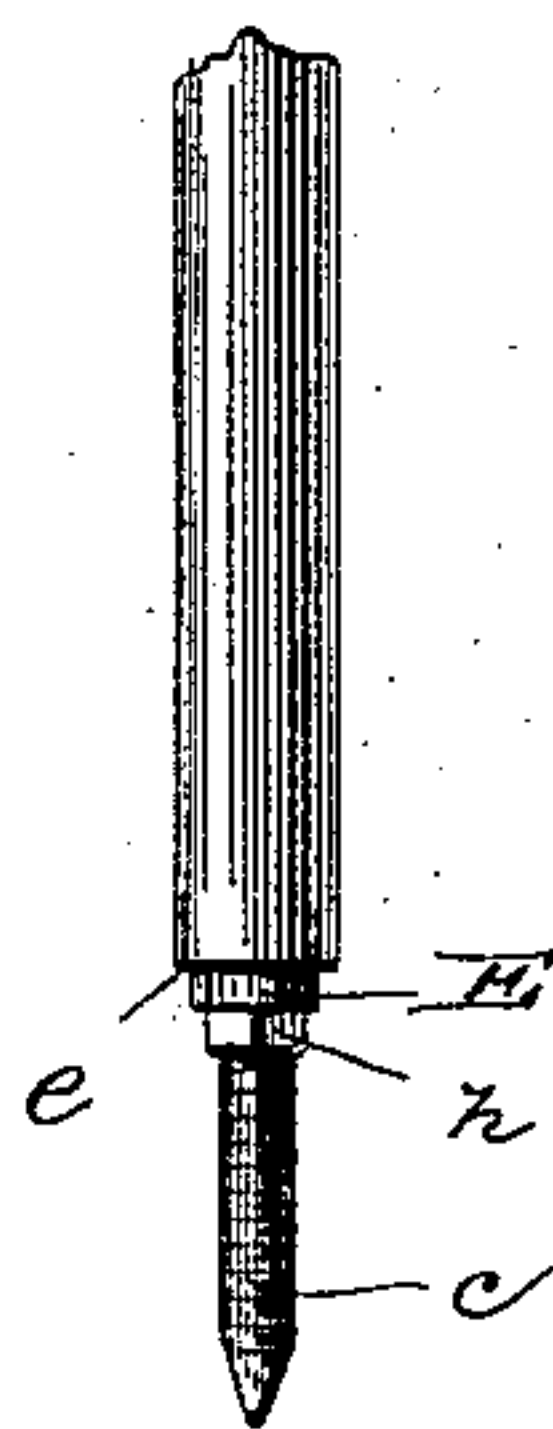


FIG. 4.



Witnesses:

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Inventor:

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By his Attorneys

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# UNITED STATES PATENT OFFICE.

GEORGE MERDIAN, OF VANCOUVER, WASHINGTON TERRITORY.

## AUGER.

SPECIFICATION forming part of Letters Patent No. 369,020, dated August 30, 1887.

Application filed December 10, 1886. Serial No. 221,171. (No model.)

### *To all whom it may concern:*

Be it known that I, GEORGE MERDIAN, a citizen of the United States, residing at Vancouver, in the county of Clarke and Territory of Washington, have invented certain new and useful Improvements in Augers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in earth-augers. Hitherto the trouble has been that when the material to be removed by the auger has been very wet or finely pulverized and slippery it has been liable to slide or sift back into the hole while the auger was being withdrawn, thereby necessitating the employment of another implement, a dip or the like, and causing a considerable waste of time and labor.

The object of my present invention is to provide a boring device which shall be well adapted to the removal of sand and other substances out of wells, for sinking wells, prospecting for ores, removal of pulverized rock from drill-holes, and for general use on the farm, and which shall be simple in construction, durable, effective, and inexpensive.

With these ends in view my invention consists in an auger provided near its bit with a cut-off plate adapted to open when the auger is turned to bore and close when the auger is turned in the reverse direction.

My invention further consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an end perspective view showing the parts in position for boring, the casing being partially broken away. Fig. 2 is a similar view showing the cut-off closed as in removing the sand or other material from a well. Fig. 3 is a detached view of the bit, bit-plate, and cut-off; and Fig. 4 is a detached view of the shaft.

A represents a cylindrical casing in which the auger is housed. It is conveniently provided at its upper end with a pair of connected standards, or with a loop, B, the ends of which are secured to the opposite sides of the casing, and its bight perforated to form a guide and bearing for the auger-shaft C.

The shaft C extends centrally through the casing, and is provided with a screw-threaded point, *c*, which projects below the lower end of the casing. The threaded point *c* is preferably removable from the shaft in order to adapt the auger to a greater variety of uses, as will hereinafter appear. A flat semicircular plate, D, of such diameter as to loosely fit within the casing A, is provided with a central extension, *d*, in which is formed a circular perforation, *d'*, adapted to fit loosely on a round section, E, of the shaft, a short distance above the point *c*.

The round section E is preferably formed by reducing the lower end of the shaft, and thereby forming a shoulder, *e*, against which the upper face of the plate D bears, or against a washer, *e'*, interposed between the plate and the shoulder.

To the straight edge of the plate D, on opposite sides of the shaft, are secured, respectively, the cutting-bit F and the screw-flange *f*. They are preferably bolted to the plate or otherwise secured in such a manner that they may be removed for bending, sharpening, and the like, or for the attachment of others having a different form of bend or cutting-edge. The screw-flange *f* preferably extends a little more than half-way around the shaft, and serves to guide the material lifted by the bit F onto the plate D, upwardly within the casing.

The end of the bit F which is in contact with the plate D is re-enforced or thickened, as shown, to give the bit the necessary strength in boring into hard ground, and has a projecting flange, *f'*, which extends about parallel with the bottom of the plate D, forming, in conjunction with the plate, a recess, *f''*, for the purpose which will hereinafter appear.

Between the round section E on the shaft and its point the shaft is squared or made angular shape, as shown at *h*, to receive a corresponding perforation, *g*, formed in a flat semicircular plate, G, which is conveniently termed the "cut-off."

The cut-off G is located in close proximity to the plate D, and when turned into a position symmetrical with the plate D serves to completely close the lower end of the casing A; but when turned into a position corresponding to that of the plate D leaves about one-half of the end open. The cut-off G, being locked



to the shaft, turns with it. Thus when the shaft is turned to the right, as in boring, the bit F, in engagement with the earth, will be locked to the shaft and forced around with it by the engagement of one wing of the cut-off with the end of the bit within the recess  $f^2$ . The projection of the flange  $f'$  over the edge of the cut-off will prevent it from binding on the slanting bit, and will form a smooth working-surface in contact with the ground.

When it is desired to remove the auger, the backward rotation of the shaft will turn the cut-off around into the position shown in Fig. 2, with the edge of one wing in contact with the edge of the plate D at the base of the bit, and the opposite wing lapping under the edge of the plate D on the opposite side of the shaft, completely closing the lower end of the hole bored or of the casing. The material around the shaft in the hole is thus completely cut-off from escape at the bottom, and may be withdrawn by the withdrawal of the auger.

To completely clean the pulverized stone from the bottom of the hole drilled in a rock the point  $c$  may be removed, or an auger for this specific purpose might be manufactured. It is evident that slight changes might be resorted to in the construction and shape of the several parts described without departing from the spirit and scope of my invention; hence I do not wish to limit myself strictly to the construction herein set forth; but,

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

1. An auger provided with a bit-plate and a cut-off plate, one loosely mounted on the auger-shaft and the other rigidly mounted

thereon, in combination with a casing loosely surrounding the bit-plate and shaft, whereby the casing will remain stationary when the shaft revolves during the boring operation, substantially as described.

2. In an auger, a bit-carrying plate loosely mounted on the shaft, and having a recess formed at the heel of the bit, and a cut-off plate secured on the shaft and adapted to enter said recess and lock the bit in working position, in combination with a casing adapted to loosely surround said bit and cut-off plates and remain stationary during the boring operation, substantially as described.

3. In an auger, the combination, with the shaft, of a plate loosely mounted thereon and provided with a cutting-bit and screw-flange, and a cut-off plate rigidly secured to the shaft below the bit-plate, substantially as set forth.

4. In an auger, the combination, with the shaft having a screw-threaded point attached thereto, and a plate loosely mounted on the shaft and carrying a bit and screw-flange, of a cut-off plate locked to the shaft, substantially as set forth.

5. In an auger, the combination, with a plate loosely mounted on the shaft, and having a bit and screw-flange removably secured thereto, of a cut-off plate secured on the shaft in juxtaposition to the bit-plate, substantially as set forth.

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

GEORGE MERDIAN.

Witnesses:

J. J. WINTLER,  
G. H. DANIELS.