

No. 629,171.

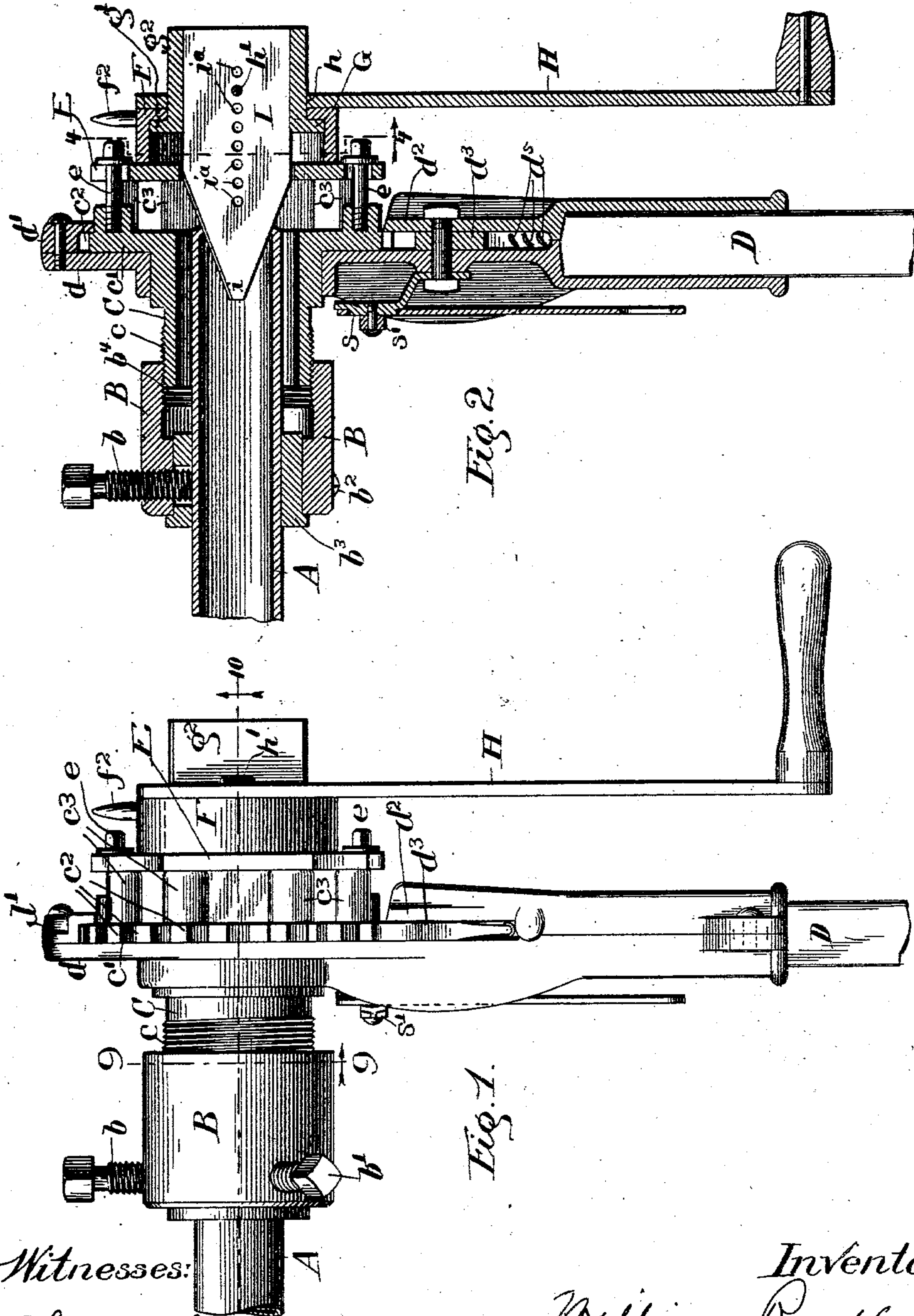
Patented July 18, 1899.

W. RADLEY.  
REAMER.

(Application filed Nov. 25, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:  
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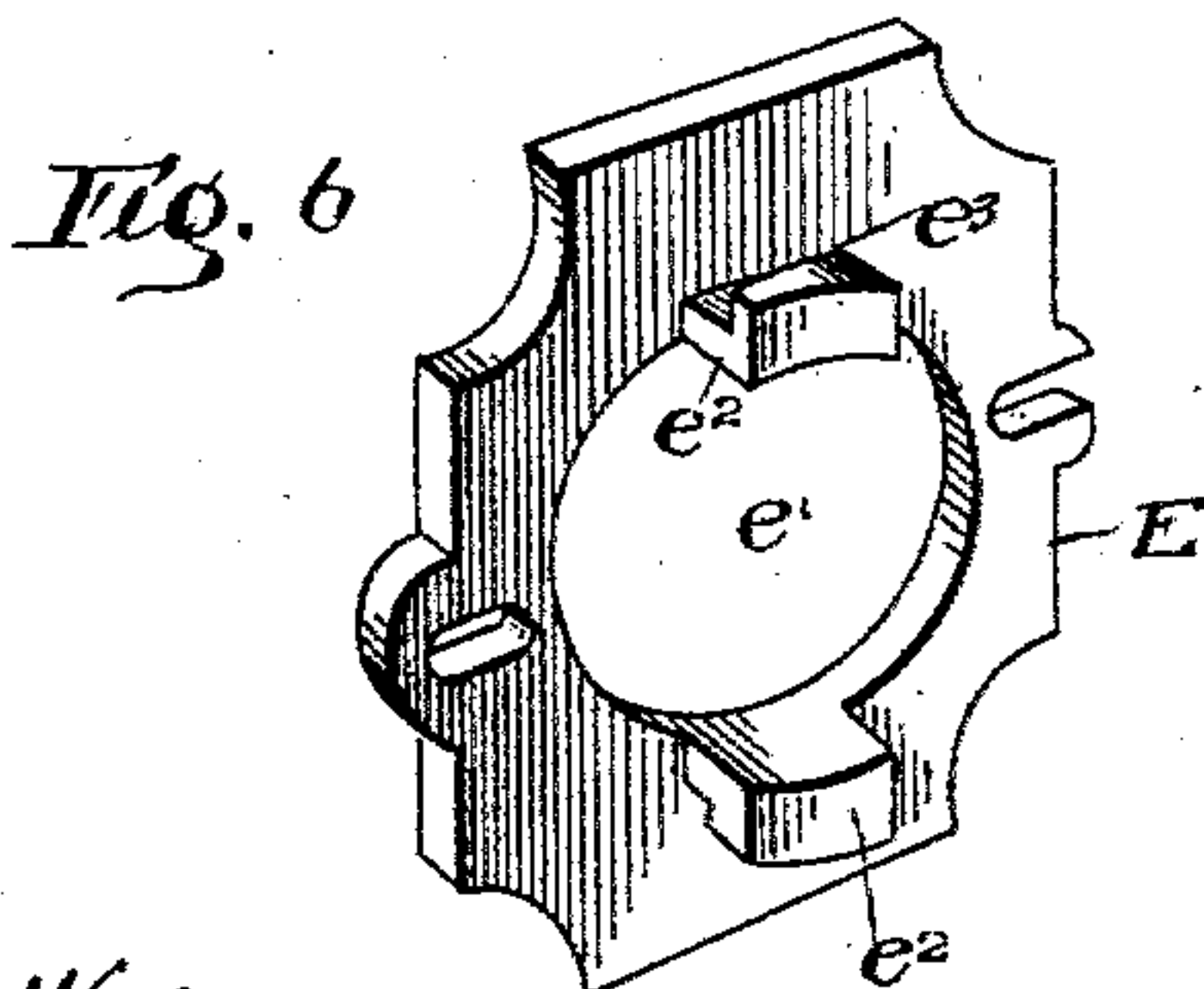
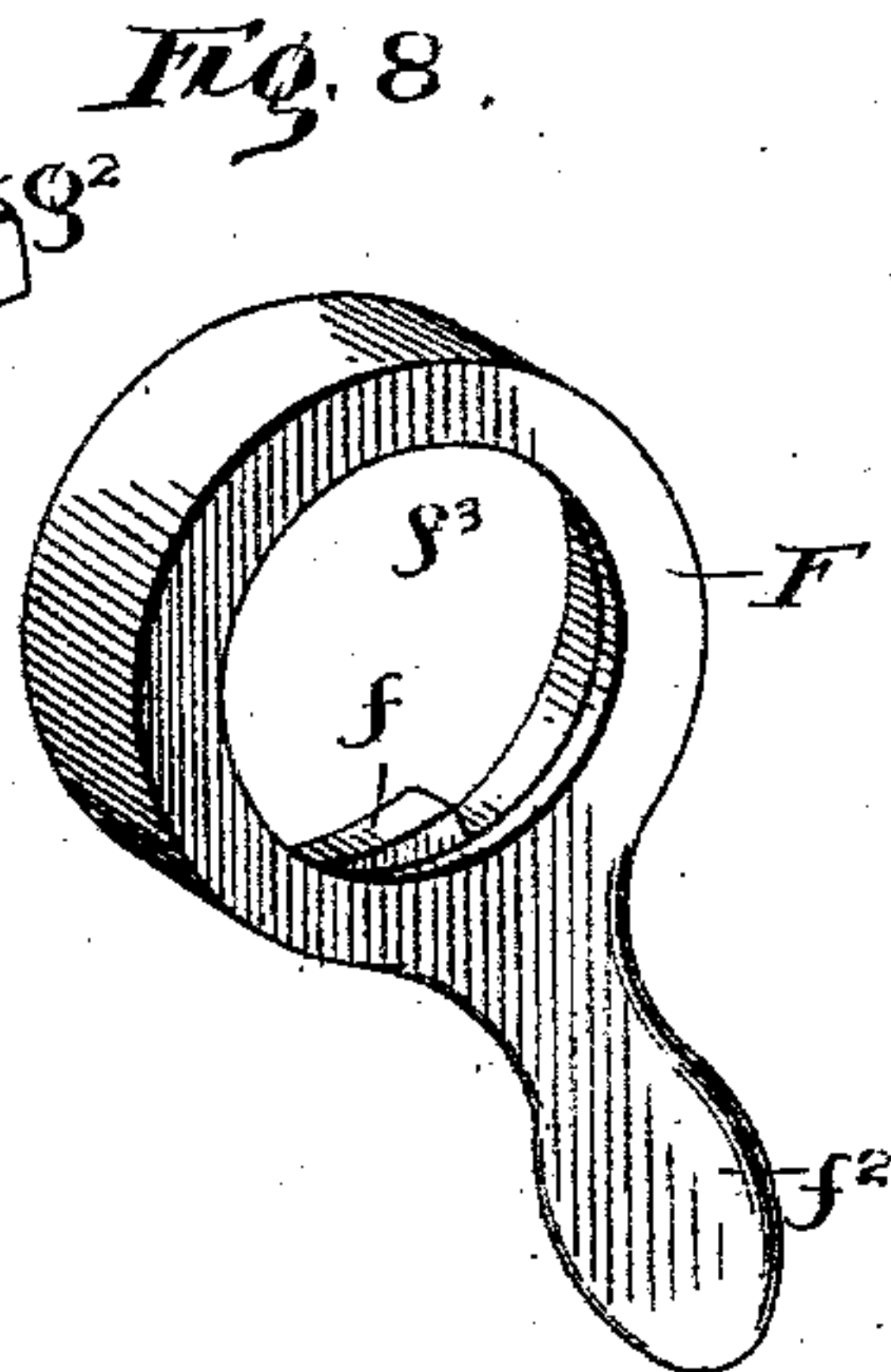
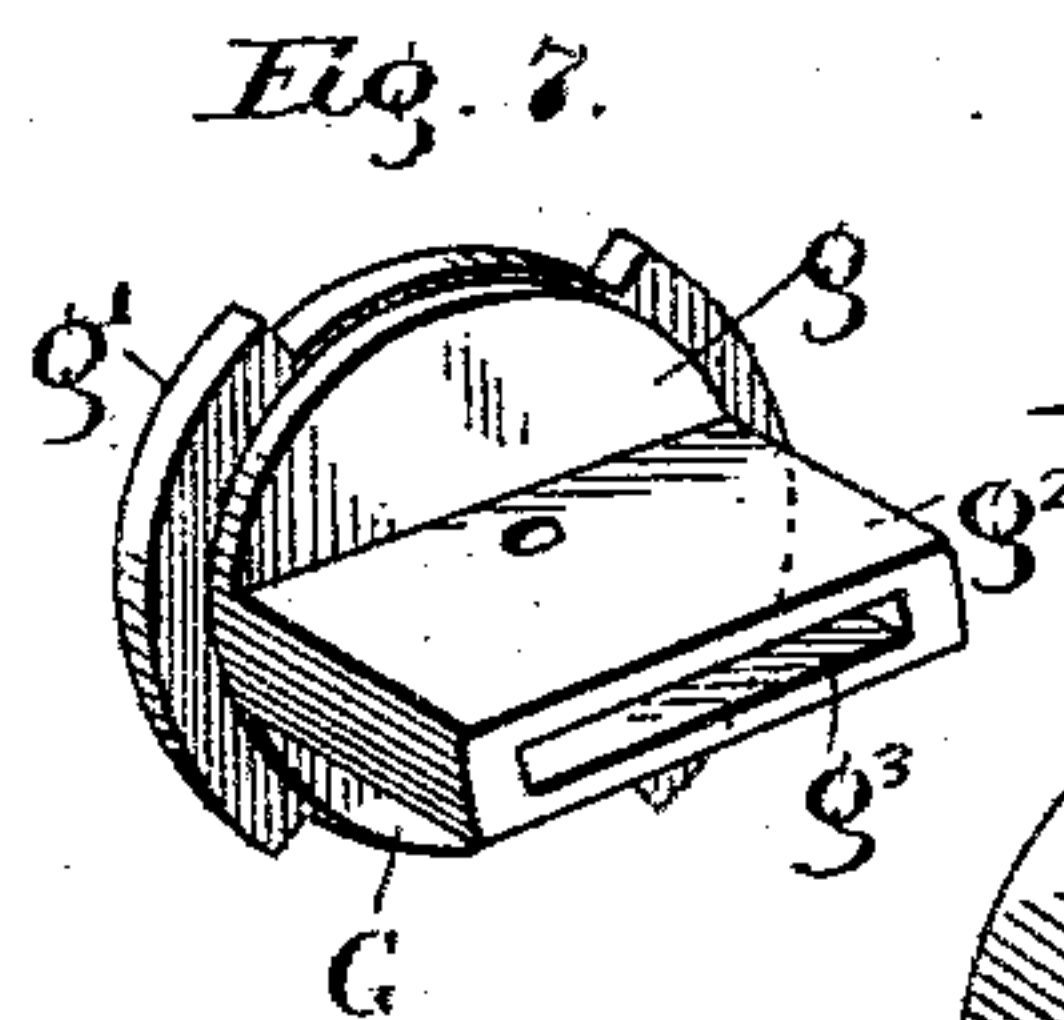
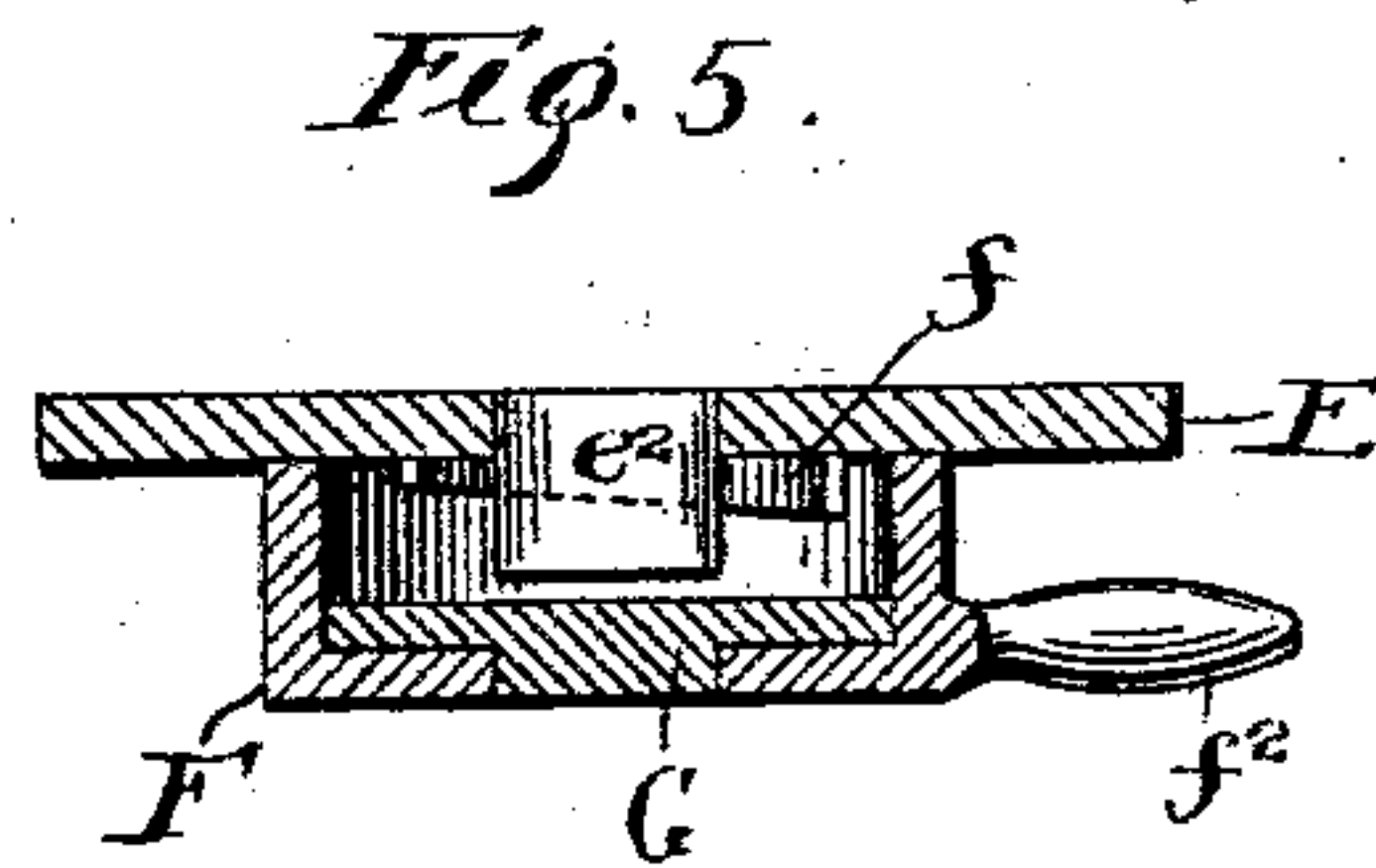
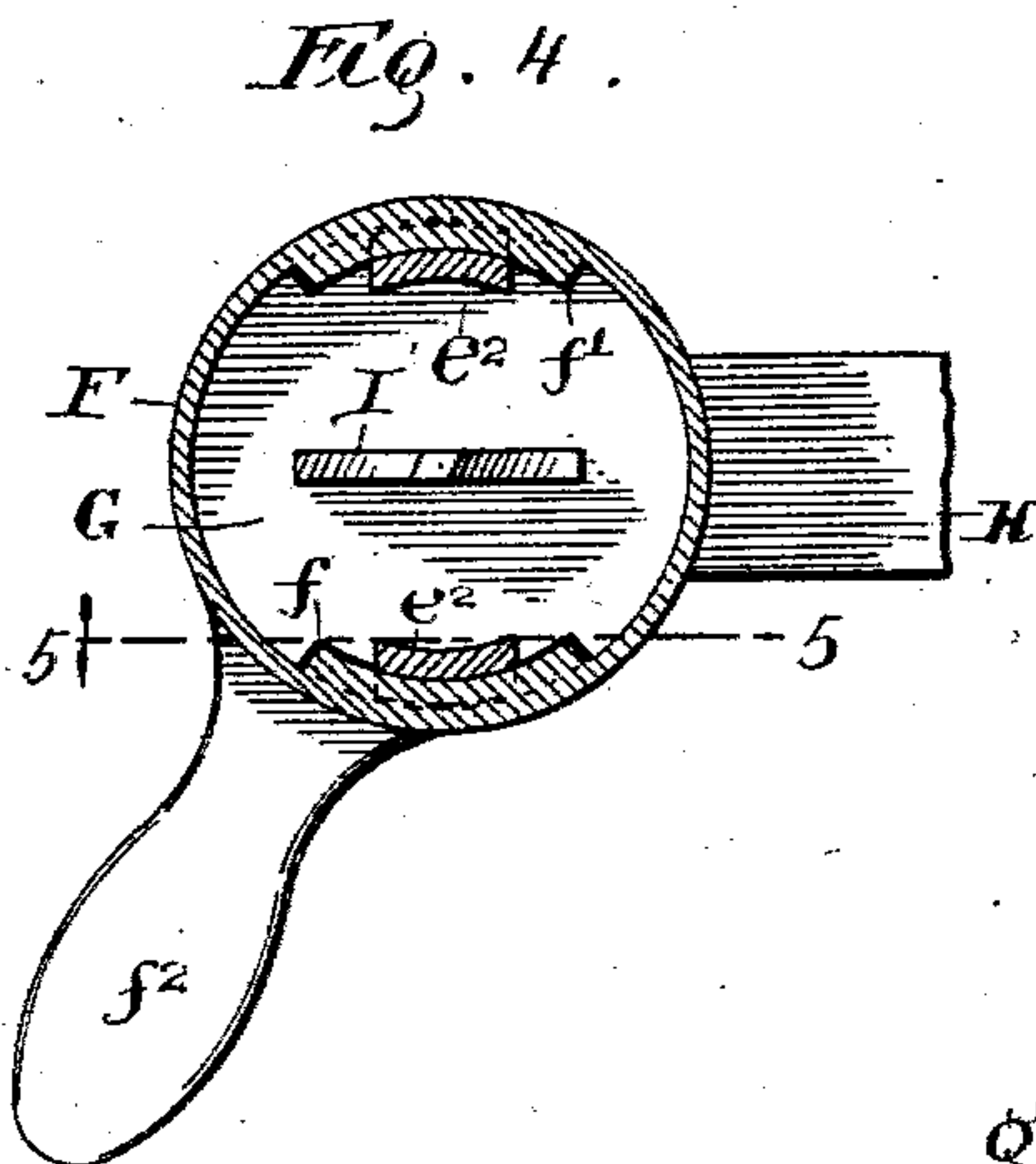
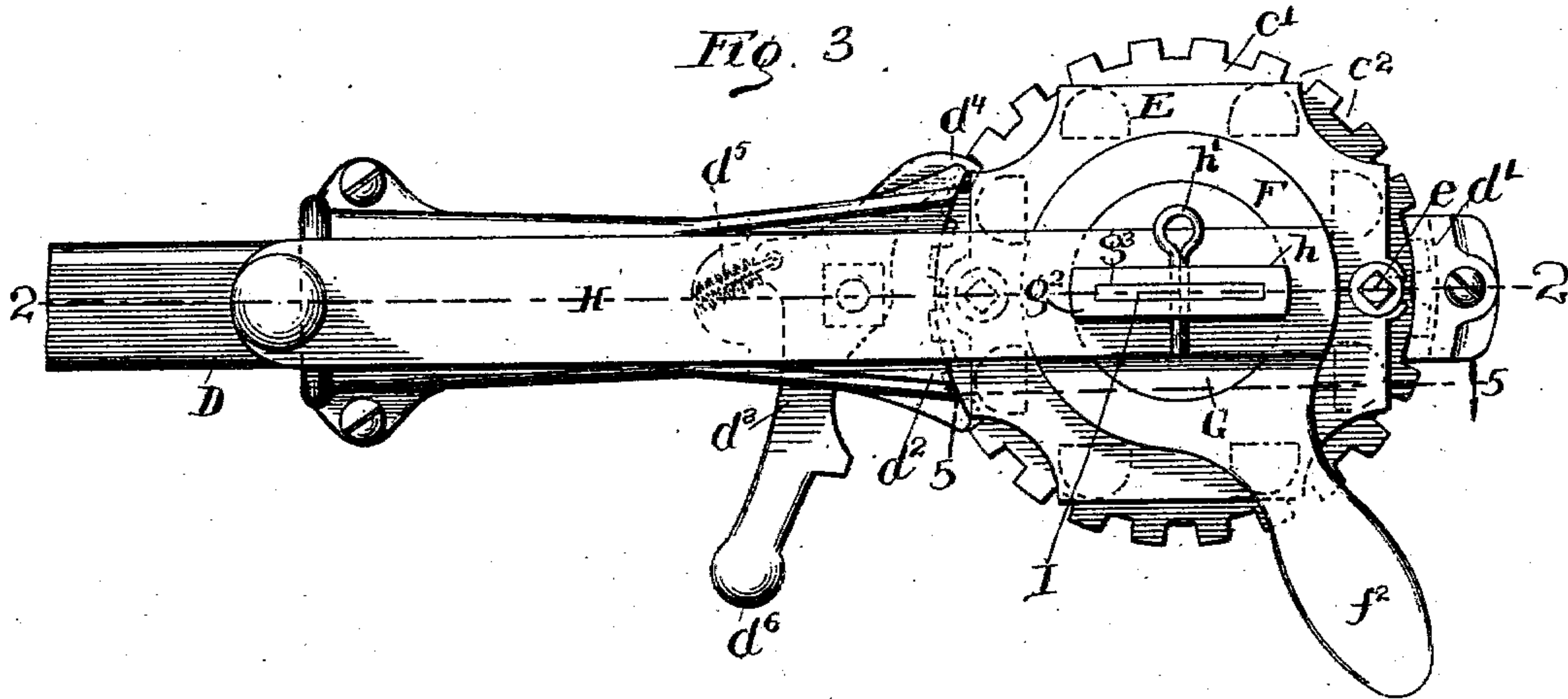
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REAMER.

(Application filed Nov. 25, 1898.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses:

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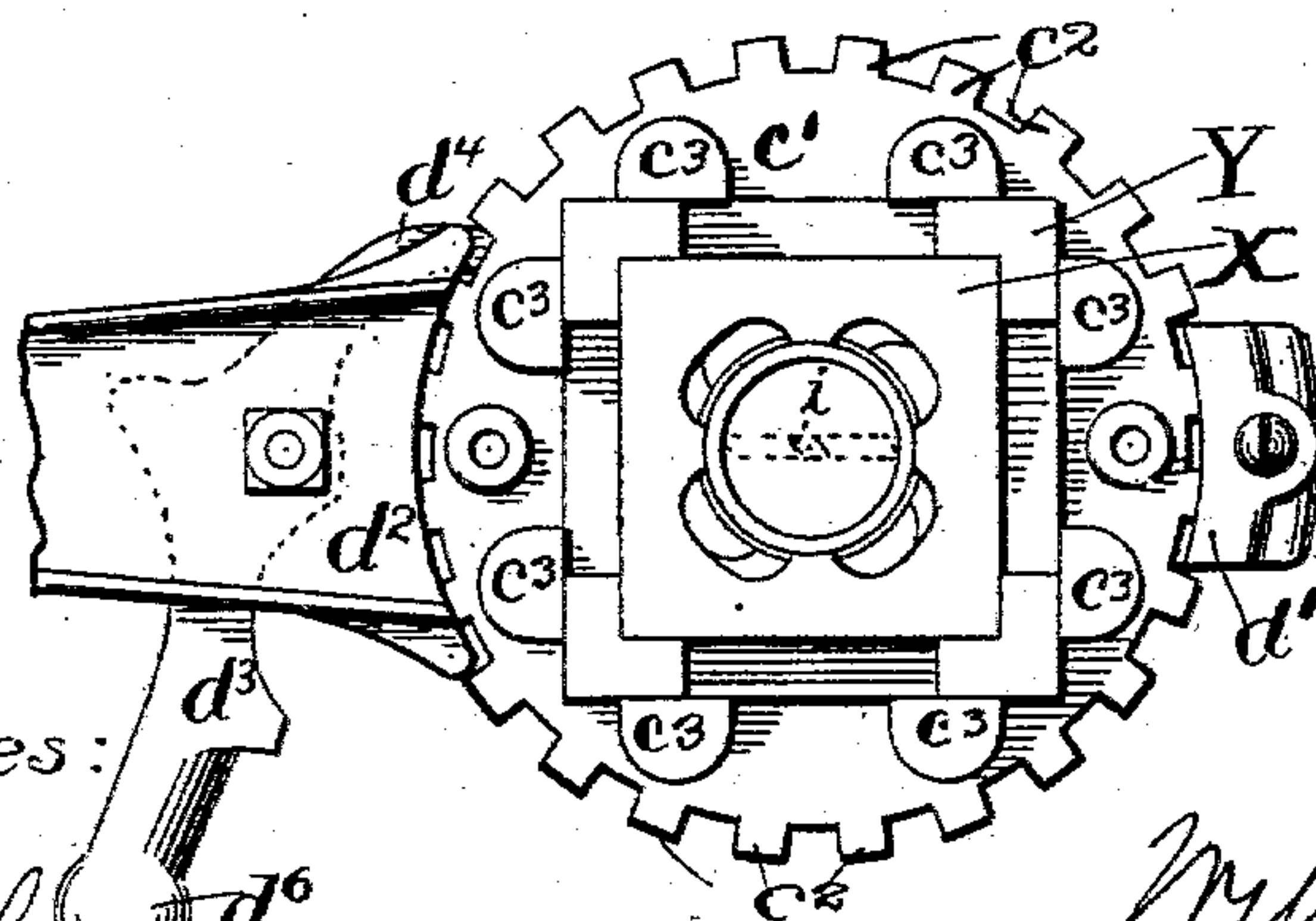
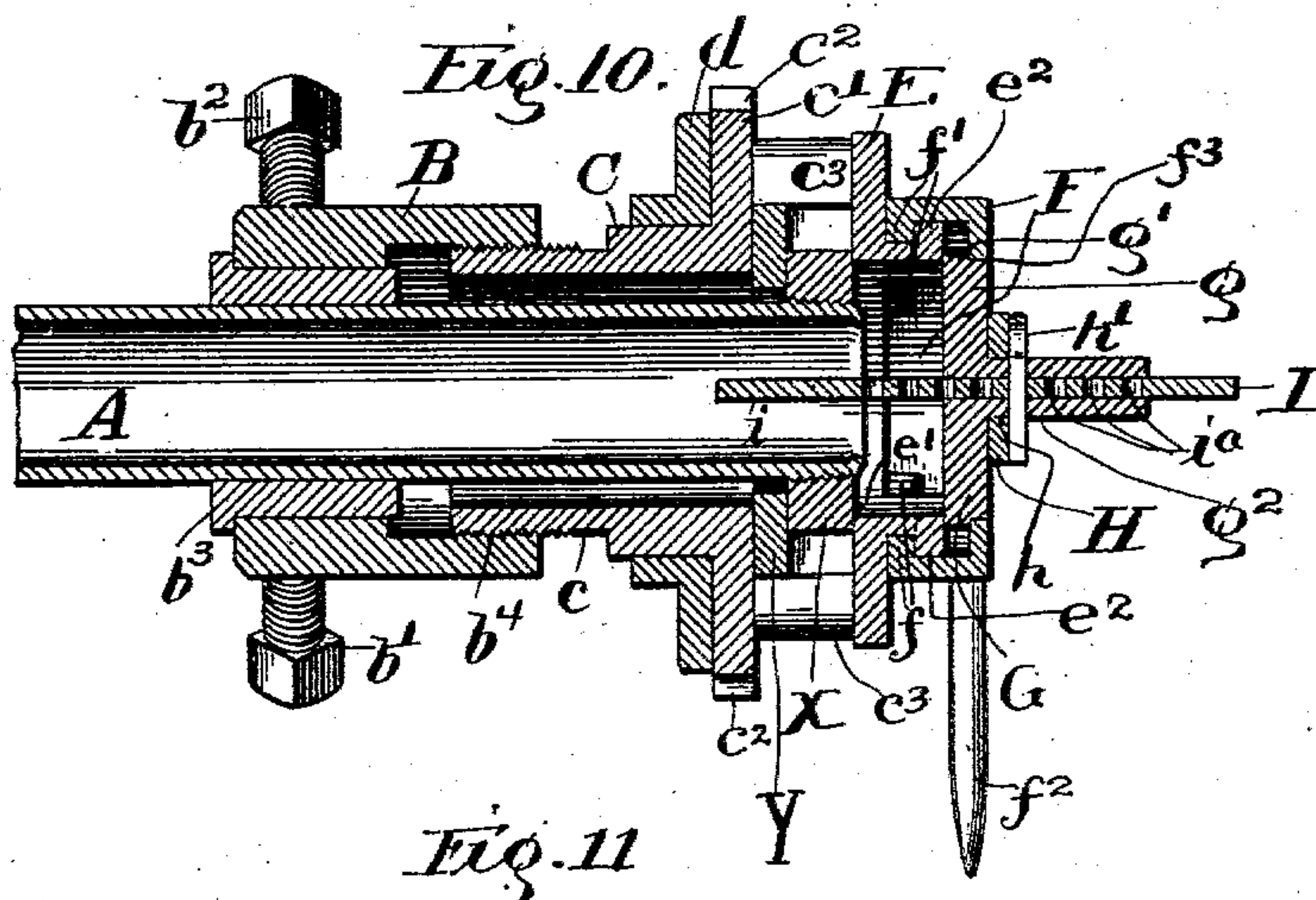
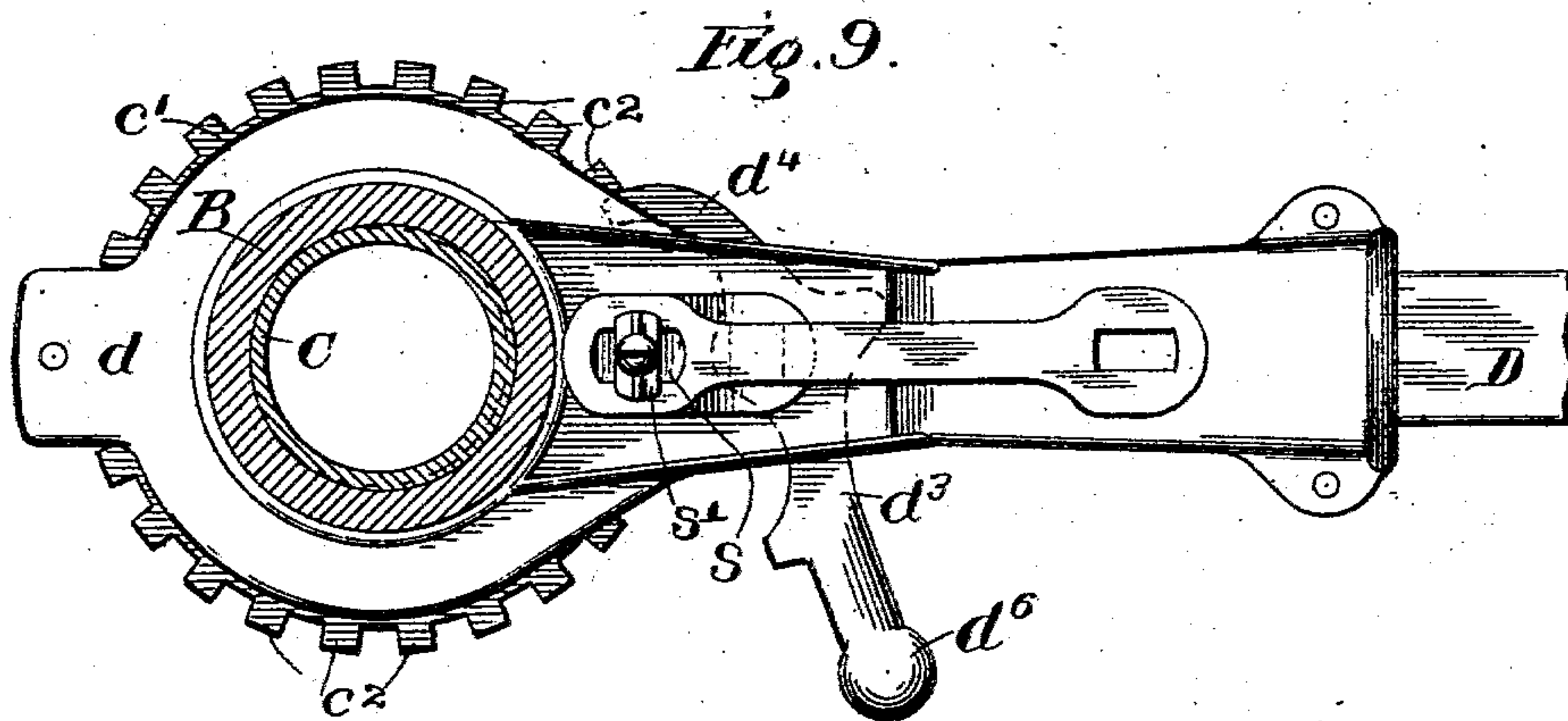
Patented July 18, 1899.

W. RADLEY.  
REAMER.

(Application filed Nov. 25, 1898.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses:

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# UNITED STATES PATENT OFFICE.

WILLIAM RADLEY, OF SANDWICH, ILLINOIS.

## REAMER.

SPECIFICATION forming part of Letters Patent No. 629,171, dated July 18, 1899.

Application filed November 25, 1898. Serial No. 697,445. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM RADLEY, a citizen of the United States of America, residing at Sandwich, in the county of De Kalb and State of Illinois, have invented certain new and useful Improvements in Reamers, of which the following is a specification.

My invention relates to certain improvements in reamers designed especially for use in removing the inwardly-projected bur commonly produced by ordinary tools used for cutting off wrought-iron gas, water, and steam pipes. In cutting off the smaller sizes of these pipes, such as are more commonly used, a rotary tool of some sort is usually employed, the action of which is to crowd the metal inward toward the center of the pipe and when said metal is finally severed to leave a very pronounced bur or inwardly-projecting flange, which reduces the diameter of the pipe and is otherwise exceedingly objectionable. It is my purpose to provide a cheap and reliable device which may be accurately centered upon the end of a pipe of this sort and positively advanced into the same to make a clean cut sufficient to remove all of the bur above described; and to such end the invention consists in certain features of novelty below described and claimed.

In the drawings presented herewith, Figure 1 is a side elevation showing the reamer secured to the end of a piece of pipe. Fig. 2 is a vertical longitudinal section of the same, the line of section being shown at 2 2 of Fig. 3. Fig. 3 is an end elevation of said device. Fig. 4 is a detail section in plane 4 4 of Fig. 2, looking in the direction of the arrow 4. Fig. 5 is a similar section in line 5 5 of Fig. 4, looking in the direction of the arrow 5. Fig. 6 is a perspective of a detachable plate. Fig. 7 is a perspective of a tool-carrier. Fig. 8 is a perspective of a bearing-cup. Fig. 9 is a section in line 9 9 of Fig. 1. Fig. 10 is a section in line 10 10 of Fig. 1, and Fig. 11 is a view similar to Fig. 3 with all of the parts down to the covering-plate removed.

Referring first to Figs. 1 and 2, a piece of gas-pipe is shown at A, upon which is secured a detachable collar B by means of set-screws  $b$   $b'$   $b^2$ ; an intermediate perforated bushing

$b^3$  being shown in Fig. 2 to accommodate the pipe A, which is smaller than the smallest size which the collar will hold. The removable collar is internally screw-threaded at  $b^4$  to receive an externally-screw-threaded collar C, the threads  $c$  of which fit those of the removable collar, so that the rotation of the collar C advances it upon or withdraws it from the end of the pipe. This collar C will be called the "feed-collar" and the screw-threads  $c$  thereon the "lead-screw." The feed-collar C is provided with a radially-projecting annular flange  $c'$ , toothed around its outer margin at  $c^2$ . Against one side of the flange  $c'$  rests a plate-like extension  $d$  upon a handle D, pivoted upon the feed-collar by means of said extension. It is secured in this position by means of two clips  $d'$   $d^2$ , which project inward slightly over the opposite side of the annular flange. Between the clip  $d^2$  and the plate  $d$  is pivoted a detent or pawl  $d^3$ , (shown more clearly in Fig. 3,) one end of which,  $d^4$ , is held in engagement with the tooth of the flange by a spring  $d^5$  and the other end of which is formed into a handle  $d^6$ . By means of the handle D and detent the feed-collar may be rotated to advance or withdraw it from the removable collar B. The annular flange  $c'$  is provided with a series of studs  $c^3$ , upon the ends of which is removably secured a perforated plate E by means of screws  $e$ .

The parts above referred to make up an ordinary die-stock, and so far as they have been described no novelty is claimed therein.

The studs  $c^3$  are intended to hold an ordinary pipe-threading die, as is shown at X in Figs. 10 and 11, said Fig. 11 also showing one of a series of rectangular bushings Y, by means of which different sizes of dies may be accommodated. The die is secured in the stock by means of the perforated plate E above mentioned. This plate E is shown in perspective in Fig. 6. It is provided with a central opening  $e'$ , about the margin of which are two hooked lugs  $e^2$ , the inner surfaces of the hooks of which are inclined, as seen at  $e^3$ . Upon this plate is removably secured a bearing-cup F. (Shown in perspective in Fig. 8 and in various sections in Figs. 2, 4, 5, and 10.) Upon the inside of the rim of the cup are two



inwardly-projecting lugs  $f f'$ , adapted to engage with the hooked lugs  $e^2$  and wedge themselves between the hooks upon the latter and the plate E to firmly secure the bearing-cup to the plate. The cup is provided with a handle  $f^2$ , by means of which this attachment may be effected. It also has a central perforation  $f^3$  in its bottom portion, in which is journaled a tool-carrier G. (Shown in perspective in Fig. 7.) This tool-carrier has a cylindrical portion  $g$  fitted to the perforation  $f^3$  in the cup, a notched flange  $g'$  upon one side of said cylindrical portion, adapted to rest upon the inside of the bottom of the cup, and a flat extension  $g^2$  upon the other side of said cylindrical portion, provided with a slit  $g^3$  to accommodate a suitable reaming-tool. Upon this flat extension is secured a handle H, (see Figs. 1, 2, and 3,) provided with a slot  $h$  to fit over said extension and secured thereon by means of a split pin  $h'$ , which also secures the reamer in the slit. Said reamer is seen at I and has an inwardly-extending tapered and sharpened end  $i$  to do the cutting and a series of perforations  $i^a$  to receive the pin  $h'$  and enable the reamer to be secured in a number of predetermined positions.

Fig. 9 shows an auxiliary device adapted to hold a wrench such as is needed in the use of the die-stock, the same consisting of a lug  $s$ , projecting from the handle, and a button  $s'$ , pivoted upon the lug. The lug is so proportioned in cross-section as to fit one of the openings of the wrench, and the button is adapted to secure the wrench upon the lug. This device affords a means of insuring the presence of the wrench whenever needed and avoiding the possibility of losing the same.

In the operation of the device above described the die-stock is secured to the pipe, and the reaming device is fastened upon the end of the stock by means of the bearing-cup F. The handle H is then turned to rotate the reaming-tool and the handle D oscillated to advance the feed step by step and carry the reamer into the end of the pipe. While of course the reaming operation may be effected without regard to the threading of a pipe, yet I consider my invention particularly valuable because of the possibility of carrying on the two operations simultaneously, or at least in succession, without removing the die-stock from the pipe. The preferred method is to secure the die-stock upon the pipe with the die in place and the reaming-tool attached and so adjusted as to finish its cutting when the die has completed the threading operation. The die-stock is then rotated to thread the pipe, the feeding devices being loosened upon said pipe as soon as the die takes a proper hold and the reamer being rotated by means of the handle H as soon as it comes in contact with the bur extending into the pipe. By this means the reaming is effected without any expenditure of time and with but little additional effort beyond that required to thread the pipe.

I claim as new and desire to secure by Letters Patent—

1. The combination with a tubular die-stock having a clamping device for attachment to a pipe and a ratchet-feed adapted to advance the stock upon the pipe, said feed having an actuating-handle extending radially from the stock, of a bearing-piece removably attached to the die-stock and a reaming-tool journaled in the bearing upon an axis coincident with that of the die-stock and having an operating-handle also extending radially from the die-stock; substantially as described.

2. The combination with a tubular die-stock provided with means for attachment to and positive advancement upon a pipe and having a centrally-perforated die-holding plate provided with engaging devices of a bearing-piece having cooperating engaging devices removably secured thereby to the die-holding plate, a tool-carrier journaled in the bearing-piece upon an axis coincident with that of the die-stock and provided with an operating-handle, and an internal reaming-tool properly secured in the tool-carrier; substantially as described.

3. The combination with a positive-feed tubular die-stock, adapted for attachment to the outside of a pipe, of a bearing-cup having a perforated bottom and a rim provided with means for detachably securing it to the die-stock, a tool-carrier having a cylindrical portion fitted to the perforation in the bearing-cup, a flange inside of said cup and an extension upon the outside thereof, having an axial opening for the accommodation of a reaming-tool, a handle secured to said outer extension and an internal reaming-tool secured in said axial opening; substantially as described.

4. The combination with a positive-feed tubular die-stock, provided with a series of longitudinally-extending hooked lugs, of a bearing-cup having a perforated bottom and a series of lugs extending inward from its rim and adapted to engage with those of the die-stock, a tool-carrier journaled in the perforation of the bearing-cup upon an axis coincident with that of the die-stock, said tool-carrier having a cylindrical portion fitted to the said perforation, a flange fitted within the cup and notched to pass the inwardly-projecting lugs thereof, and a longitudinally-extending outer portion adapted to hold a reaming-tool and provided with an operating-handle and a reaming-tool suitably secured in said tool-carrier; substantially as described.

5. The combination with a suitable bearing of a rotatable tool-carrier journaled therein provided with a longitudinal perforation to receive the tool and a transverse perforation, of a pointed blade fitted to the tool-carrier and having a series of perforations, any one of which may be brought into register with the transverse perforation of the tool-carrier by longitudinal movement of the tool, a handle adapted to slip over the tool-carrier, and



a pin adapted to pass through the perforations in the carrier and the tool to secure the tool in place and also to engage with the handle to fasten it to the carrier; substantially  
5 as described.

In witness whereof I have hereunto set my hand, at Sandwich, in the county of De Kalb

and State of Illinois, this 17th day of November, A. D. 1898.

WILLIAM RADLEY.

Witnesses:

JOHN W. HALL,  
ALFRED SMITH.