

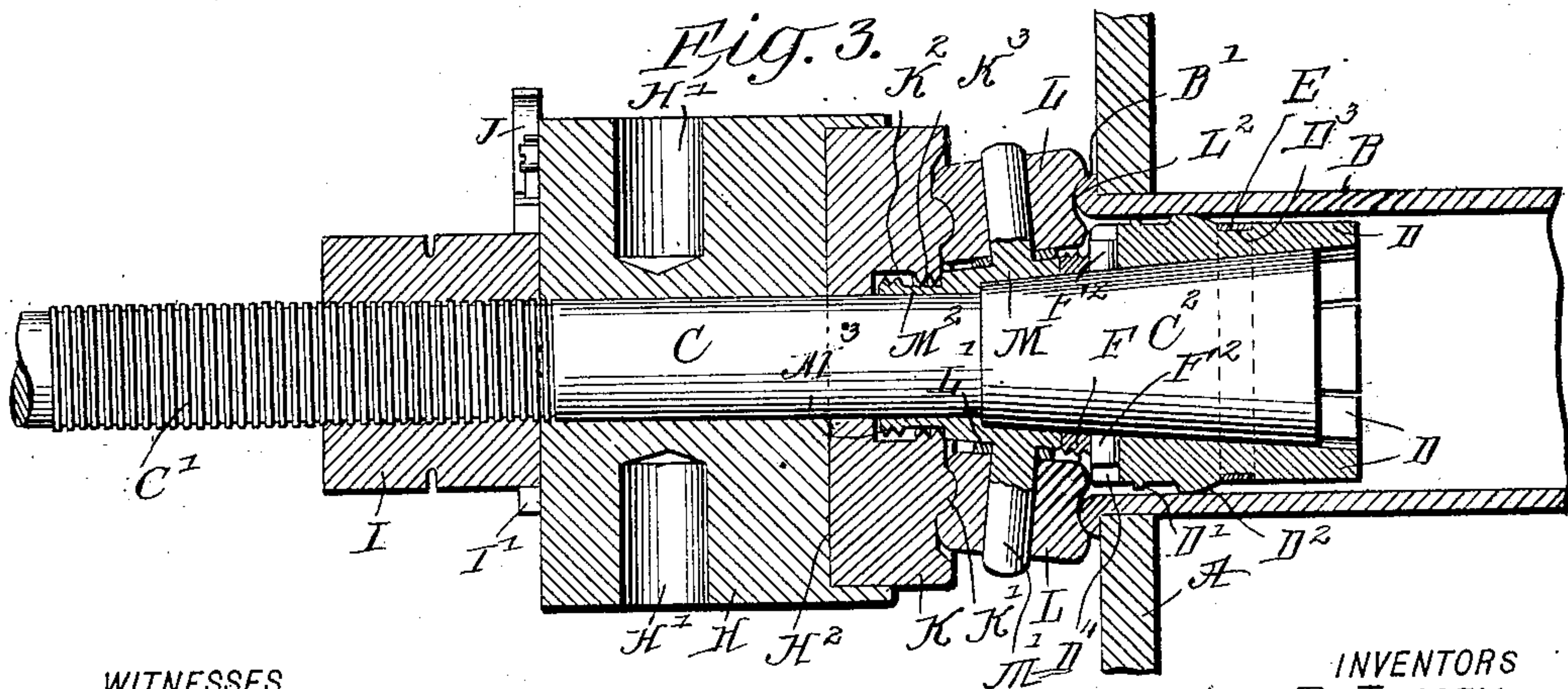
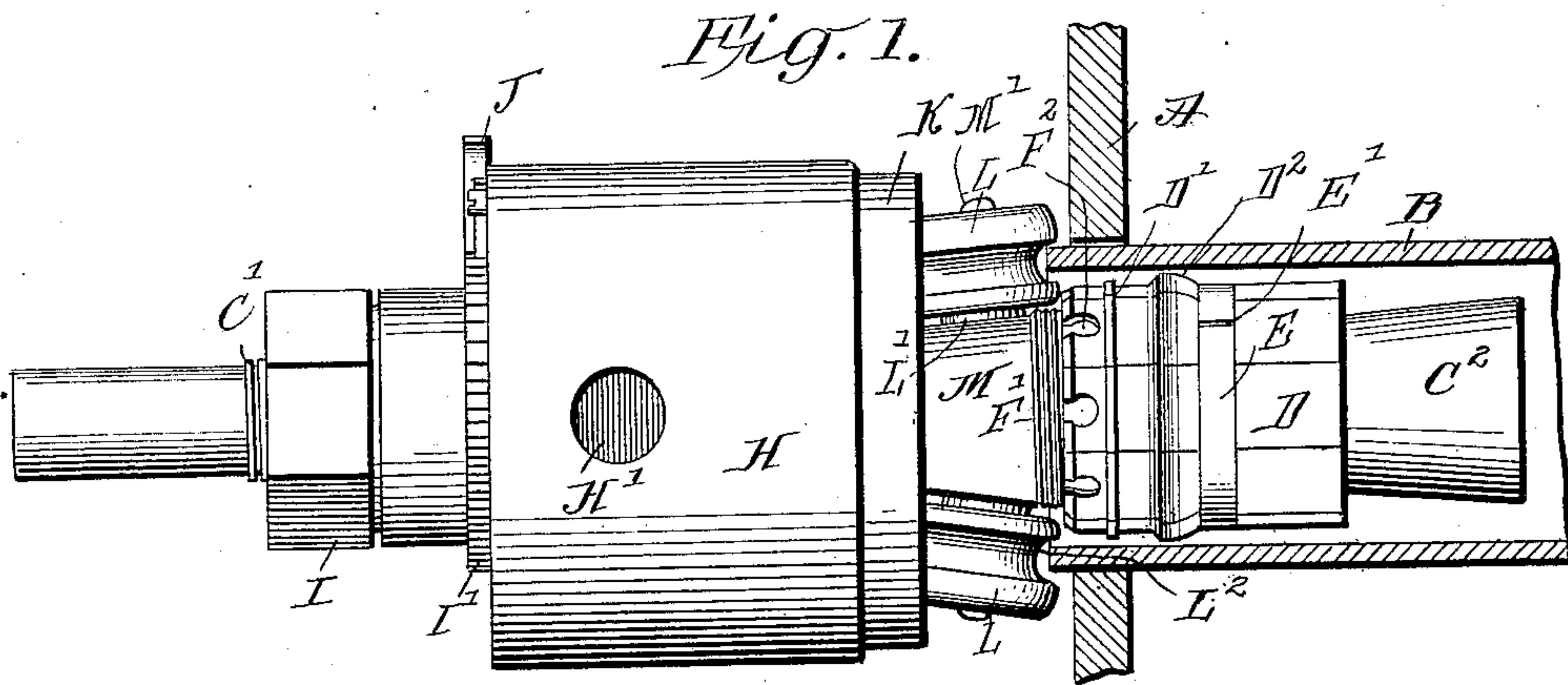
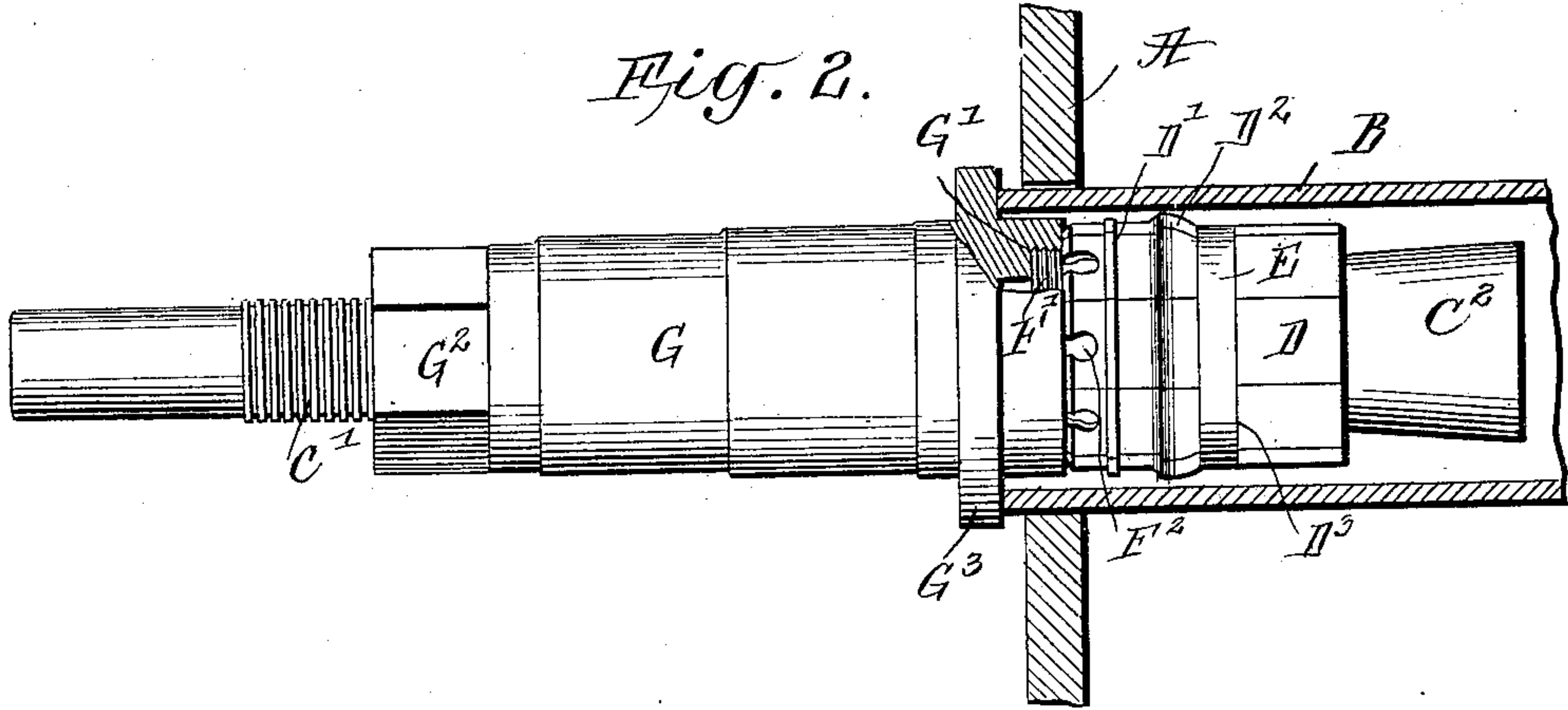
No. 897,175.

PATENTED AUG. 25, 1908.

J. C. TASSEY & J. B. HARRINGTON.  
BOILER TUBE PRESS.

APPLICATION FILED DEC. 27, 1907.

2 SHEETS—SHEET 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

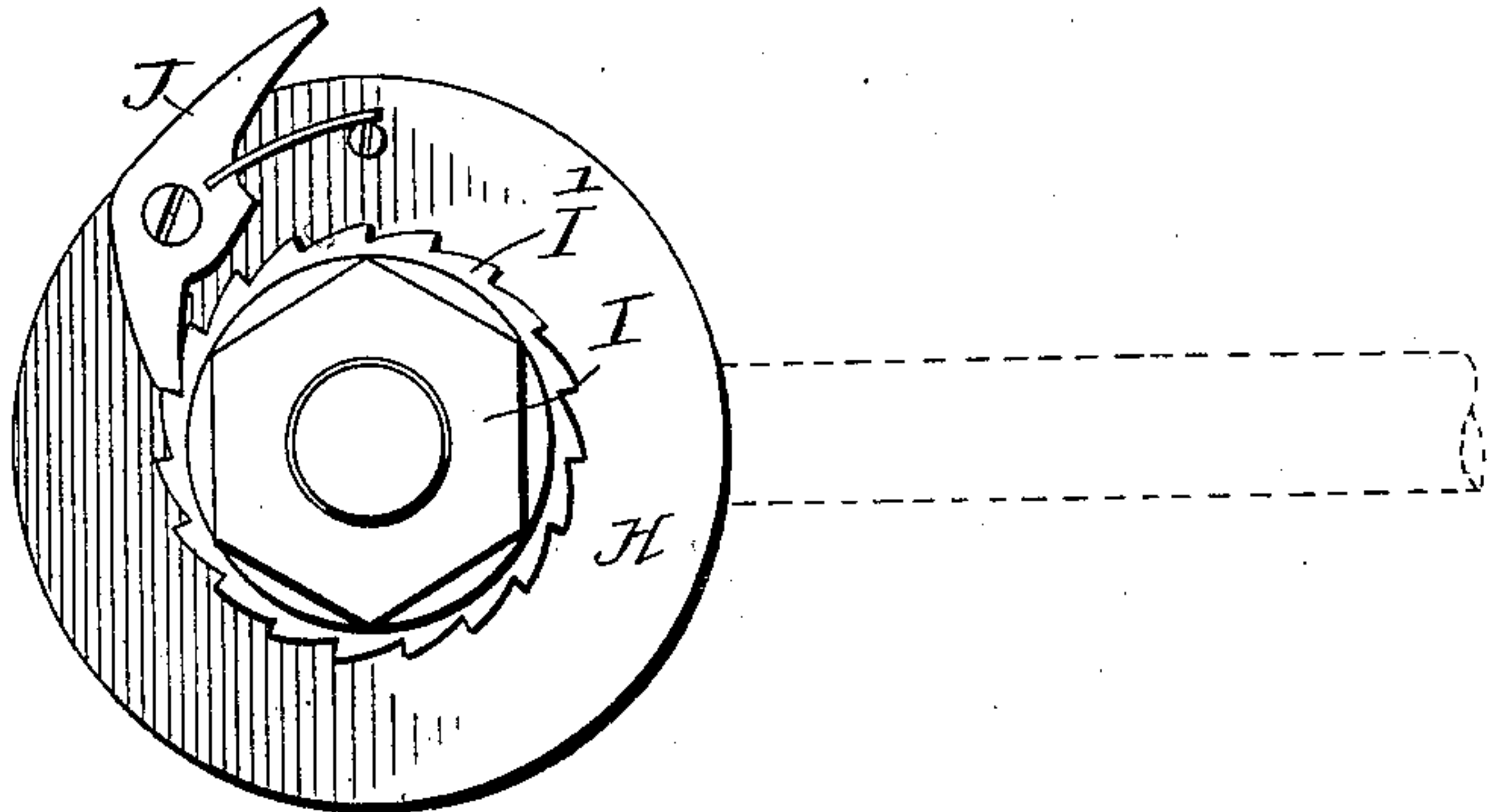


Fig. 8.

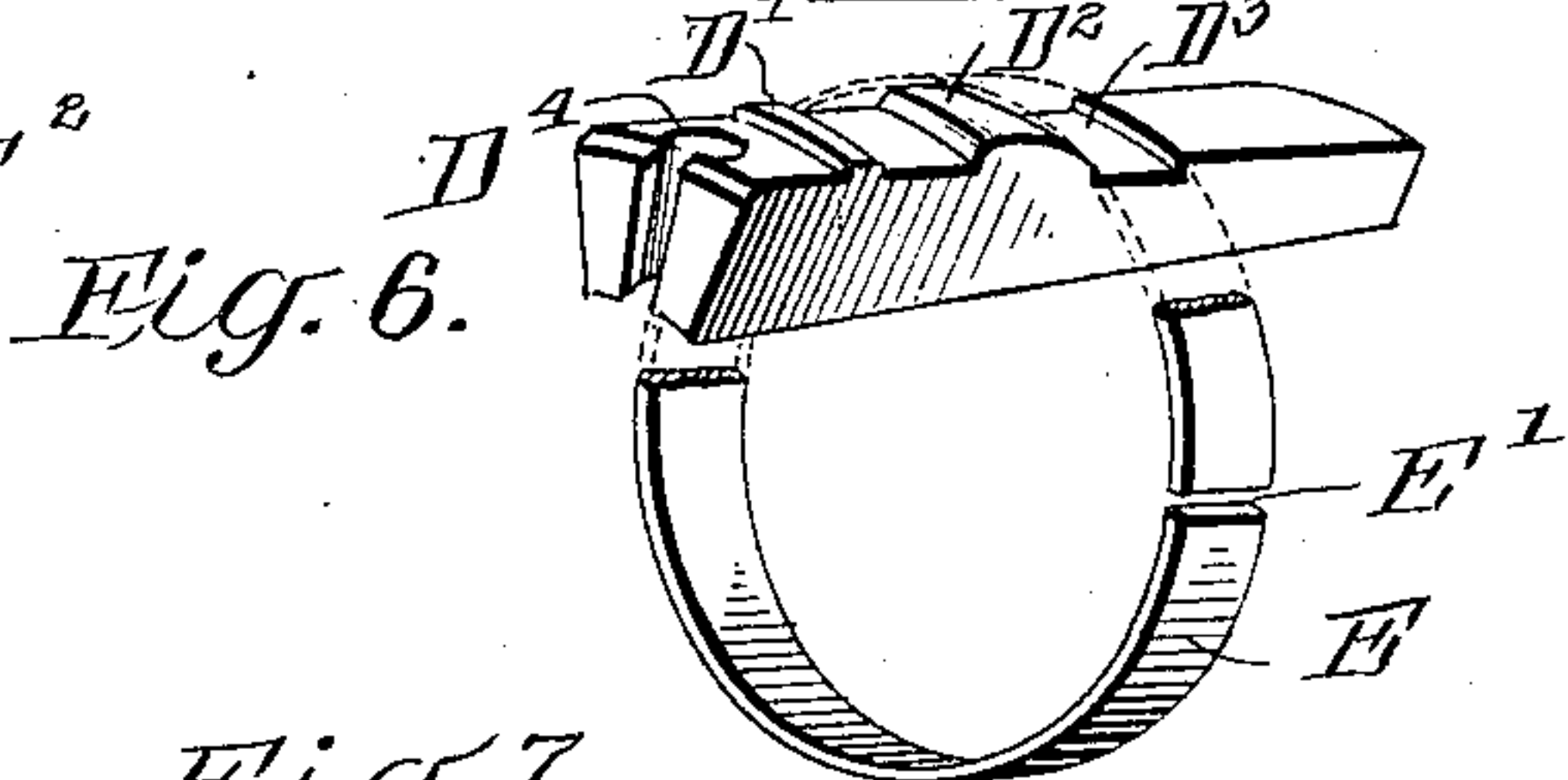
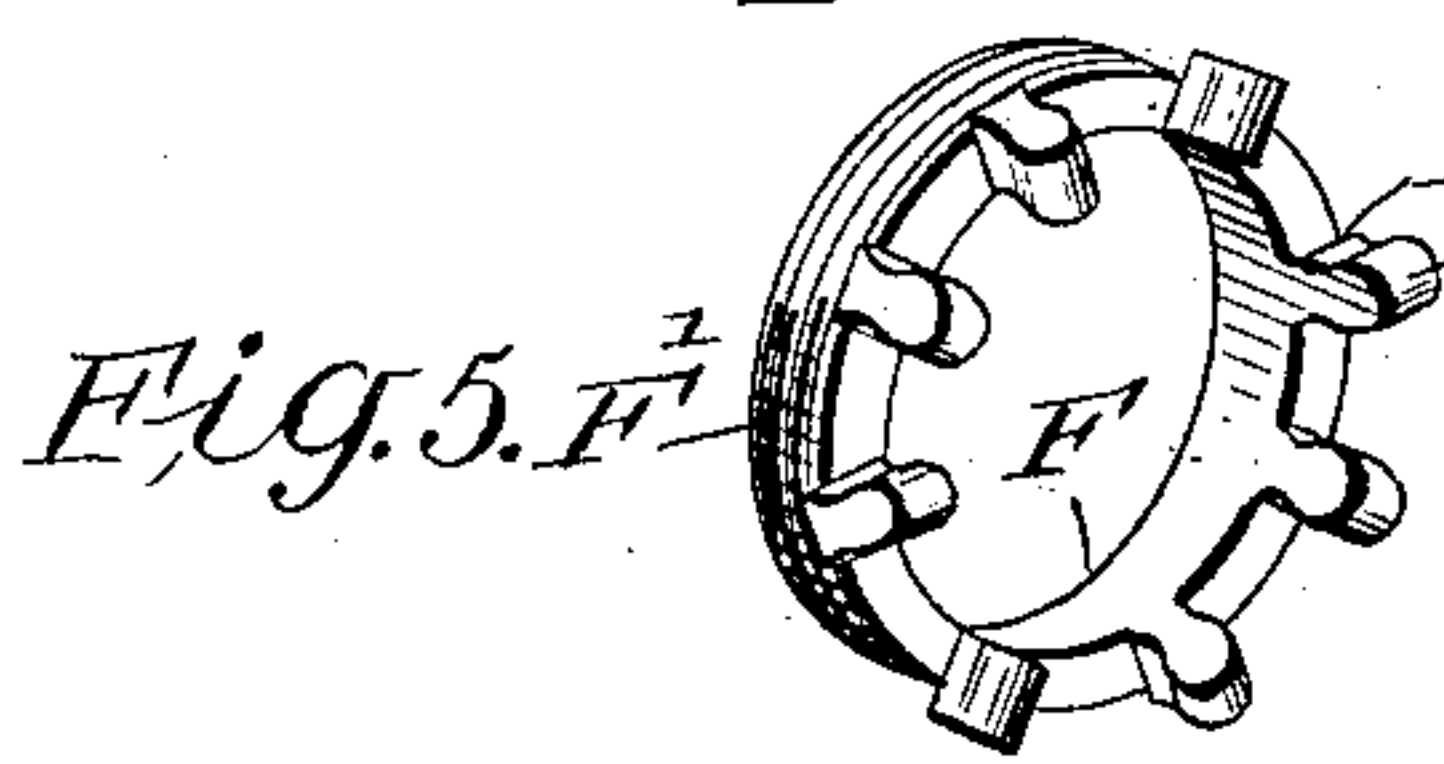
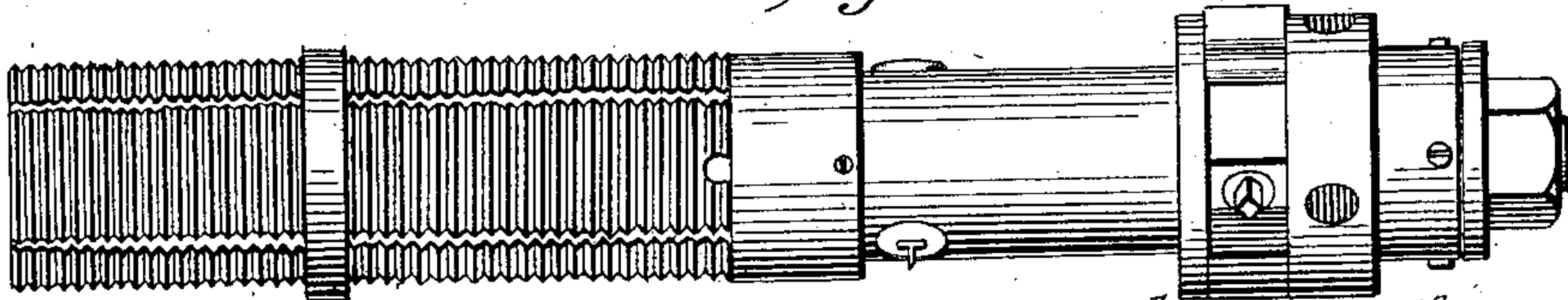
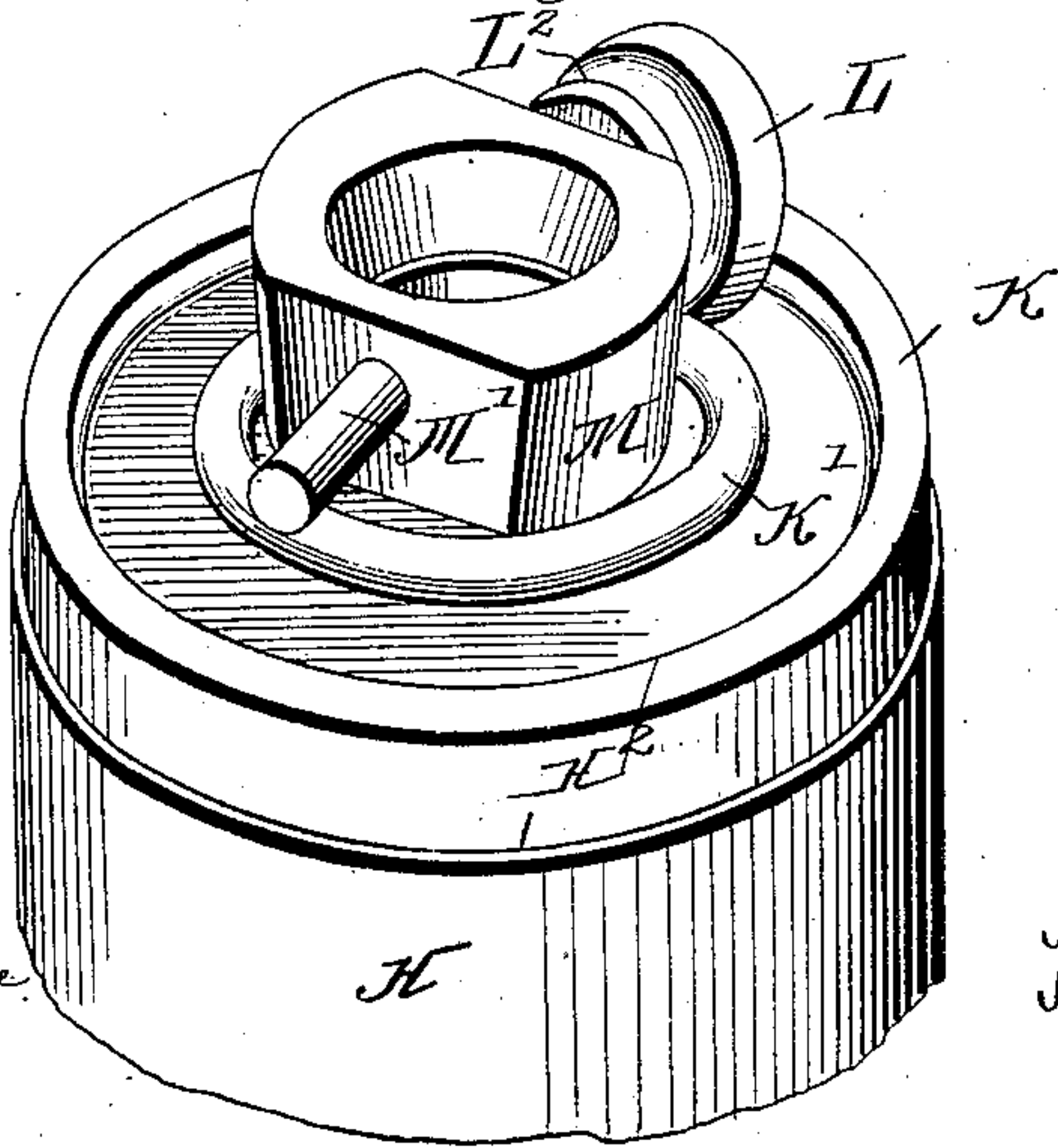


Fig. 7.



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# UNITED STATES PATENT OFFICE.

JOE CEPHUS TASSEY AND JAMES BENJAMIN HARRINGTON, OF NASHVILLE, TENNESSEE.

## BOILER-TUBE PRESS.

No. 897,175.

Specification of Letters Patent.

Patented Aug. 25, 1908.

Application filed December 27, 1907. Serial No. 408,319.

*To all whom it may concern:*

Be it known that we, JOE CEPHUS TASSEY and JAMES BENJAMIN HARRINGTON, citizens of the United States, and residents of Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Boiler-Tube Presses, of which the following is a specification.

This invention is an improvement in boiler tube presses for pressing boiler tubes into tube sheets, and rolling the bead thereon; and the invention consists in certain novel constructions and combinations of parts as will be hereinafter described and claimed.

In the drawings Figure 1 is a side view, parts being shown in section, illustrating the apparatus for expanding a tube and rolling a bead. Fig. 2 is a similar view partly in section showing a wedge block for use in setting or placing the expanding devices. Fig. 3 is a vertical longitudinal section of the parts shown in Fig. 1. Fig. 4 is an end view of the apparatus shown in Fig. 1. Fig. 5 is a detail perspective view of the wedge holder. Fig. 6 is a detail perspective view showing one of the wedges and the bridle for the wedges, parts being broken away and others shown in section, Fig. 7 is a detail perspective view showing a portion of the base block, the roller plate and the roller carriage with one of the rollers in place, and Fig. 8 illustrates a tube cutter and long serrated wedges used in stretching the tubes.

In the construction shown in Figs. 1, 2 and 3, A designates the tube sheet, and B one of the tubes, and in Fig. 3, the tube B is shown as beaded at B' along the outer side of the sheet A.

The main bolt C is threaded at one end C' and is provided at its other end with a head C<sup>2</sup> tapered to a suitable degree, it being illustrated as given a five degree taper in Figs. 1, 2 and 3. This tapered head C<sup>2</sup> operates in practice within the expanding wedges D, which may be tapered on their inner sides and ribbed on their outer sides at D' and D<sup>2</sup>, and these wedges are employed in sufficient number to practically encircle the tapered head C<sup>2</sup>, as will be understood from Figs. 1, 2 and 3 of the drawings. I also provide the wedges D on their outer sides with grooves D<sup>3</sup> in which operates the bridle E, which bridle is preferably a spring band split at E' and embracing the series of wedges, so the latter will be held together upon the tapered head C<sup>2</sup> and may be expanded by the longi-

tudinal movement of said head within the series of wedges, as will be understood from the drawings. To hold these wedges D from independent longitudinal movement we provide what for convenience of reference we term the wedge holder F, which, as shown, is in the form of a ring threaded at F' to screw into the threaded bearing G' in the wedge block G, and provided at one end with lugs F<sup>2</sup> having contracted necks F<sup>3</sup>, the said lugs F<sup>2</sup> fitting within undercut openings D<sup>4</sup> in the ends of the wedges D. By this construction the wedges D are interlocked with the holder F, and are movable radially relative thereto so that they may be expanded by the action of the tapered head C<sup>2</sup>, when the bolt C is moved longitudinally relatively to the series of wedges, as best illustrated in Figs. 1 and 3 of the drawings.

In operation, in expanding the tubes, the parts may be arranged as shown in Fig. 1 with the wedge block G connected with the holder F and a nut G<sup>2</sup> be turned upon the threaded end of the bolt C to draw the tapered head C<sup>2</sup> outwardly within the series of wedges D.

The block G, as shown in Fig. 2, is not used to expand the tube but as a guide or gage by which to set and hold the wedges in place until they are tightened in the tube by operating the nut on the bolt; this being done the part G may be removed and the base block H with the attached parts, as shown in Figs. 1 and 3 be applied to said block and the nut I screwed on the threaded portion C' up against the block H, the said nut I having a ratchet ring I' engaged by a pawl J on the end of the base block H, so the turning of the nut I on the bolt C' may operate to turn the block H during a portion of the operation as more fully described hereafter. The block H is provided with sockets H' to receive a wrench handle or other rod by which the said block may be turned and in its end opposite the pawl J it is recessed at H<sup>2</sup> to receive the track plate K whose outer end is provided with a track K' for the rollers L, and is recessed centrally at K<sup>2</sup>, the end of the recess being relatively contracted and threaded at K<sup>3</sup> for the purpose presently described. The operation of the base block followed by the nut on the bolt will tighten the tube in the tube sheet and roll the bead or flange on the end of the tube at the same time.

The roller carrier M is provided with the studs or trunnions M' for the rollers L, and



has at its end the reduced tubular portion  $M^2$  provided at its extremity with a few turns of thread  $M^3$  which may be screwed through the threaded portion  $K^3$  of the track plate  $K$  and then revolve freely within the recess  $K^2$  of the said track plate when the parts are in the position shown in Fig. 3.

Washers  $L'$  may be placed on the studs  $M'$  between the rollers  $L$  and the body of the roller carriage and the rollers  $L$  are grooved at  $L^2$  to form a bead  $B'$  on the tube  $B$  and also to run upon the track  $K'$ , in the operation of the parts when arranged as shown in Fig. 3.

In operation it will be noticed the block  $H$  may be revolved followed by the nut  $I$  to swage or bead the end tube, the turning of the base block also operating to revolve the roller carriage, the rollers revolving against the end of the tube in the forming of the bead.

By the use of the ratchet  $I'$  and the pawl  $J$ , the apparatus may be driven by the turning of the nut  $I$  until the expanding devices are tight within the tube when the wrench may be removed from the nut and inserted in the sockets in the base block to complete the operation.

The bolt  $C$  carries with it a tube cutter and may also be used for stretching boiler tubes. This construction is illustrated in Fig. 8 in which the bolt is supplied with tube cutters, and with long serrated wedges for use in stretching the tubes.

We claim—

1. The combination in an apparatus substantially as described of a bolt, expanding devices operating on the bolt, the base block turning on the bolt and provided at its outer end with a pawl and recessed at its inner end, a pawl at the outer end of the block, a track plate fitting at one end in the end recess of the block and having a circular track at its end and also provided in said end with a central recess threaded at its open end, a roller carrier having a tubular extension provided with a threaded portion to screw into the threaded end of the recess in the track plate and to revolve freely within said recess, studs or trunnions on said roller carrier, rollers on said trunnions and having a beading groove receiving the track on the track plate,

and a nut on the bolt at the outer end of the base block and having a ratchet engaged by a pawl on said block, substantially as set forth.

2. In an apparatus substantially as described, the combination of a series of wedges, a bridle encircling the same, the said wedges being provided at one end with openings extending radially, a wedge holder in the form of a ring having at one end projecting lugs adapted to operate in the radial openings of the wedges and having contracted necks, a bolt operating within the series of wedges and having a tapered head whereby to expand the wedges, and coöperating means on the bolt, substantially as set forth.

3. The combination of the wedge holder in the form of a ring provided at one end with projecting lugs, a series of wedges having openings or recesses in their ends receiving said lugs whereby the wedges are interlocked with the ring, and means for expanding the wedges, substantially as set forth.

4. The combination with the bolt and the nut thereon of a base block on the bolt in advance of the nut, a track plate on the bolt in advance of the base block and having a circular track and also provided with a central recess and with threads at the open end thereof, a roller carrier having a tubular portion threaded at its extremity to screw into the threads of the track plate and having said threaded portion adapted to revolve freely within said central recess of said track plate, and rollers carried by the roller carrier and having beading grooves running upon the track of the track plate, substantially as set forth.

5. The combination with a carrier bolt and beading devices thereon, of a base block adapted to be turned on the bolt, a nut threaded on the bolt, and ratchet and pawl devices between the nut and the base block whereby the nut may be utilized to turn the base block and the latter may be turned independent of the nut, substantially as set forth.

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