

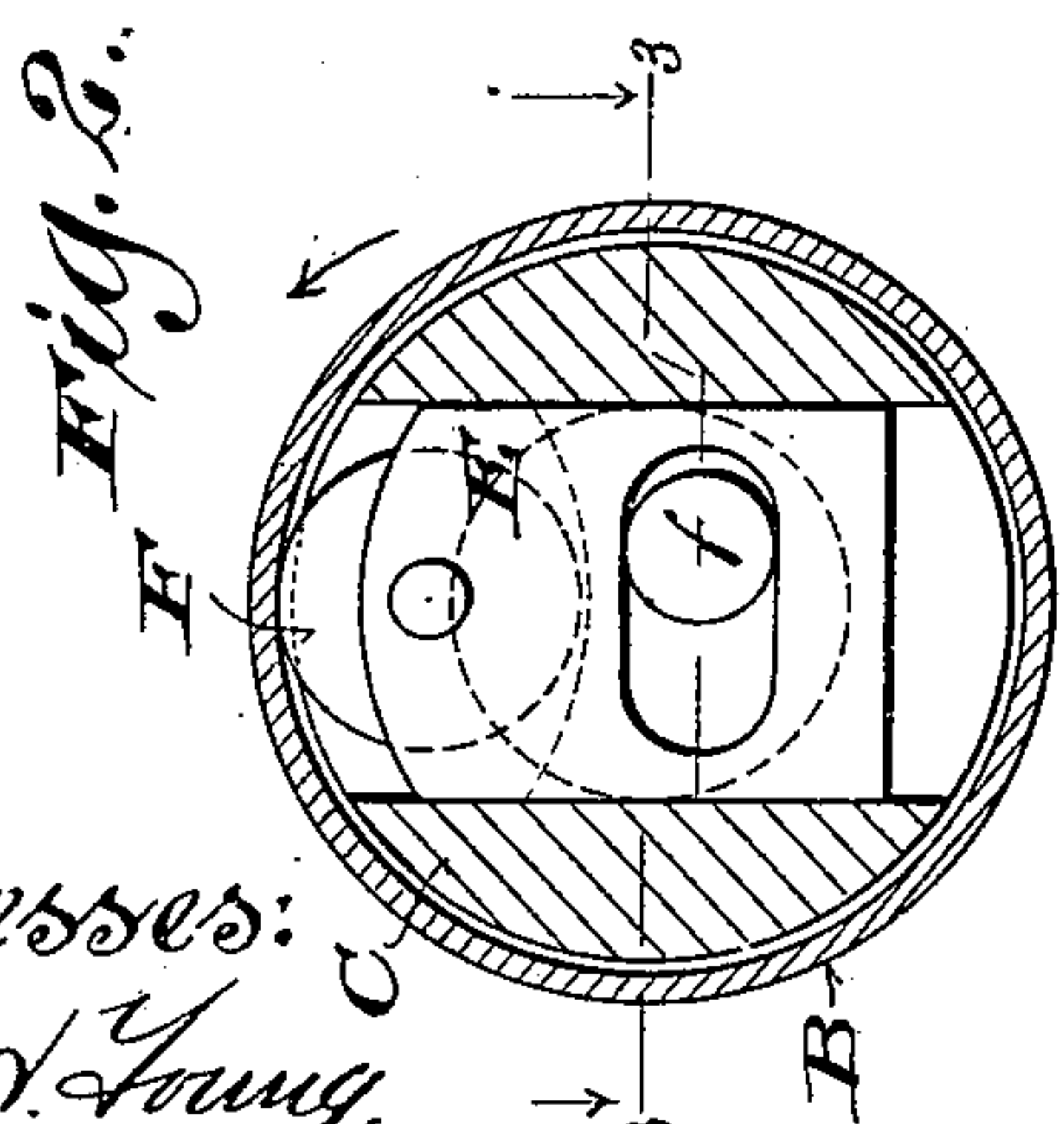
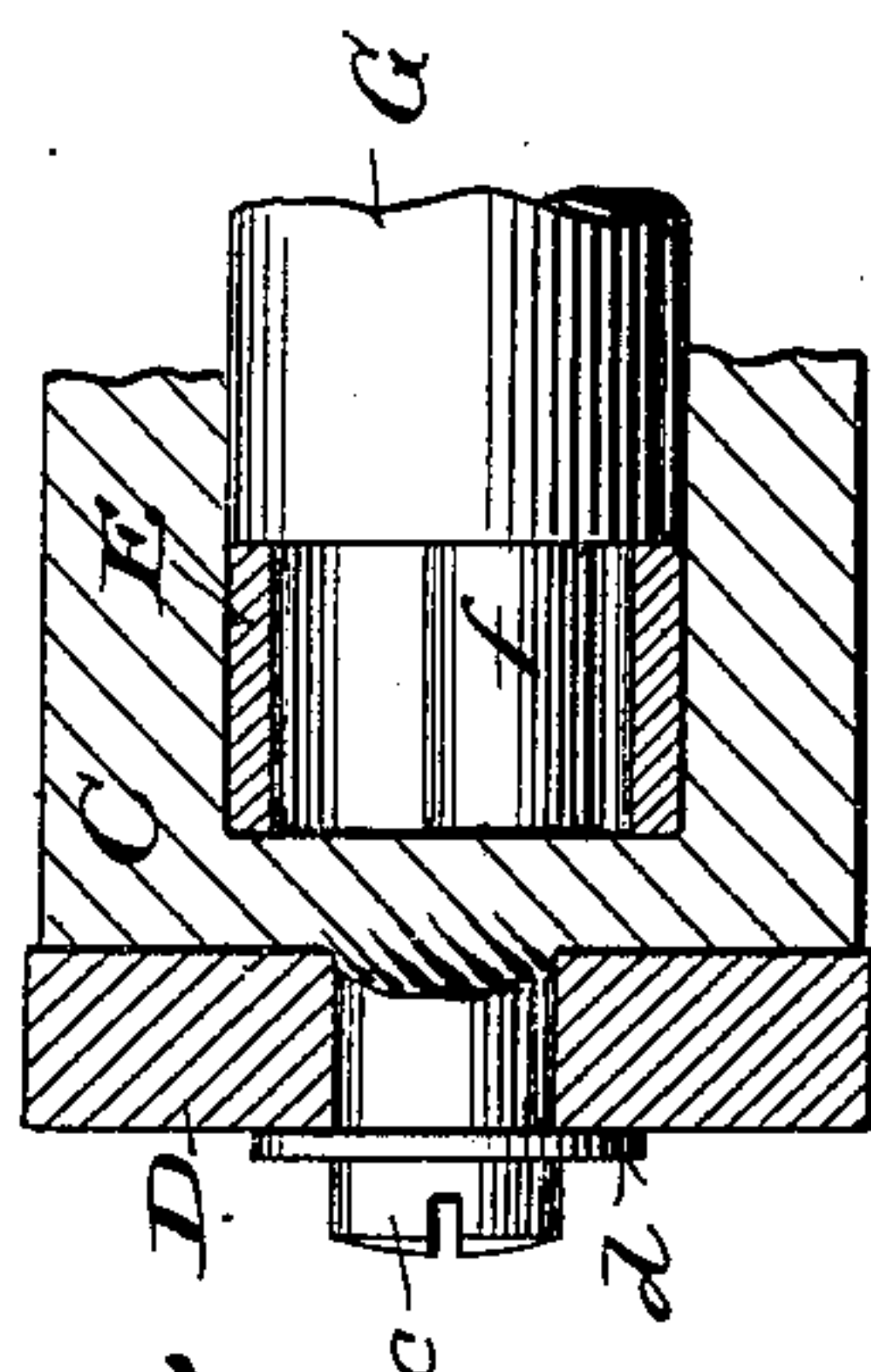
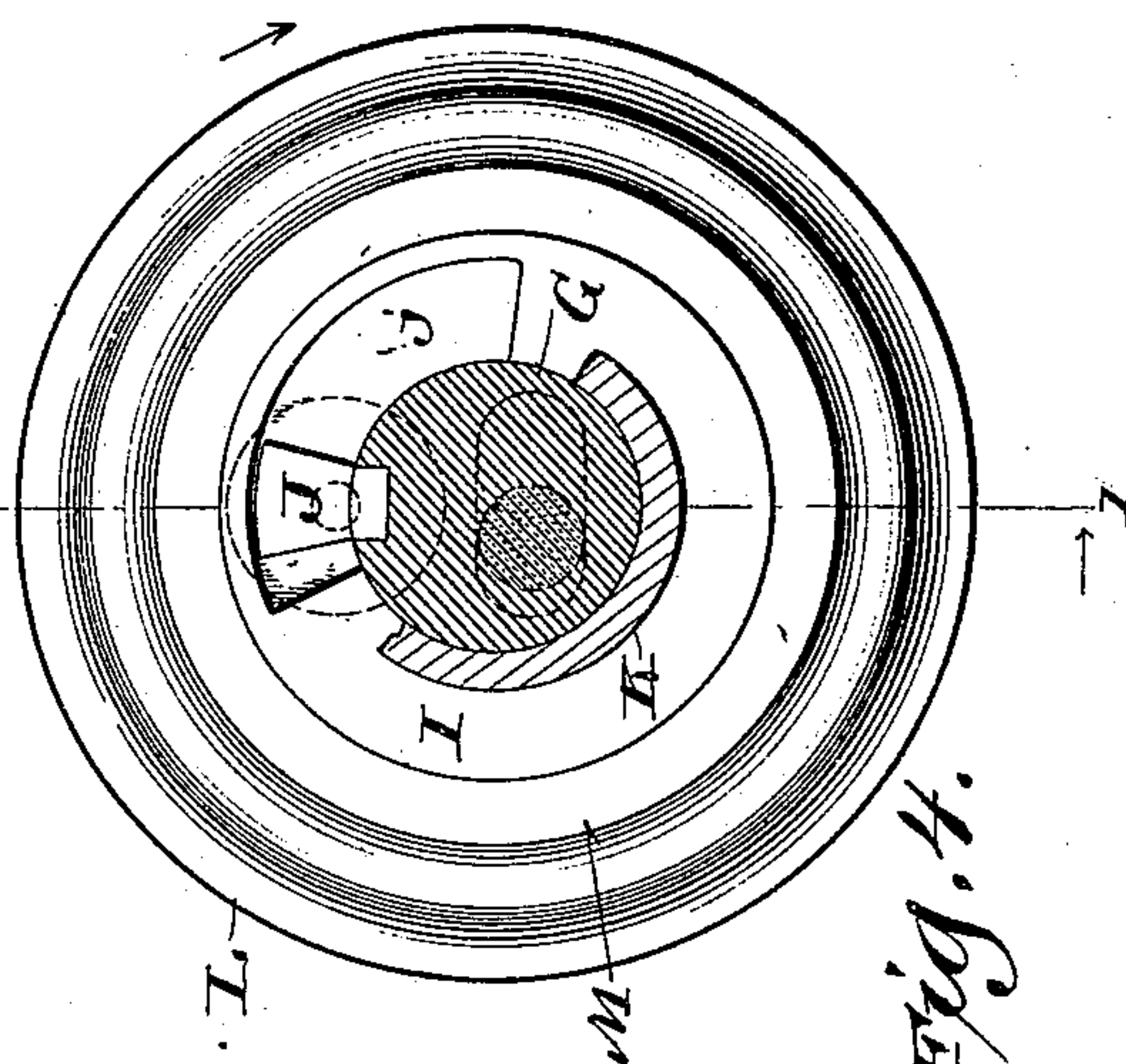
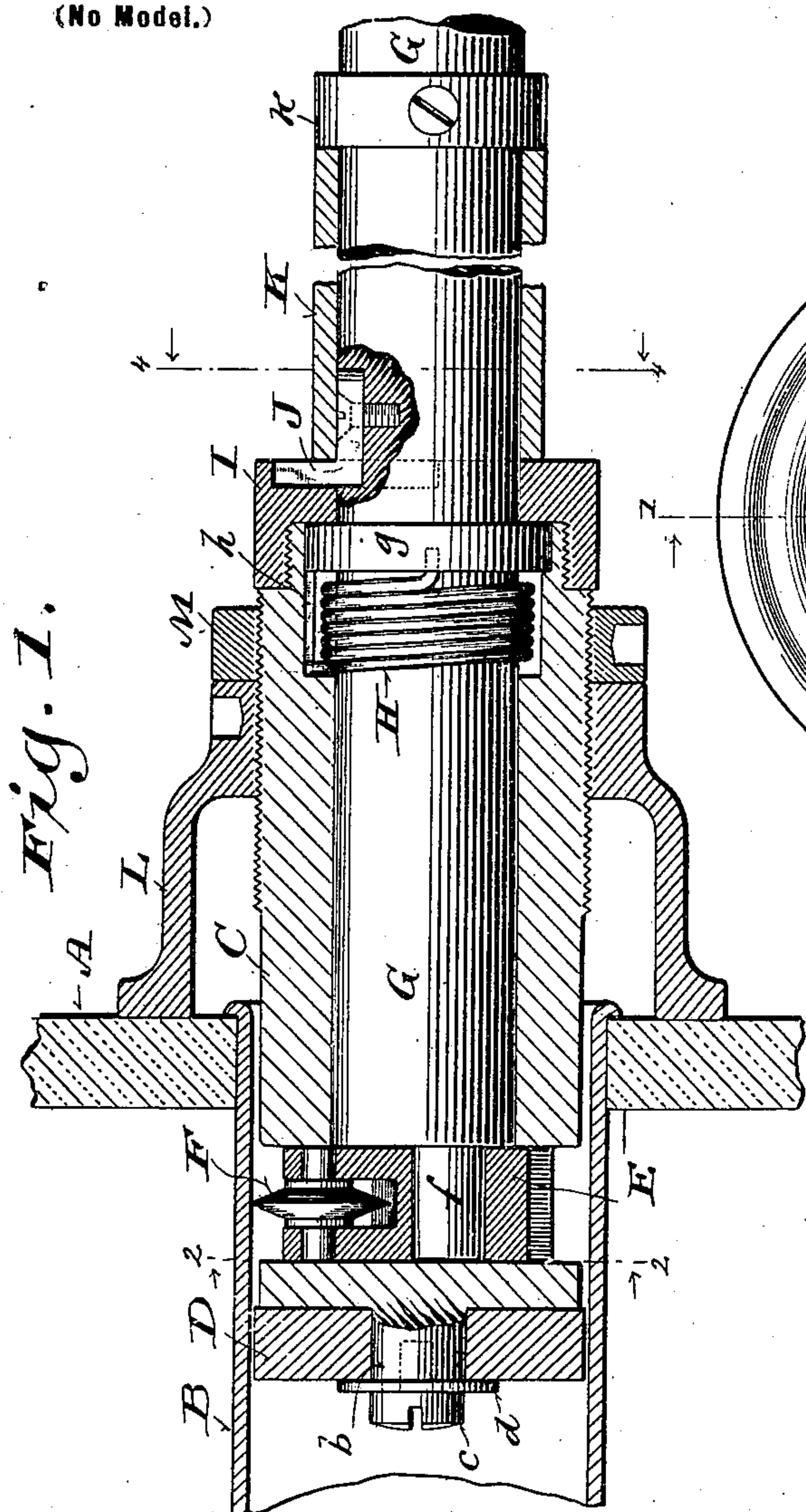
**No. 665,578.**

**Patented Jan. 8, 1901.**

**H. ORD.  
TUBE CUTTER.**

(Application filed Oct. 29, 1900.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

HARRY ORD, OF MILWAUKEE, WISCONSIN.

## TUBE-CUTTER.

SPECIFICATION forming part of Letters Patent No. 665,578, dated January 8, 1901.

Application filed October 29, 1900. Serial No. 34,745. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY ORD, a subject of the Queen of Great Britain and Ireland, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Tube-Cutters; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide simple, economical, and convenient tools especially designed for cutting boiler-tubes from the inside; and it consists in certain peculiarities of construction and combination of parts hereinafter particularly set forth with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents what is for the most part a longitudinal sectional view of a tube-cutter in accordance with my invention positioned for use, the plane of the view being indicated by line 1 1 in Fig. 4; Fig. 2, a transverse section of the tool on the plane indicated by line 2 2 in Fig. 1; Fig. 3, a detail horizontal section on the plane indicated by line 3 3 in Fig. 2; and Fig. 4, an end elevation, partly in transverse section, on the plane indicated by line 4 4 in said Fig. 1.

Referring by letter to the drawings, A indicates a boiler-head, and B one of the tubes that are set in said head. Engaging the tube is shown one end of my improved cutting-tool. A centrally-bored cylindrical stock C of the tool has an axial end stub *b*, that turns in a central aperture of a supporting-disk D, and a set-screw *c* engages this stud, a washer *d* being interposed between the screw-head and said disk. Fitting a mortise in tool-stock C is a transversely-slotted slide-block E, provided with an end recess, and a cutter-wheel F is journaled in block-ears flanking said recess. A rotative spindle G engages the tool-stock and is provided with an eccentric end stud *f*, engaging the slot in the slide-block, and a spiral spring H, wound on the spindle, has one of its ends connected to a collar *g* of said spindle, the other end of this spring being engaged with a longitudinal groove *h* in a counterbore of said stock, said spindle-collar being arranged in an enlargement of the counterbore. A stay-ring I, in opposition to spindle-collar *g*, has screw-thread connection

with a reduced end of the tool-stock, and held by a screw in a seat longitudinally of the spindle is a right-angular stop J, that also engages a segmental recess *j* in the stay-ring.

Loose on the spindle G, between the stay-ring I and another collar *k*, is a hand-sleeve K for the tool-operator, and shown in screw-thread connection with the tool-stock is a friction-shell L, that opposes the boiler-head aforesaid, this shell being adjusted to determine the position of the cutter-wheel F in a boiler-tube, a set-nut M being run on said spindle against the shell to hold the same in adjusted position. The collar *k* is detachably connected to the spindle by a screw.

In practice rotation at a sufficiently-high speed is imparted to spindle G, and the tool as a whole is controlled by grasp of the operator on the hand-sleeve K, loose on said spindle. The friction-shell L being adjusted to desired position on the tool-stock and there held by the set-nut M, the forward end of the tool is run in a tube B as far as the set of said friction-shell will permit. Owing to the engagement of the eccentric spindle-stud *f* with the slot in the block E and the friction of shell L against the boiler-head A, the block E, carrying the cutter, is moved outward to sever the adjacent tube, the rotation of the said shell and the tool-stock being somewhat slower than that of the spindle G, because of the friction of said shell against the adjacent boiler-head. The differential speed of rotation on the part of spindle G and friction-shell L results in contraction of the spring H. Hence when the tool is moved to relieve pressure of said shell on the opposing boiler-head expansion of said spring will cause a shift of the aforesaid shell to retract slide-block E and cutter therewith, so that said tool may be withdrawn, the stop J, arranged as shown, serving to limit the travel of said block in either direction of its movement.

From the foregoing it will be readily understood that the herein-described cutting-tool may be readily shifted from tube to tube of a boiler without stopping rotation of the spindle constituting part of said tool.

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



1. A tube-cutting tool comprising an end disk, a mortised stock having an axial stud held in loose engagement with a central aperture in the disk, a slide-block in the stock-mortise, a rotative spindle held in loose engagement with the stock and having eccentric connection with the slide-block, a spring connecting the spindle and stock, a cutter in connection with an end of said slide-block, and a friction-shell carried by said stock.

2. A tube-cutting tool comprising an end disk, a mortised stock having an axial stud held in loose engagement with a central aperture in the disk, a slide-block in the stock-mortise, a rotative spindle held in loose engagement with the stock and having eccentric connection with the slide-block, a spring connecting the spindle and stock, a cutter in connection with an end of said slide-block, a friction-shell carried by said stock, and means for limiting travel of the aforesaid slide-block in either direction of its movement.

3. A tube-cutting tool comprising an end disk, a mortised stock having an axial stud held in loose engagement with a central aperture in the disk, a slide-block in the stock-mortise, a rotative spindle held in loose engagement with the stock and having eccentric connection with the slide-block, a spring connecting the spindle and stock, a cutter in connection with an end of said slide-block, and a friction-shell in adjustable connection with said stock longitudinally of same.

4. A tube-cutting tool comprising an end disk, a mortised stock having an axial stud held in loose engagement with a central aperture of the disk, a slide-block in the stock-mortise, a rotative spindle held in loose engagement with the stock and having eccentric connection with the slide-block, a spring connecting the spindle and stock, a cutter in connection with an end of said slide-block, a friction-shell carried by said stock, and a hand-sleeve loose on the spindle.

5. A tube-cutting tool comprising an end disk, a mortised stock having an axial stud held in loose engagement with a central aperture of the disk, a slide-block in the stock-mortise, a cutter-wheel in journal connection with a recessed end of the slide-block, a rotative spindle held in loose engagement with the stock and having eccentric connection with the slide-block, a spring connecting the spindle and stock, a cutter in connection with said slide-block, a friction-shell carried by the stock, means for limiting travel of the aforesaid slide-block in either direction of its movement, and a hand-sleeve loose on the spindle.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

HARRY ORD.

Witnesses:

N. E. OLIPHANT,  
B. C. ROLOFF.