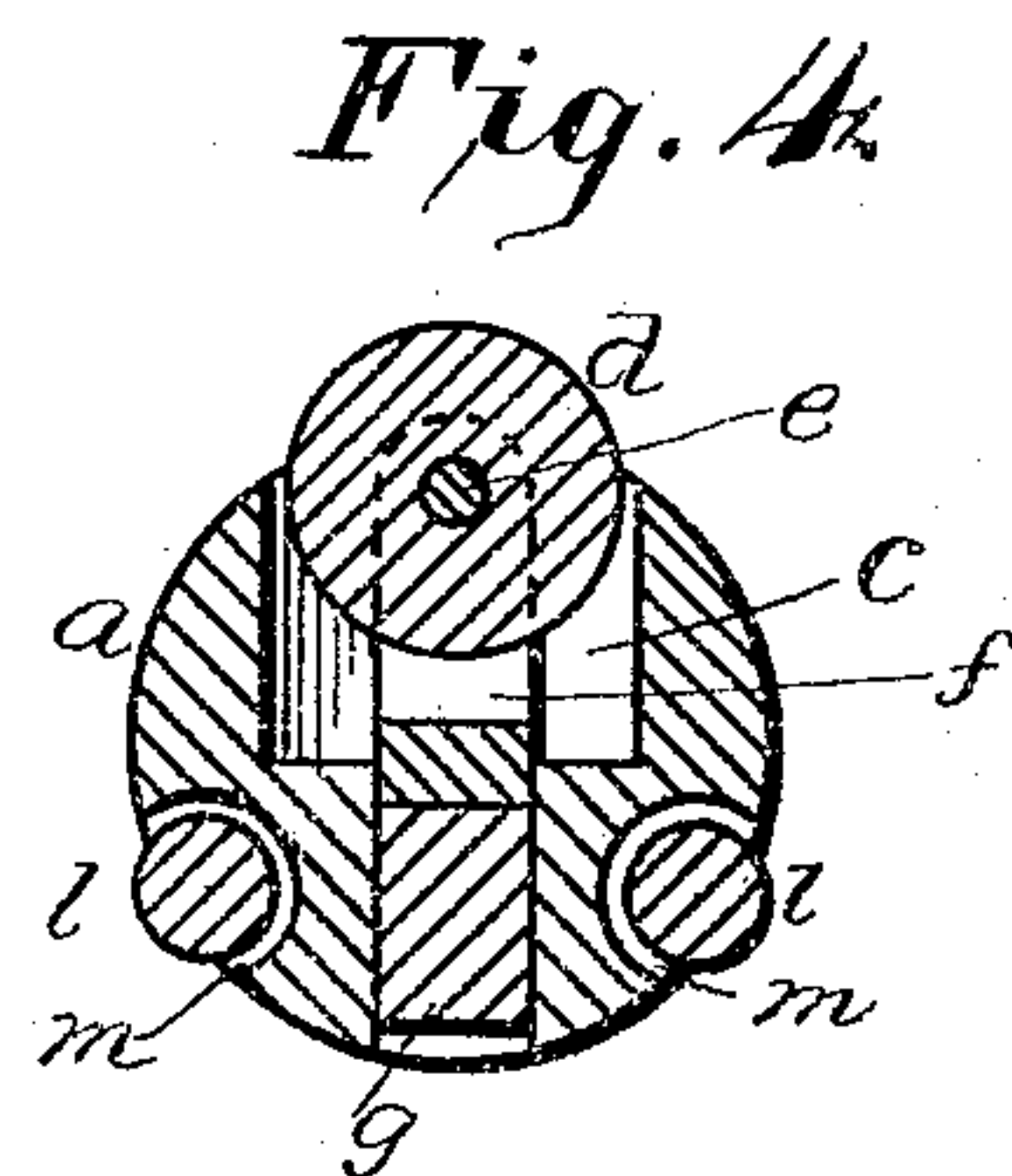
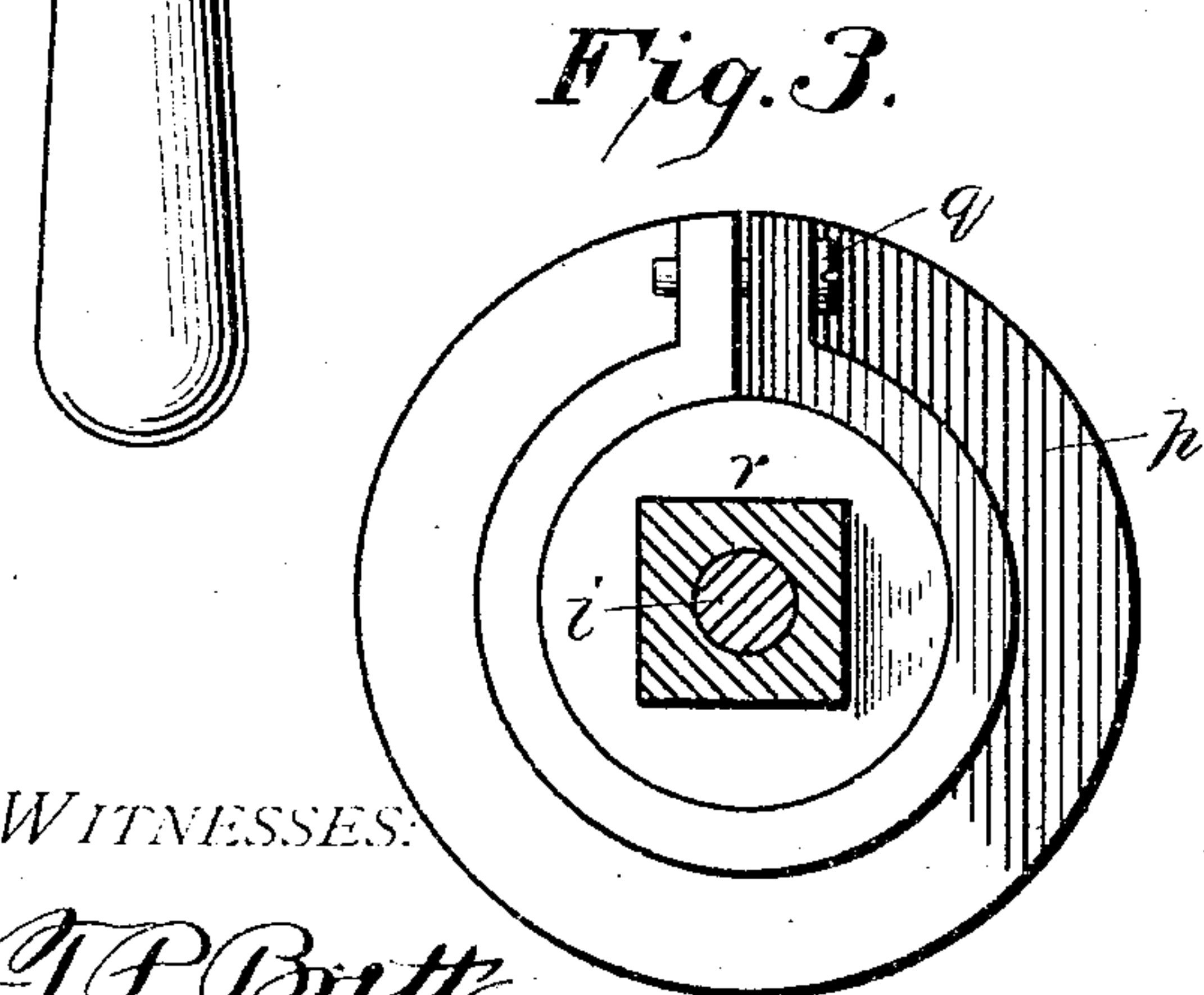
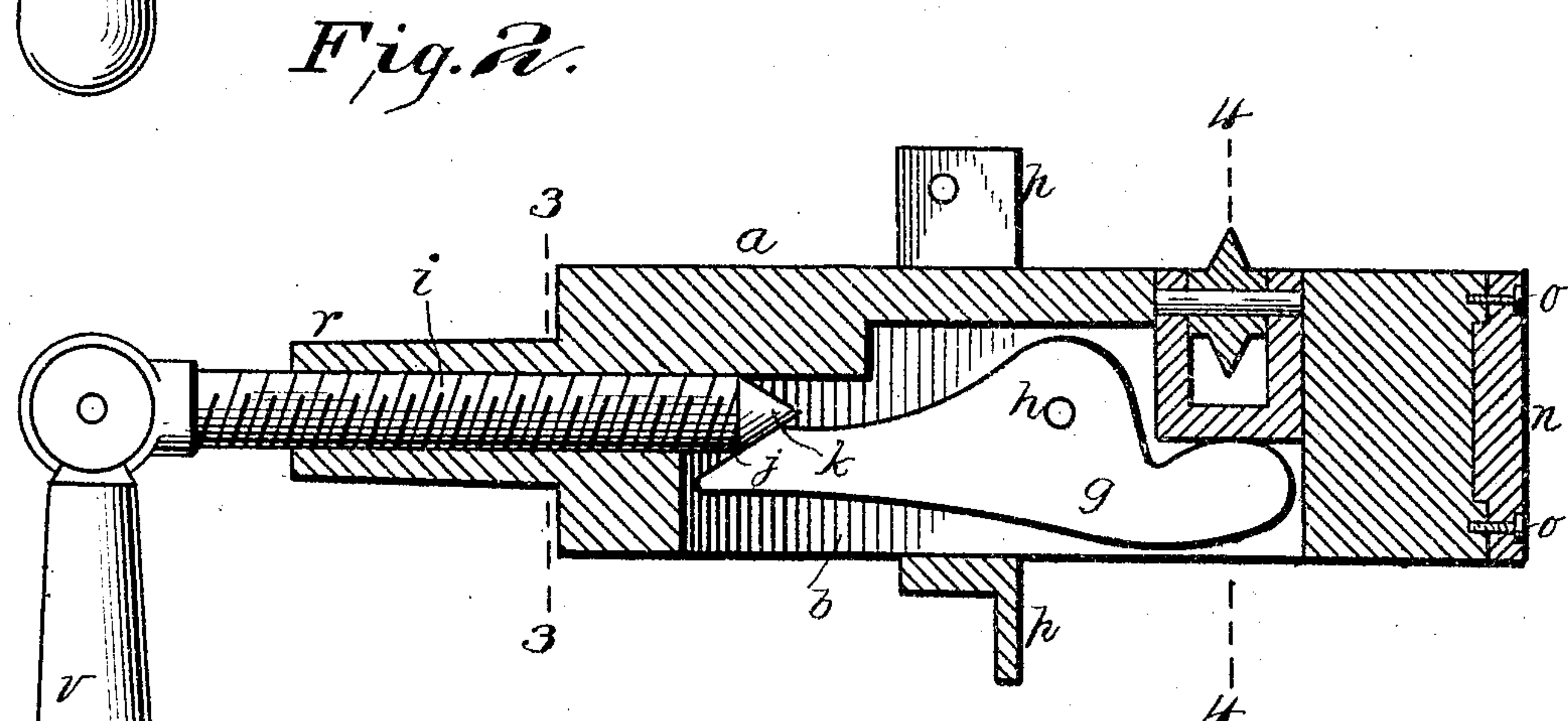
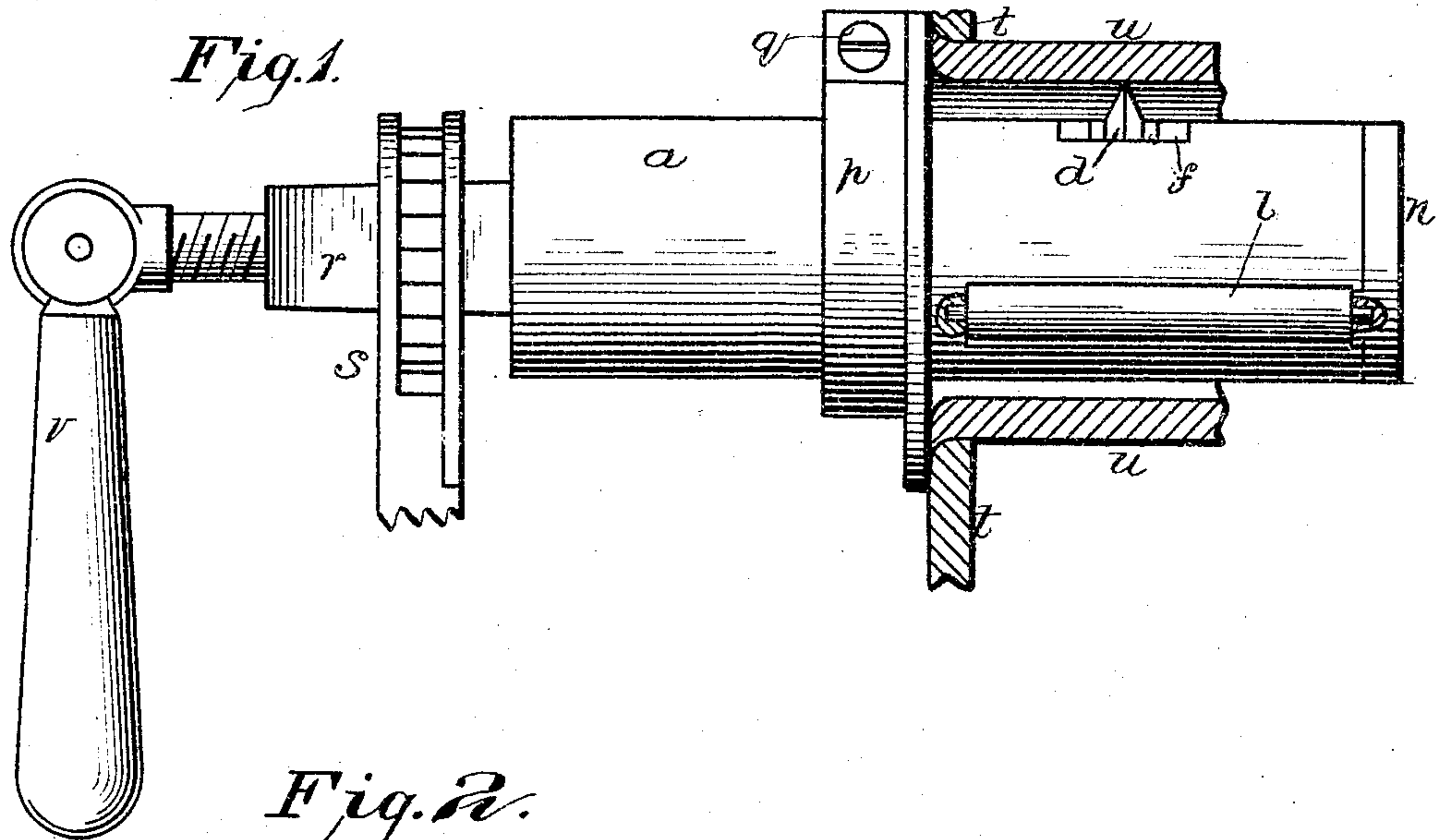


No. 764,637.

PATENTED JULY 12, 1904.

E. SHACKELFORD.  
BOILER TUBE CUTTER.  
APPLICATION FILED MAY 28, 1903.

NO MODEL.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

EDGAR SHACKELFORD, OF CAMBRIDGE, MARYLAND.

## BOILER-TUBE CUTTER.

SPECIFICATION forming part of Letters Patent No. 764,637, dated July 12, 1904.

Application filed May 28, 1903. Serial No. 159,146. (No model.)

*To all whom it may concern:*

Be it known that I, EDGAR SHACKELFORD, a citizen of the United States, residing at Cambridge, in the county of Dorchester and State of Maryland, have invented certain new and useful Improvements in Boiler-Tube Cutters, of which the following is a specification.

This invention relates to devices for cutting off tubes or pipes in general, but more specifically to that class of such devices as are intended for cutting out the tubes of boilers.

The object of the invention is to provide an improved tube-cutter which can be readily adjusted into position for work or removed from such position, is economical and compact in structure and rapid and reliable in operation, and in which the cutting-tool can be instantly adjusted into place and removed for repair or renewal.

With this object in view the invention consists in the improved construction, arrangement, and combination of the parts of a tube-cutter, which will be hereinafter fully described and afterward specifically claimed.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a view in elevation, illustrating the invention in position in a boiler-tube, the handle of the ratchet-wrench and also part of the body being broken away. Fig. 2 is a view of the device removed from the tube in longitudinal section, partly in elevation. Fig. 3 is a transverse vertical section of the device on the line 3 3 of Fig. 2. Fig. 4 is a transverse vertical section on the line 4 4 of Fig. 2.

Like letters of reference mark the same parts in all the figures.

Referring to the drawings by letter, *a* indicates the main body of the tool, which is preferably in the form of a cylinder of metal provided with a recess or chamber *b* open at the bottom and extending vertically and longitudinally a considerable portion of the length of the body. From this recess or chamber *b* a continuation thereof at the inner end of the chamber, as at *c* in Fig. 4, extends through the upper surface of the body, both chambers *b* and *c* being rectangular in cross-section. In the chamber *c* is located the cut-

ting-tool *d*, which is freely rotatable, being mounted upon a shaft *e*, journaled in a block *f*, which is free to rise and fall, and thus move the cutting-tool in a radial direction near to or farther from the axial line of the body *a*, such movement being effected by means of a lever *g*, pivoted on a pin *h* and located in the longitudinal chamber *b*, the forward end of said lever being located beneath and forming the support of the cutter-block *f*, while its outer end is engaged by a left-hand-threaded set-screw or adjusting-bolt *i*, threaded through the outer end of the body *a*, the outer end of the lever being beveled at *j* to receive the conical inner end *k* of the screw.

*l l* indicate two rollers (although their number may be varied) which are journaled in longitudinal recesses *m m* in the body *a*, preferably on its lower side, the outer end journals of said rollers being located in a head or end piece *n*, secured to the inner end of the body *a* by means of screws *o*.

At *p* is shown a flanged collar adapted to be slipped upon the body *a* and to be secured in any desired position thereon by means of a set-screw *q*. The outer end of the body *a* is reduced and squared, as at *r*, to receive a ratchet-wrench *s*.

*t* indicates a portion of a boiler-head, and *u* a portion of a tube secured therein.

The outer end of the adjusting-screw is provided with a pivoted drop-handle *v*, as shown in Figs. 1 and 2.

The operation of the device may be described as follows: The parts being in position with the cutter *d* projecting slightly beyond the circumference of the body *a*, the inner end of the instrument is inserted in the tube *u* until the cutter reaches the point at which the tube is to be cut off. The collar *p* is now slipped along the body *a* until it contacts with the boiler-head or the outer head of the tube, where it is secured in position by the set-screw *q*. The screw *i* is now turned inward against the lever *g* until the cutter *d* is brought into forcible contact with the interior of the tube, the rollers *l l* being in contact with the interior of the tube substantially diametrically opposite to the point of contact with the cutter. The whole im-



plement is now turned by means of the ratchet-wrench *s* until the cutter makes an annular groove inside of the tube, during which turning the screw *i* is continuously turned inward by holding the drop-handle *v* stationary, throwing the cutter *d* gradually farther outward, and the tool continuously turned until a cut of sufficient depth has been made in the tube or the tube entirely cut off.

Should the feed of the tool be too rapid, it may be retarded by turning the handle of the screw with the tool, and if too slow it may be accelerated by turning the handle in the direction opposite to that of the tool. In placing the wrench upon the reduced end of the body it is slipped over the drop-handle in its extended position, or a reversible ratchet-wrench may be permanently attached.

The implement is compact and of economical construction, all of the operating devices being substantially included within the area of the body *a* in that portion which enters the tube. The distance of the cutter in the tube is readily and quickly maintained by the collar *p* and set-screw *q* and its depth of cut quickly adjusted through the medium of the screw *i*, both of the adjusting-screws *i* and *q* being located outside of the boiler-head and readily accessible. The chambers in which the cutter, cutter-block, and adjusting-lever are located may be made in the body by casting said body, and the rollers *l*, while affording a substantially frictionless bearing on the inside of the tube, are readily insertible and removable by means of the head *n* and screws *o*.

While I have described the set or adjusting screw as left-hand-threaded, it might be right-hand-threaded for a person who desired to turn the tool to the left, the only requirement being that it be threaded in the direction opposite to that in which the tool is to be turned.

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

1. In a tube-cutter, the combination with a cylindrical body provided with a longitudinal chamber open at the bottom and a branch therefrom open through the top, of a cutter-

block mounted in the branch chamber, a rotary cutter journaled in the block, a lever pivoted in the longitudinal chamber, supporting the cutter-block at its forward end and having its rear end beveled, a conically-pointed left-hand-threaded set-screw threaded through the outer end of the body and bearing upon the beveled rear end of the lever, a pivoted drop-handle on the outer end of the set-screw, and a reduced squared outer end on the body to receive a wrench, substantially as described.

2. In a tube-cutter, the combination with a cylindrical body, provided with a longitudinal chamber, opening through the bottom and a branch therefrom opening through the top, of a cutter-block mounted in the branch chamber, a rotary cutter journaled in the block, a lever pivoted in the longitudinal chamber and supporting the cutter-block at its forward end, a set-screw threaded through the body and bearing upon the rear end of the lever, an inner head removably secured to the body, and longitudinal rollers located in recesses in the lower side of the body, projecting slightly beyond the periphery thereof and journaled at their inner ends in the body and their outer ends in the removable head, substantially as described.

3. In a tube-cutter, the combination with a cylindrical body, of a cutter mounted to move radially therein, a lever supporting the cutter at its forward end, a set-screw threaded through the body and bearing upon the outer end of the lever, a movable collar on the body, means for securing it in any adjustment, means for turning the body on its longitudinal axis, and friction-rollers projecting from the periphery of the body opposite to the cutter, the cutter and collar adjusting means being located outside the tube in which the cutter is operated, substantially as described.

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

EDGAR SHACKELFORD.

Witnesses:

J. H. C. BARRETT,  
MURRAY G. HOOPER.