

E. MANUEL.

Tube-Cutters.

No. 135,484.

Patented Feb. 4, 1873.

Fig. 1.

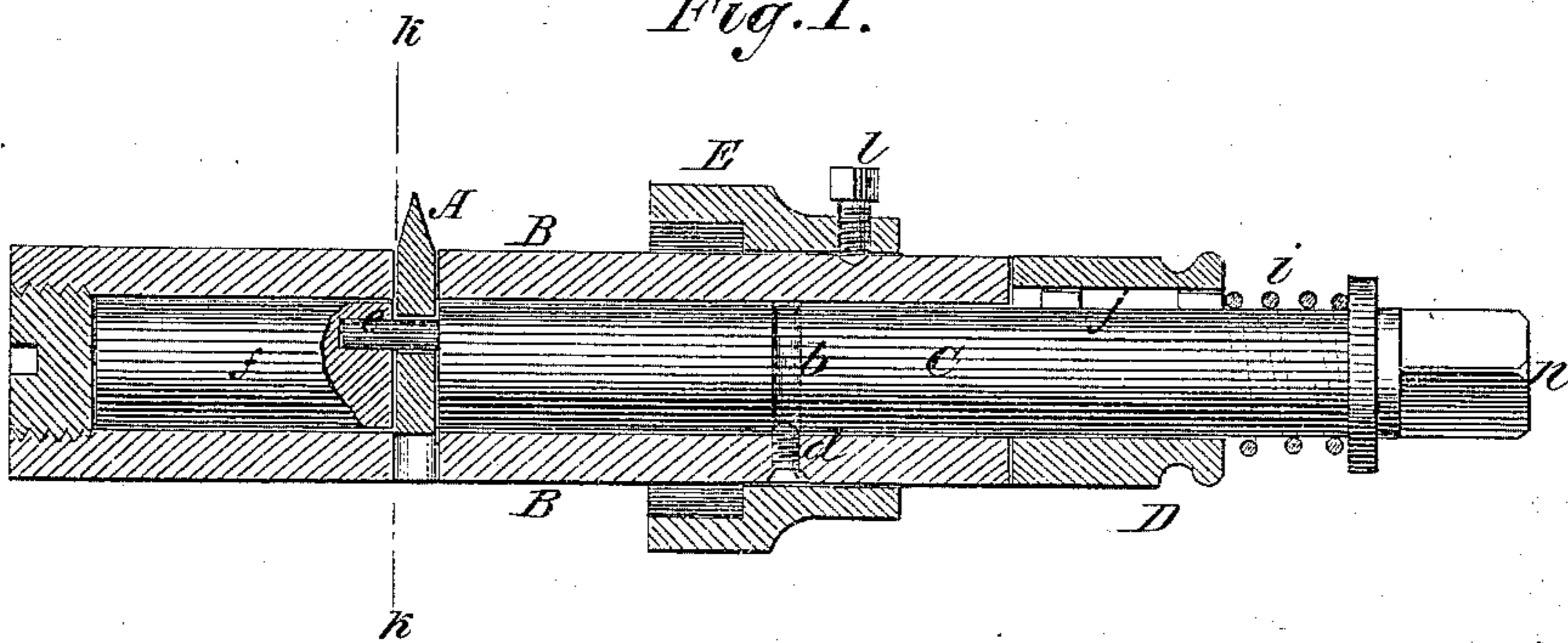


Fig. 2.

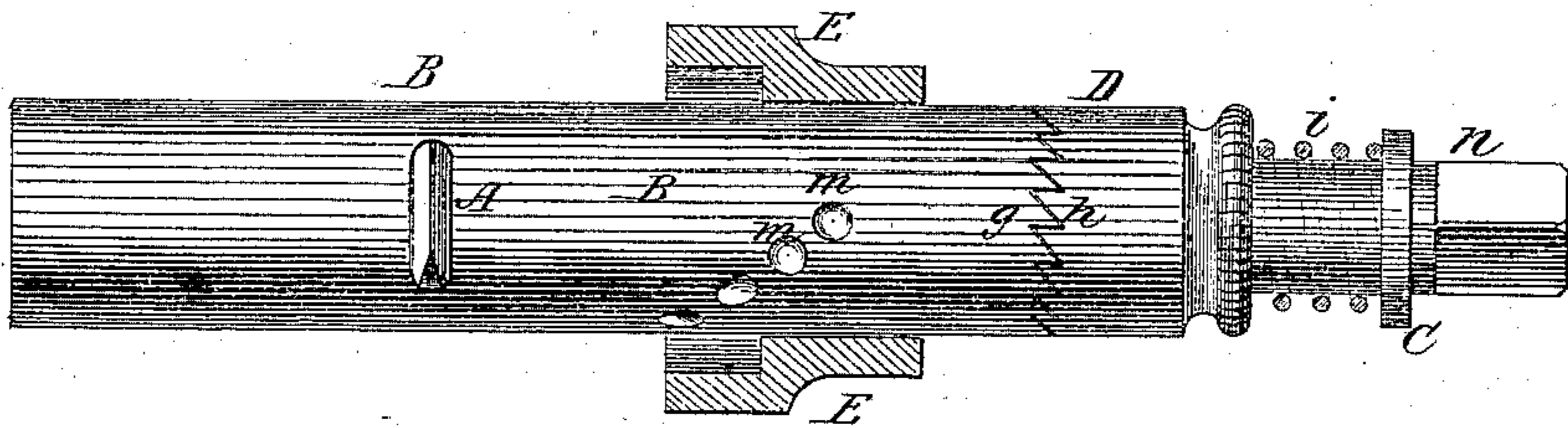
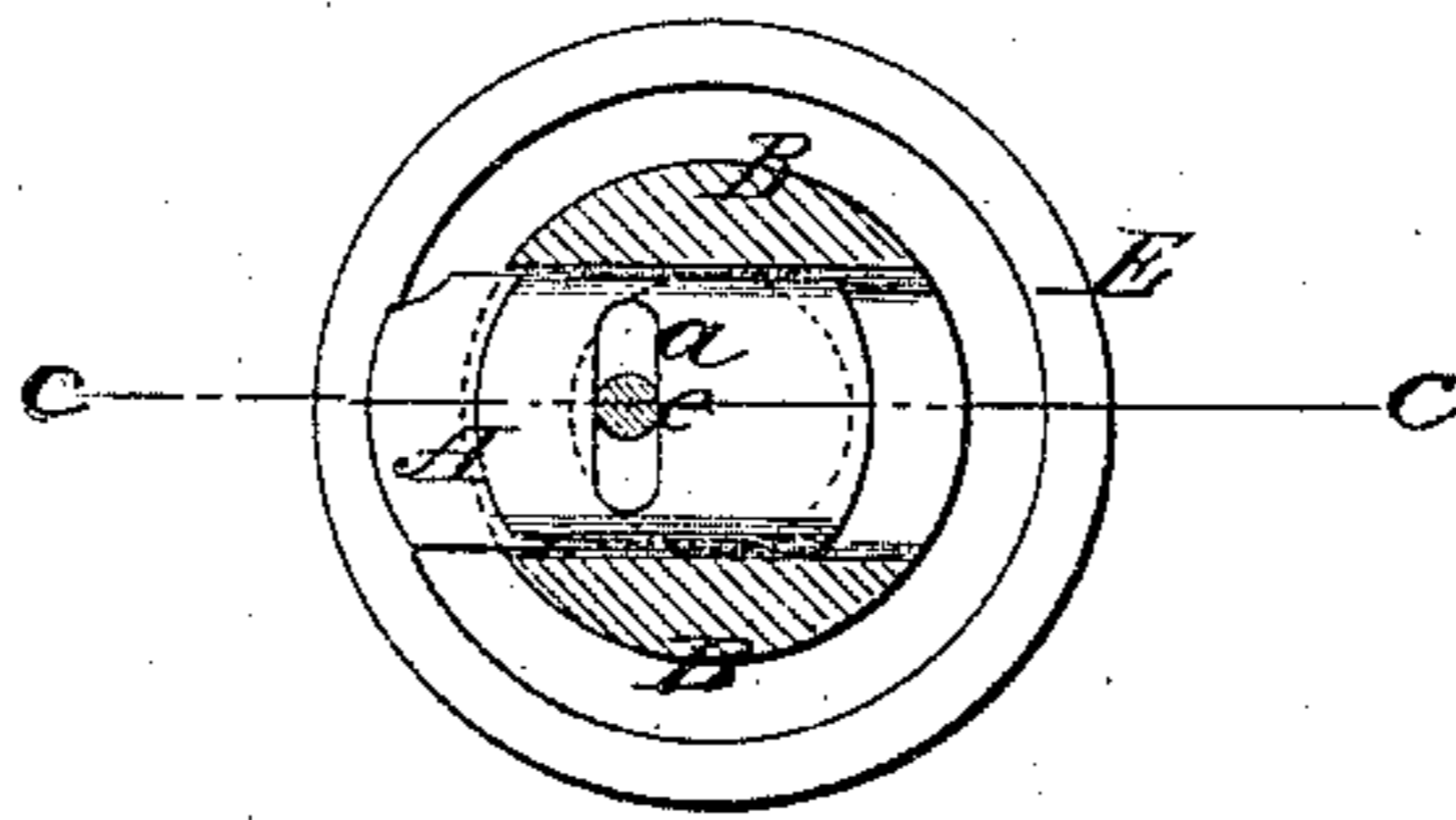


Fig. 3.



Witnesses:

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EDWARD MANUEL, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO HIMSELF
AND GEORGE GUY, OF SAME PLACE.

IMPROVEMENT IN TUBE-CUTTERS.

Specification forming part of Letters Patent No. 135,484, dated February 4, 1873.

To all whom it may concern:

Be it known that I, EDWARD MANUEL, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and Improved Tube-Cutter, of which the following is a specification:

Figure 1 is a longitudinal section of my improved tube-cutter, taken on the line *c c*, Fig. 3. Fig. 2 is a side view, partly in section, of the same; and Fig. 3, a vertical transverse section of the same, taken on the line *k k*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to produce a tube-cutter which can be set to cut a tube from within, and whose knife can be gradually forced out to finally cut entirely through the tube within which it revolves. Devices of this character have been made with a cutting-tool or chisel arranged to project laterally through a slot in a tube, and made adjustable therein by means of a spindle fitting in said tube. My improvement relates particularly to a spring-and-ratchet connection between the tube and spindle, as hereinafter described.

The letter A in the drawing represents a flat cutter made of proper size. It is fitted within a transverse slot of a tubular case, B, in such manner that its cutting-edge may project from the side of said case, in manner fully shown in Fig. 1; but the length of the cutter is such that it can be entirely drawn into the tube B transversely, so as not at all to project from the same. The cutter contains a slot, *a*, which is clearly shown in Fig. 3. C is a pin or spindle fitted into the tubular case B, at one end of the same, and grooved at *b*, to receive a pin, *d*, from the tube, so that it can be freely turned within the case B, but not longitudinally moved therein. The inner end of the spindle C carries a projecting crank-pin, *e*, which passes through this slot *a* of the cutter in such manner that, by turning the spindle, the cutter will be moved laterally in the tube. For security I prefer to let the pin *e*, after it has passed the cutter, enter a cylindrical block, *f*, which rests in the lower or inner end of the case B, so that it can be turned therein with the spindle. The outer end of the case B has

ratchet-teeth *g g* formed on it, as shown in Fig. 2. A cap, D, is fitted upon the outer part of the spindle C, and has ratchet-teeth *h* formed on the end, and is, by a spring, *i*, pressed against the toothed end of the case B. By groove and feather *j*, or otherwise, the cap D is connected with the spindle so that the two must turn jointly, although the cap may play lengthwise on the spindle. E is a sleeve embracing the case B and locked thereto by a set-screw, *l*. The case B may, at its outer side, be provided with a series of depressions, *m m*, as indicated in Fig. 2, to receive the point of the set-screw *l*, so as to permit the sleeve E to be set on the case B at suitable distance from the cutter.

In operation, the distance between the cutter and the inner end of the sleeve E determines the distance from the end of the tube to be cut at which the cutter is applied. The sleeve E, therefore, serves as an adjustable gage.

In operation, the case B is inserted within the tube to be cut so far that the sleeve E reaches the end of such tube. The cutter A being drawn into the case B to the fullest extent, the spindle C is then slightly turned with its ratchet-cap D to force the cutter slightly out from the case B, which then is turned by means of a wrench or other instrument applied to the square outer end *n* of the spindle. The spindle, when thus turned, is turned in direction against the teeth of the ratchets, so the relative positions of the parts B C D will not be changed. After one rotation of the cutter, it has made an incision in the inner part of the tube to the extent of its projection from the case B beyond the empty space around said case B. Thereupon the spindle C is turned within the case B to force the cutter out a little more, and is then subsequently turned again in the opposite direction to produce a further and deeper incision, and so forth. It is evident that, when the spindle is turned within the case B to set the cutter further out, the ratchets *h g* will slip on each other and then be relocked by the spring *i*. After the tube has been cut, the cap D is drawn off the end of the tube B and turned, together with the spindle, so as to draw the cutter again into the case B, where-

upon the same can be withdrawn from the tube.

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

The combination, with the spindle C *n* provided with the groove *b* and wrist-pin *e*, and the slotted case B having teeth *g*, of the

ratchet-cap D, feather *j*, spring *i*, cutter A, and screw *d*, to operate as shown and described.

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Witnesses:

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