

(No Model.)

H. D. CONE.

WRENCH.

No. 376,584.

Patented Jan. 17, 1888.

Fig. 1.

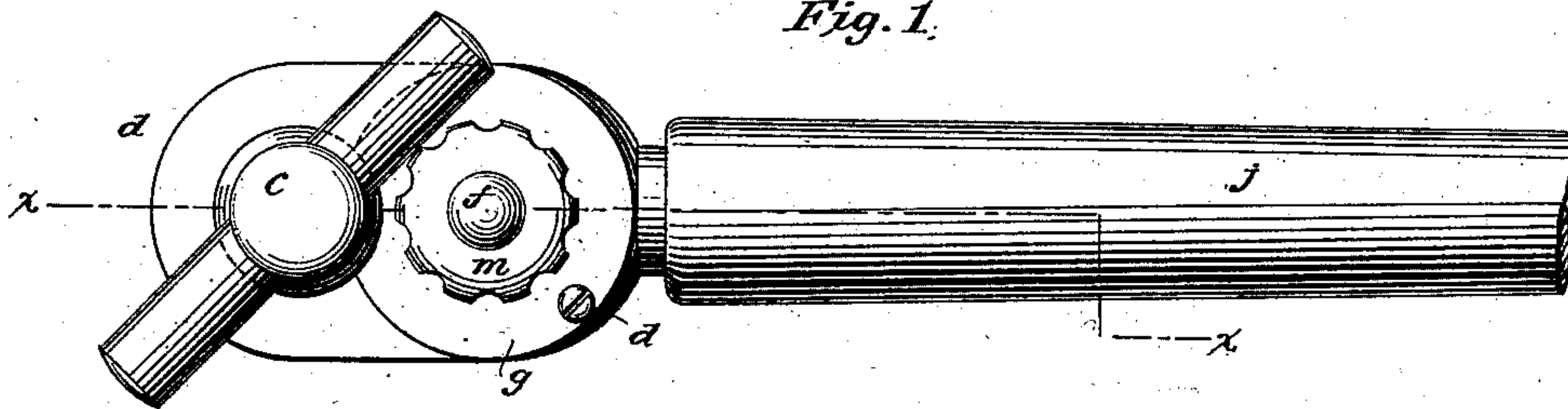


Fig. 2.

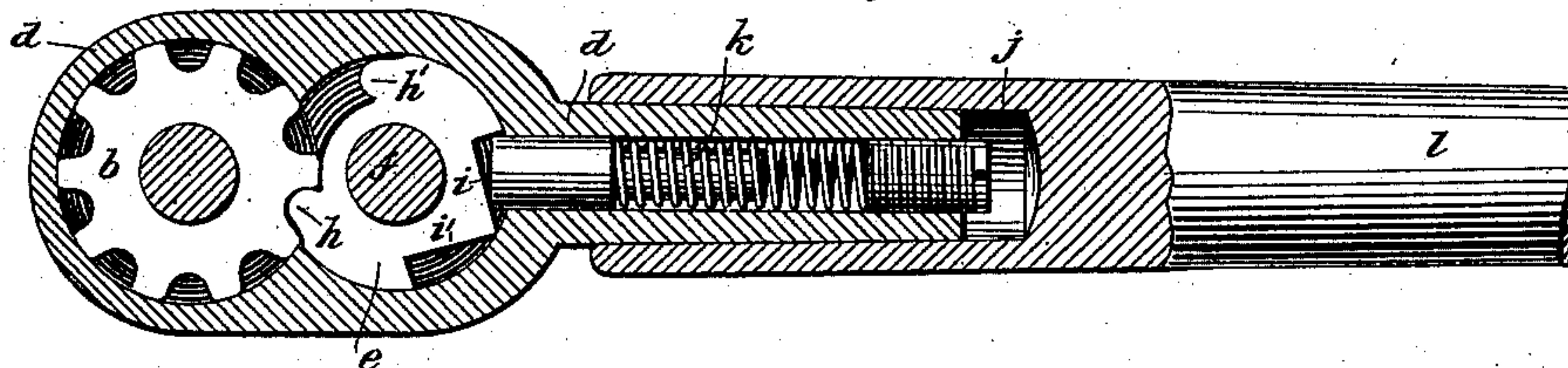


Fig. 3.

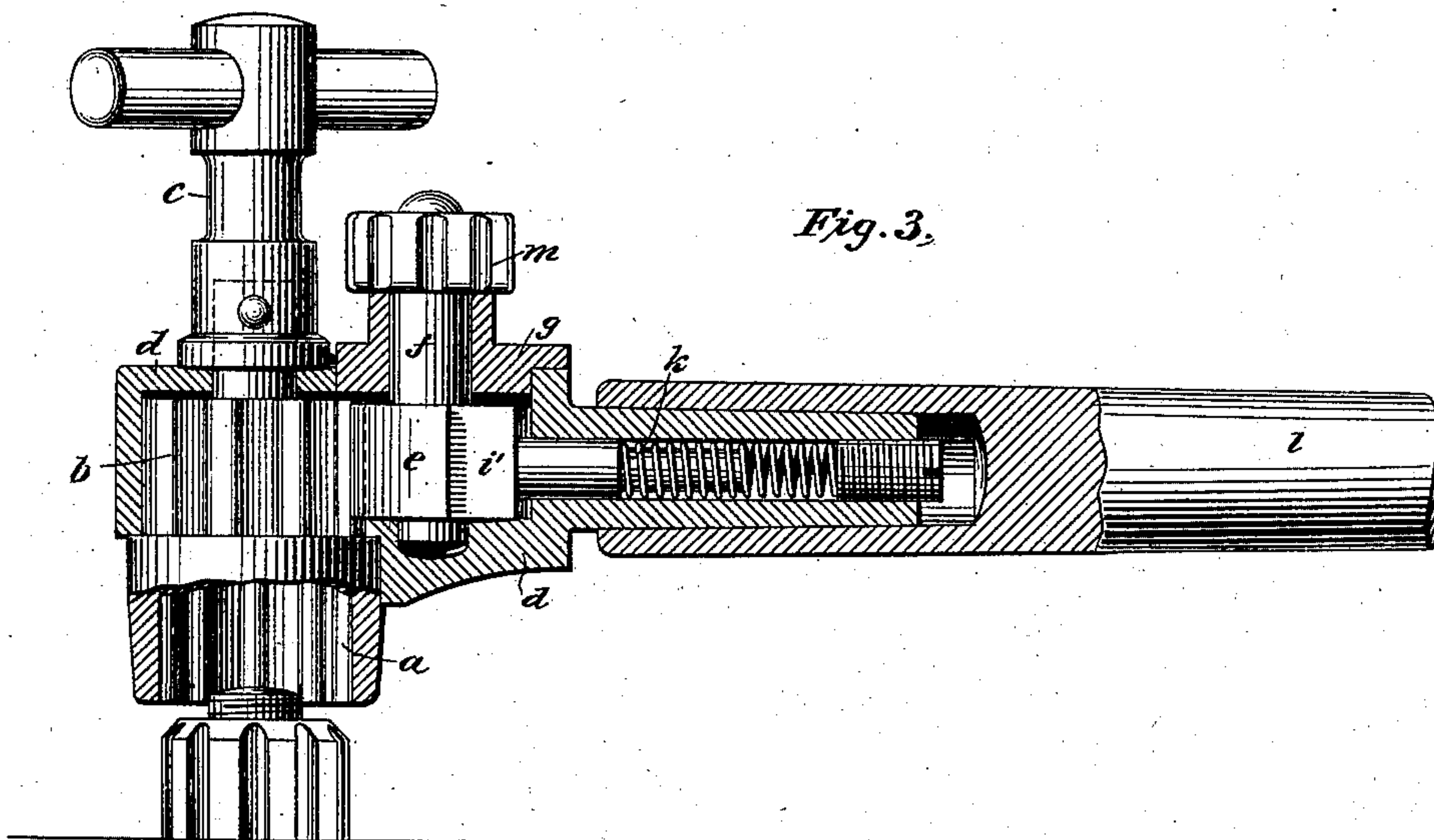
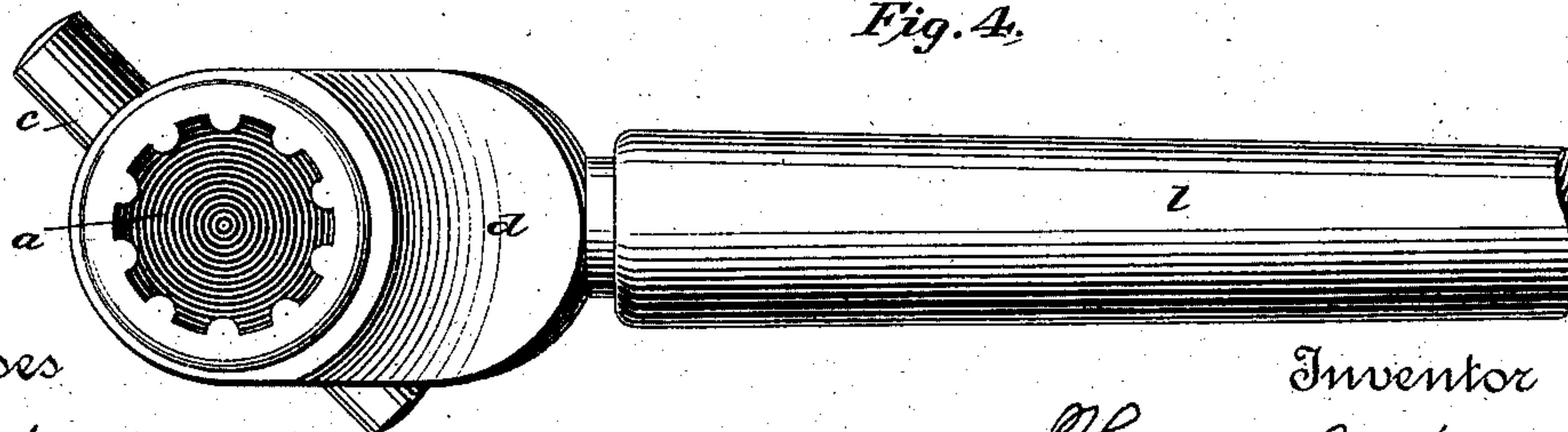


Fig. 4.



Witnesses

Geo. W. Dreck.
Carrie C. Ashley.

Inventor

Henry D. Cone

By his Attorney

W. C. Witter.

UNITED STATES PATENT OFFICE.

HENRY D. CONE, OF STOCKBRIDGE, MASSACHUSETTS.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 376,584, dated January 17, 1888.

Application filed June 10, 1887. Serial No. 240,888. (No model.)

To all whom it may concern:

Be it known that I, HENRY D. CONE, a citizen of the United States, residing in Stockbridge, in the county of Berkshire and State of Massachusetts, have invented a new and useful Improvement in Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form part of this specification.

The object of my improvement is to provide a pawl-wrench for nuts or similar devices which can be readily adjusted for operation in either direction, and which will be at once convenient and economical in the time and force required in using it.

My improved wrench is specially applicable to the form of fluted nut shown.

My invention is shown in the accompanying drawings, in which—

Figure 1 is a plan view of my improvement. Fig. 2 is a top view with certain parts removed. Fig. 3 is a vertical section on the line *x x* of Fig. 1. Fig. 4 is a bottom view of the wrench.

Similar letters indicate similar parts in the different views.

Referring to the drawings, *a* is the socket part of the wrench, which may be made of any desired shape on the interior. The form shown in Fig. 4 is specially adapted for a grooved or fluted nut such as I have shown and claimed in another patent. Above the socket part *a* is a grooved piece, *b*, (shown in Figs. 2 and 3,) which can be made solid with or is fastened firmly to the part *a*, so as to turn with that part.

c is a handle, attached to the piece *b* in any suitable manner and turning with it.

The parts *a* and *b* are supported in a circular recess in the arm *d* and revolve freely in the recess. They are held in place in the recess by means of a shoulder on the handle *c*, which bears on top of the arm *d*, as shown. Another circular recess is provided in the arm *d*, into which the teeth or cogs of the piece *b* are revolved. In this second recess the circular duplex pawl-piece *e* is placed. The pawl *e* is mounted rigidly on and vibrates with the shaft *f*. The shaft *f* vibrates in bearings in the arm *d* and the cap *g*, as shown. The cap *g*

covers the recess, and is screwed to the arm *d*. A thumb-nut or head is placed on the outer end of the shaft *f*, so that the shaft *f* and the pawl-piece *e* can be turned as desired.

The duplex pawl-piece *e* is constructed as shown in Fig. 2, having two circular or partly-circular pawl-teeth, *h h'*, adapted to fit snugly into the grooves in the piece *b*. The radial distance of each of these pawl-teeth from the vibrating axis of the pawl is greater than the distance from the same axis of the bottom of a groove of the piece *b* when it is in the straight line connecting that axis with the turning axis of the said piece *b*. On the opposite side of the pawl from the teeth *h h'* the duplex pawl-piece *e* is cut away, so as to form two flat surfaces, *i i'*, as shown. The portion of the arm *d* extending into the handle *j* of the wrench is provided with a central hole, in which a spring, *k*, is inserted. The spring is fixed at its outer end; but at its inner end it is provided with a pin, which bears against one of the surfaces *i i'* of the pawl-piece *e* and operates constantly to press one of the pawl-teeth *h h'* into the grooves in the piece *b*.

To screw a right-handed nut on its bolt the socket-piece *a* is placed upon the nut. The pawl-piece *e* is turned by means of the thumb-nut, so that the pawl-tooth *h* is thrown forward to engage with the grooved piece *b*, the other pawl-tooth, *h'*, being thus thrown out of operation. When the pawl-piece *e* is turned into this position, the surface *i* will be presented to the pin upon the end of the spring *k*, and this spring-pressed pin will bear upon that surface and press the pawl-tooth *h* into one of the grooves in the piece *b*. When the parts of the wrench are in these positions and the lever-arm *l* is turned in the direction to screw down the nut, the pawl-tooth *h* will jam in the adjacent groove of the grooved piece *b* and compel it and the socket-piece *a* to turn with the lever-arm; but if the lever-arm be swung or turned in the reverse direction the pawl will vibrate and its pawl-tooth will slip out of the groove with which it was engaged, and will be engaged by the operation of the spring *k* with the next succeeding groove of the grooved piece *b*, whereupon the lever-arm may be again turned in the direction to screw down the nut, as before.

When the nut is to be unscrewed, the pawl-piece *e* is adjusted by partially turning the pawl by means of its thumb-nut *m*, so as to throw the pawl-tooth *h* out of its operating position and to put the other pawl-tooth, *h'*, into its position for engaging with the grooved piece *b*, whereupon the action of the wrench is reversed, so that the nut may be unscrewed by swinging the lever-arm to and fro.

As the piece *b* is provided with the handle *c* in addition to the lever-arm *l*, the nut can be screwed up most of the way by means of the handle *c*, without moving the lever; but when more force is required the arm *d* can be vibrated or swung to and fro on the parts *a* and *b* and the nut screwed tight by means of the lever *l* and the pawl *h*.

To unscrew the nut it is not necessary to remove the wrench; but the pawl-piece *e* is simply turned so as to throw the pawl-tooth *h'* into operation, which also causes the pin on the end of the spring *k* to bear upon the surface *i'*. The operation is the same in this case, only in the reverse direction. In each case, when the grooved part *b* or the arm *d* is swung backward in the proper direction, the pawl is

permitted to yield by the spring *k*, so as not to hinder the backward turning of the lever-arm *l*.

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

1. A wrench, substantially as shown and described, consisting of the socket part *a*, the grooved piece *b*, the recessed arm *d*, the circular duplex pawl-piece *e*, the partly-circular pawl-teeth *h h'*, the surfaces *i i'*, the shaft *f*, on which the pawl-piece *e* is mounted, a thumb-nut at its outer end, the spring *k*, fastened in the arm *d*, and the lever *l*.

2. A wrench, substantially as shown and described, consisting of the socket part *a*, the grooved piece *b*, the recessed arm *d*, the handle *c*, the circular duplex pawl-piece *e*, the partly-circular pawl-teeth *h h'*, the surfaces *i i'*, the shaft *f*, on which the pawl-piece *e* is mounted, a thumb-nut at its outer end, the spring *k*, fastened in the arm *d*, and the lever *l*.

HY. D. CONE.

Witnesses:

ROBERT N. KENYON,
M. J. DRUMMOND.