

(No Model.)

J. PUSEY.  
WRENCH.

No. 338,874.

Patented Mar. 30, 1886.

Fig. 5.

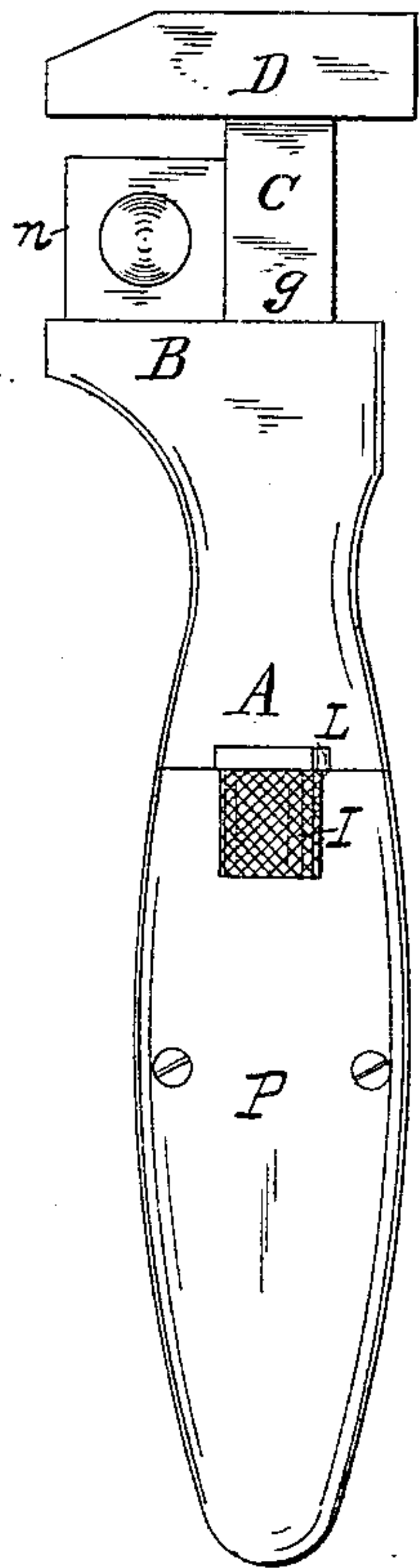


Fig. 1.

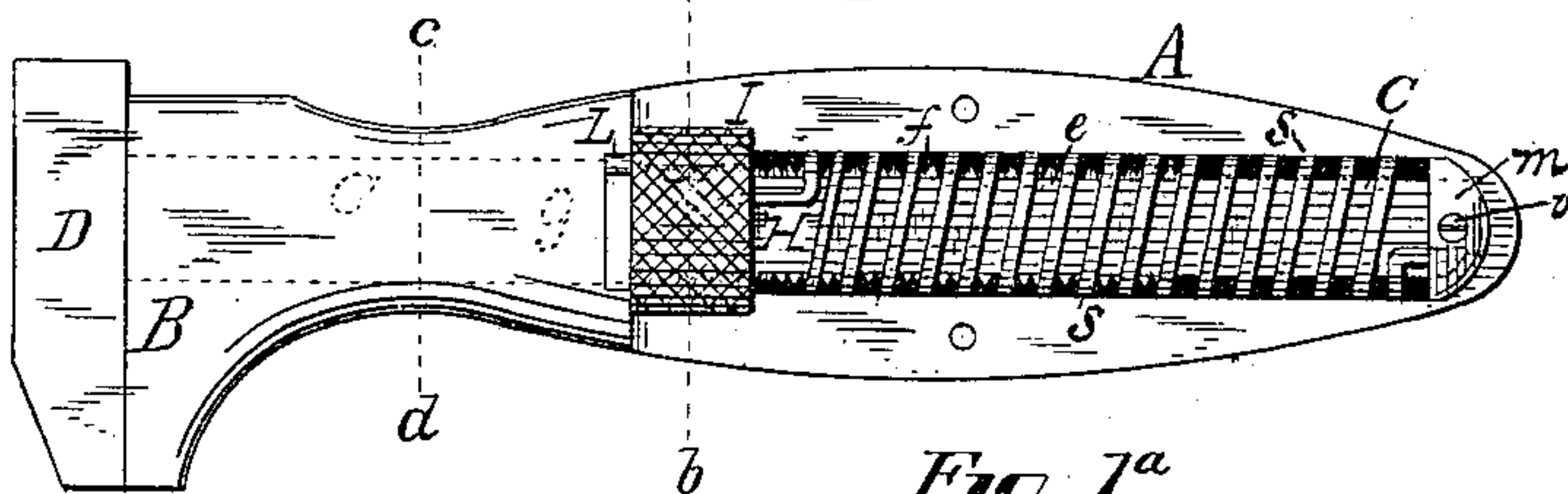


Fig. 1<sup>a</sup>.

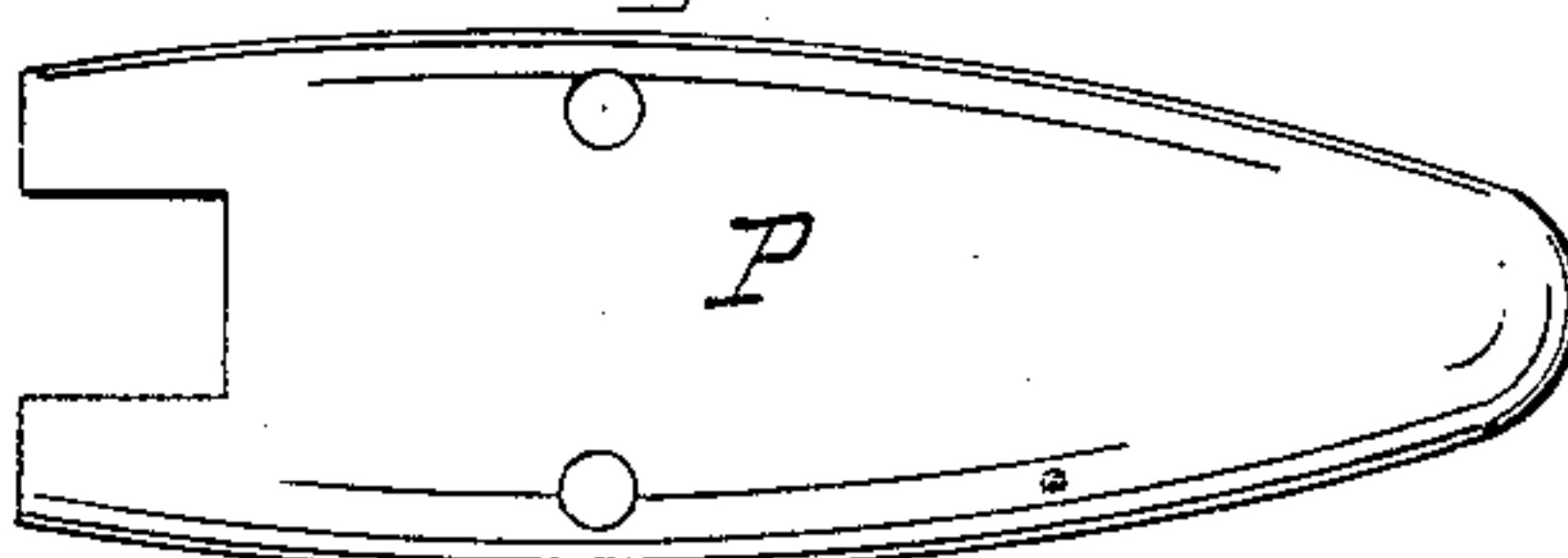


Fig. 4.

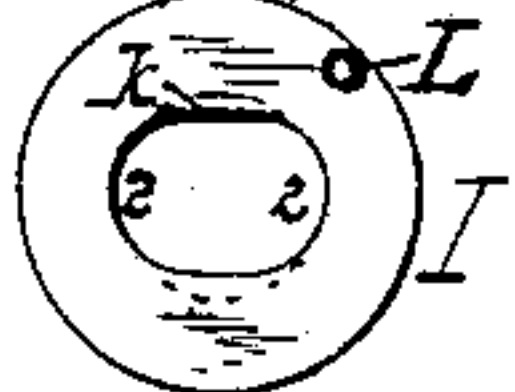


Fig. 6.

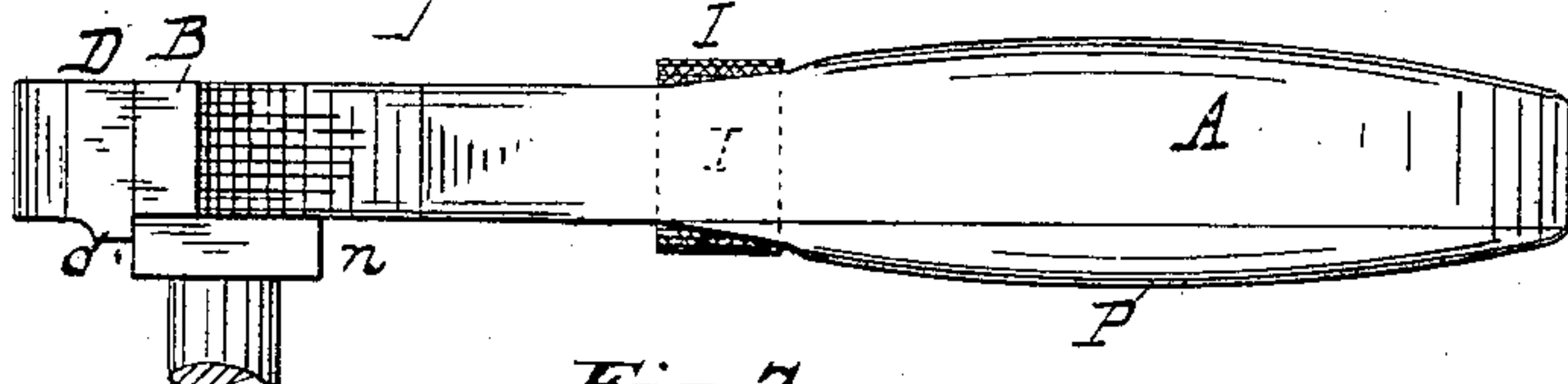


Fig. 7.

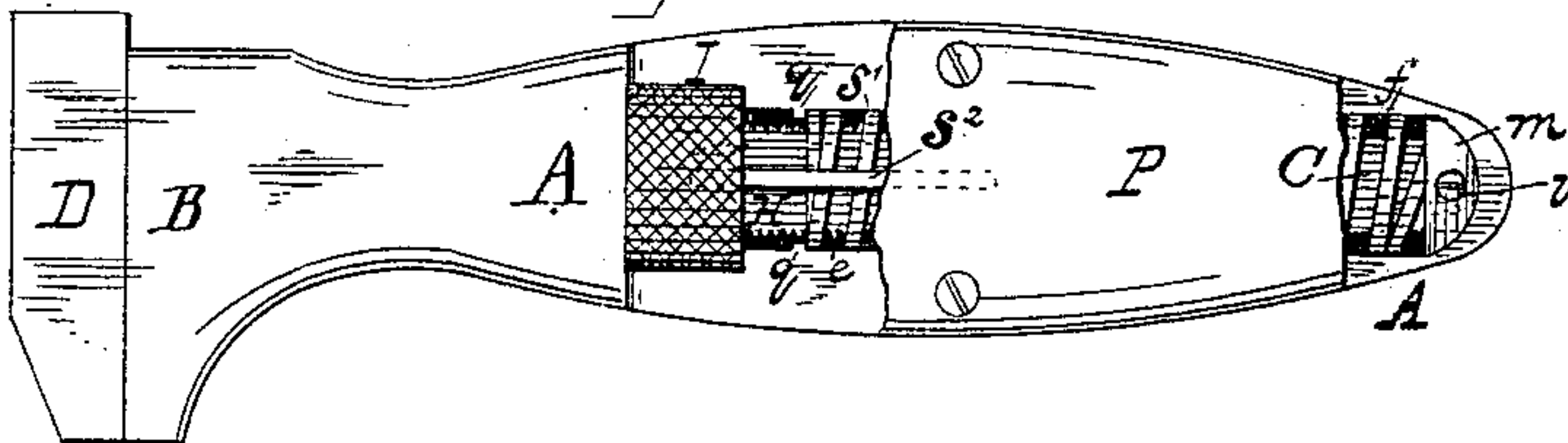


Fig. 8.

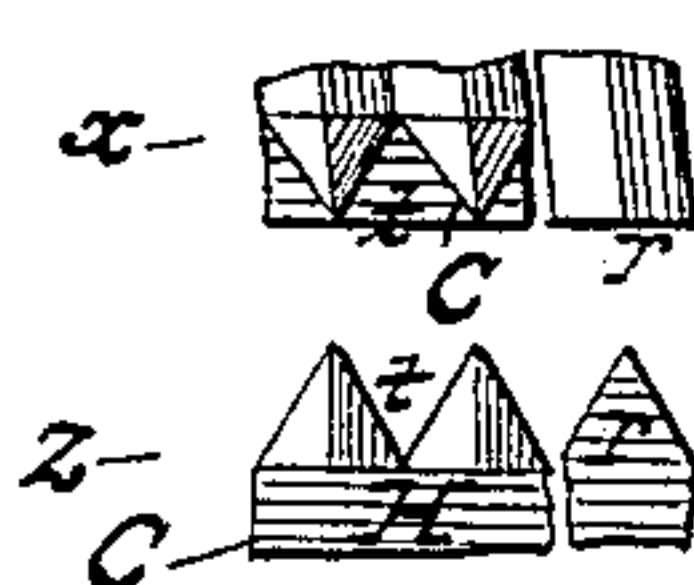


Fig. 9.

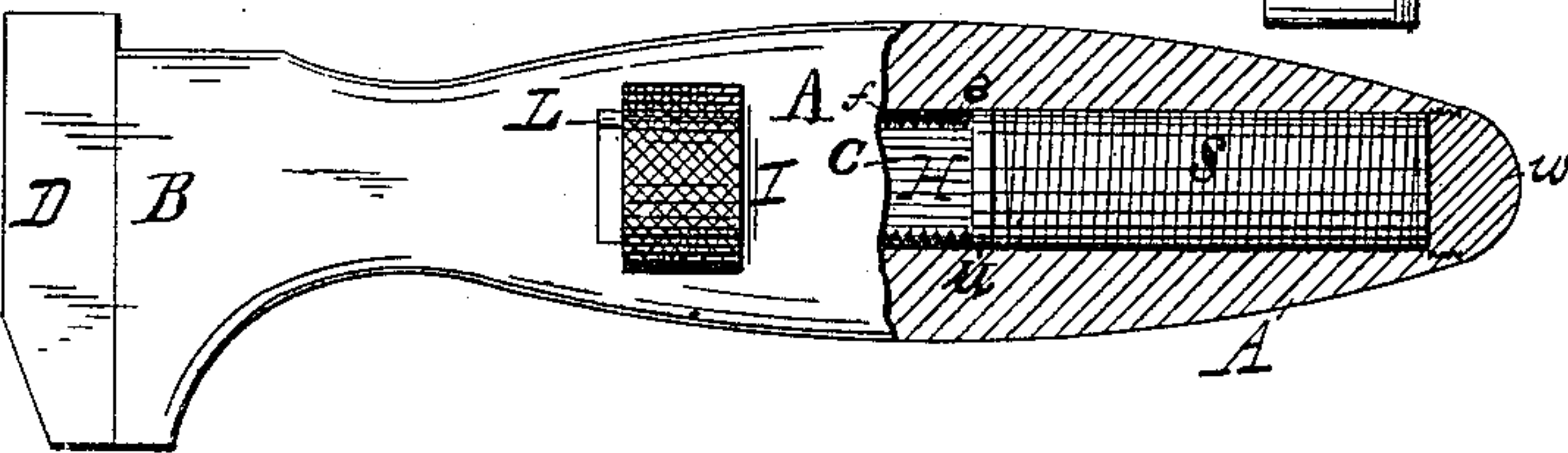


Fig. 3.

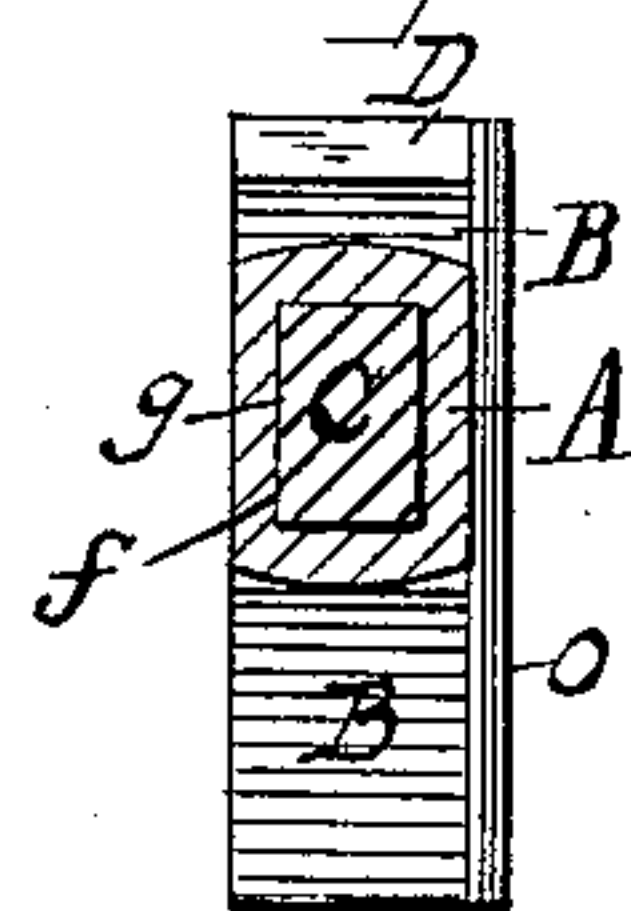
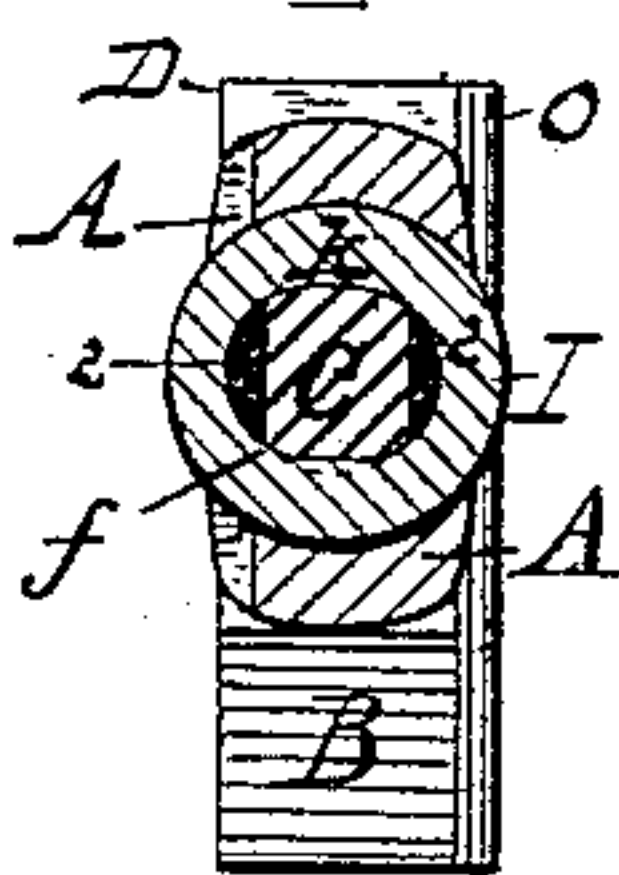


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## WRENCH.

SPECIFICATION forming part of Letters Patent No. 338,874, dated March 30, 1886.

Application filed November 27, 1885. Serial No. 184,050. (No model.)

*To all whom it may concern:*

Be it known that I, JOSHUA PUSEY, a citizen of the United States, residing at the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Wrenches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

10 Figure 1 is a side elevation with covering-plate removed and represented in Fig. 1<sup>a</sup>. Fig. 2 is a transverse section, as on line *a b*, Fig. 1. Fig. 3 is a like section, as on line *c d*, Fig. 1. Fig. 4 is an end view of the thumb-nut detached. Fig. 5 is a side elevation represent-  
15 ing the wrench with the jaw extended in the act of being applied to a nut. Fig. 6 is an edge view illustrating another mode of applying the device to a nut. Fig. 7 shows a modification of the spring construction. Fig. 8 is a detail enlarged, designed to illustrate a peculiar form of screw-threads on the sliding jaw-bar. Fig. 9 is a side elevation, partly in section, of a modification of the device, in  
20 which a spring acts in a reverse direction to that in Figs. 1, 5, 6, and 7.

The object of this invention is to improve the construction of wrenches in such manner that they may be quickly and readily applied  
30 to nuts of any size within the limits of the wrench-jaws and locked in place.

The invention consists, first, in the combination, with the usual partly-threaded and plane-sided jaw-bar, of a thumb-nut having  
35 its inner periphery cut away at suitable intervals, whereby, when the nut is rotated in one position, its threads engage with those of the jaw-bar, and when rotated to the other position (say a quarter-turn) they are disengaged,  
40 whereupon said bar may slide out and in, and locked by again turning the nut in the desired position or extension of the jaw on the outer end of said bar, together with a longitudinally-acting spring, which in one construction serves to draw in the bolt, but the latter  
45 may be drawn out against the stress of the spring, and in the other construction to throw the bar outward from the case or handle when the nut is turned to the releasing position.

50 It consists, secondly, in the particular construction whereby the spring in the first above-mentioned construction is adapted to serve the

double purpose of retracting the jaw-bar and its jaw, and at the same time, by a torsional action, of retaining the nut in the locking position—that is, its threads meshed with those  
55 on the bolt.

The invention consists, finally, in some details of construction, which will be hereinafter described, and pointed out in certain of the  
60 claims.

Referring now to the annexed drawings, A is the stock or handle of a wrench with the head or fixed jaw B and bar or shank C with its jaw D, said bar having a smooth rectan-  
65 gular portion, *g*, fitting and adapted to slide in a slot, *f*, in the stock, and the rounded threaded portion *e* with plane sides H.

I is the nut, with threads corresponding to those of bar C, and projecting beyond the sides  
70 of the handle, so as to be readily operated by the thumb and fingers or the thumb alone.

The foregoing, as thus generally described, is a usual and well-known construction of monkey-wrench. The adjustment of such  
75 wrench to different sizes of nuts, as is well known, requires, however, considerable time, owing to the sluggish movement of a screw-thread. In my present improvement I simply cut away a part of the threaded portion  
80  $\frac{1}{2}$  of the nut, as seen at 2 2, Figs. 2 and 4, whereby, when the same is turned, say, a quarter-turn, the threads of the nut are disengaged from those of the jaw-bar C, and the latter is free to be moved in or out to the  
85 required extent—that is, the width of the nut to which the wrench is to be applied. By turning the nut I its threads again engage with those of the said bar, and thus lock the  
90 latter in position. In order to limit the extent of rotation of the nut in either direction, so that it may be brought quickly and with certainty to the required position without going beyond it in either case, I sometimes use a stop or lug, L, thereon, which engages either  
95 on one side or the other of the adjacent part of the handle, accordingly as the nut is turned to the releasing or the locking position. I also usually avail of the aid of a coiled spring, S, which may be applied in two ways—one, as  
100 in Fig. 1, which serves to keep the jaws of the wrench in the closed position by its stress against a head, *m*, on the rear or inner end of the bolt, yet when the nut is turned to the re-



leasing position, allowing said bar to be extended, as desired, by drawing upon the jaw D. In the other construction (shown in Fig. 9) the spring operates to expel the jaw-bar the instant the nut is turned to the releasing position, and by placing the jaws over the nut or bolt head to be turned the extended jaw may be pressed back against the head of said nut, &c., or otherwise adjusted, and locked by turning nut I or permitting it to be turned by the action of a suitable spring, as herein-after explained.

As seen in Fig. 1, which, as a whole, is the preferred form of my invention, the inner end of the jaw-bar C has a head, *m*, upon the same, which constitutes a bearing for one end of the open spring S, whose other end bears in this instance against the edge of nut I. The two ends of the spring are respectively secured to the head *m* and to nut I in such manner that the spring serves the double function of continually tending to retract the bar C, and thus draw the jaw D against the other or fixed jaw, B, and at the same time by torsional action always tending to retain nut I in the locking position—that is to say, with its threads engaged with those at the jaw-bar. The stop L upon the latter prevents the same from being carried beyond the locking position, and, on the other hand, prevents it from being turned past the releasing position.

It is desirable that the spring should tend to rotate the nut in the forward direction, as shown in Fig. 1, so that it will to some extent retract the movable jaw upon the nut being released, and thus cause it to fit more closely to the nut to which the wrench is applied.

Although it will be obvious that by rotating the nut to the releasing position, and so retaining it with the one hand and taking hold of the jaw D with the other hand, said jaw may be extended to any point within the limit of its capacity. I sometimes provide a ledge or projection, *o*, Figs. 2, 3, and 6, upon one side or the other of said jaw, extending beyond the edge of the fixed jaw, as seen in Fig. 6, whereby, when the bar C is released, said ledge may be placed upon the farther side of the nut *n* to which it is to be applied, as illustrated in Fig. 6, and the wrench or fixed portion thereof be drawn back until jaw D is caused to recede from its fellow a trifle more than the width of the nut, whereupon nut I, being released by the thumb, is carried around to the locking position by the torsional action of the spring S, Fig. 1. In this way it will be obvious that with one hand the wrench may be instantly adjusted to nuts, bolt-heads, &c., of any size within its scope. I find, however, that in nearly all cases the most expeditious manner of applying the wrench when of this construction (with the retracting-spring) is to extend the jaw D to about its full limit, release the thumb-nut, so that it will lock the jaw-bar, then place the inner side of the fixed jaw B against the nut or bolt-head *n* to be turned, as in Fig. 5, then

allow the jaw-bar to fly back against the opposite side of said nut or bolt-head, and lock the bar by releasing nut I. Thus the wrench becomes, obviously, self-adjusting.

In large and heavy wrenches especially, I sometimes use two independently-acting springs, as illustrated in Fig. 7, one, *S'*, the jaw-bar-retracting spring, the other, *S''*, the nut-rotating spring. In this case the forward end of the retracting-spring may bear against the nut I, or, preferably, against a projection, *q*, within the stock A. I also prefer to employ for the nut-actuating spring a straight or flat spring, *S''*, as shown, one end of which is fastened within the stock and the other is connected to the nut. When the spring *S''* is in the straight or normal position, as in said figure, the bar C is locked; but the nut may be turned either way to release said bar.

As when the nut is released and is brought back to the locking position the threads of the nut and shank may not, so to say, register with each other, thus producing some lost motion, I prefer, in order to practically avoid this slight defect, to use in the first place comparatively small or fine threads, and in the next place to bevel off or point the edges of the threads of the jaw-bar—that is, instead of leaving them as in *r*, Fig. 8, I point them, as *t*, whereby the threads of the nut more readily enter into or register with those of the jaw-bar. Of course the threads of the nut may be beveled in the same way, but not without some additional cost and difficulty, and I have not found it necessary so to do.

The part *x* of Fig. 8 represents a partial plan view of the screw-threads on the jaw-bar, *t* being the threads beveled at their extremities, and *r* a thread of the usual form. The lower part, *z*, of Fig. 8 represents a like side elevation of threads corresponding to those seen in the part *x*.

In the form of my invention illustrated by Fig. 9, instead of using a spring to keep the jaw retracted, I reverse the action by employing a spring, S, which bears against the head *u* of the jaw-bar C, whereby when the nut I is turned the jaw D is thrust out, the wrench being adjusted to a bolt-head, &c., by pressing back, if necessary, the bar and its jaw by the hand against the bolt-head, &c. This construction, however, is not so ready and efficient as the other described, where a retracting-spring is used.

In the construction shown in Fig. 1 the nut I is first inserted in the transverse slot in the stock. The end of jaw-bar C is next passed in through the nut and the spring S. The head *m* is fastened onto the end of the bar by a screw, V, (the respective ends of the spring being properly fastened to said nut and head in order to secure the aforesaid torsional action,) and, finally, the plate P is screwed on the stock.

In Fig. 9 the removable plate P is dispensed with, and the space in which the spring lies is cored out and open at the rear end of the han-



dle, and after the spring is inserted the opening is plugged by a screw-cap, *w*.

The rear end of the stock in Fig. 1 may also be made open, if desired, and the head *m* be secured to the end of the bar *C* from the rear, in which case the removable plate *P* may be dispensed with—that is, the stock may be made solid and bored or cored out.

I do not confine myself to the precise construction shown, as various modifications of the parts can be readily made by any skilled mechanic without affecting the essential construction or mode of operation of the invention. For example, in lieu of screw-threads grooves in the jaw-bar, and corresponding beads and grooves in the nut *I*, may be sometimes used, although not recommended.

I am aware that it is not new in a wrench to use in combination with a partly-threaded plane-sided jaw-bar a rotatable screw-nut having a portion of its threads cut away, and a stop to limit the extent of its rotation.

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

1. The combination of the stock provided with the fixed jaw, the rotatable threaded nut partially cut away, as shown, and contained within a transverse slot in the stock, the sliding plane-sided and partially-threaded jaw-bar extending through the nut, and the retracting-spring, all constructed and adapted to operate substantially as and for the purpose recited.

2. The combination of the stock provided with the fixed jaw, the rotatable threaded nut partially cut away, as shown, and contained within a transverse slot in the stock, the stop for limiting the extent of rotation of said nut, the sliding plane-sided and partially-threaded jaw-bar extending through the nut, and the

retracting-spring, all constructed and adapted to operate substantially as and for the purpose recited.

3. The combination of the fixed jaw and stock, the sliding partly-threaded jaw-bar, the threaded rotatable nut having a portion of its periphery cut away, the stop *L*, and the jaw-bar-actuating and nut-rotating spring, substantially as and for the purpose set forth.

4. The combination of the fixed jaw and stock, the sliding partly-threaded jaw-bar, the threaded rotatable nut having a portion of its periphery cut away, the stop *L*, and the retracting-spring *S*, having one end secured under tension to the rotatable nut and the other end to the head of the rear end of said sliding jaw-bar, whereby the one spring serves to retract said sliding bar, and at the same time to rotate said nut, substantially as and for the purpose set forth.

5. The combination of the fixed jaw and stock, the partly-threaded sliding jaw-bar, the rotatable nut having a portion of its periphery cut away, the retracting-spring, and the ledge *o* upon the lateral edge of said sliding jaw projecting beyond the edge of the fixed jaw, substantially as and for the purpose specified.

6. In combination with the stock and fixed jaw, the threaded nut having a portion of its periphery cut away, and the sliding partly-threaded jaw-bar, the ends of said threads being pointed or beveled off, substantially as and for the purposes specified.

In testimony whereof I have hereunto affixed my signature this 20th day of November, A. D. 1885.

JOSHUA PUSEY.

Witnesses:

FRANCIS S. BROWN,  
JNO. NOLAN.