

(No Model.)

W. E. LAWRENCE.

WRENCH.

No. 285,415.

Patented Sept. 25, 1883.

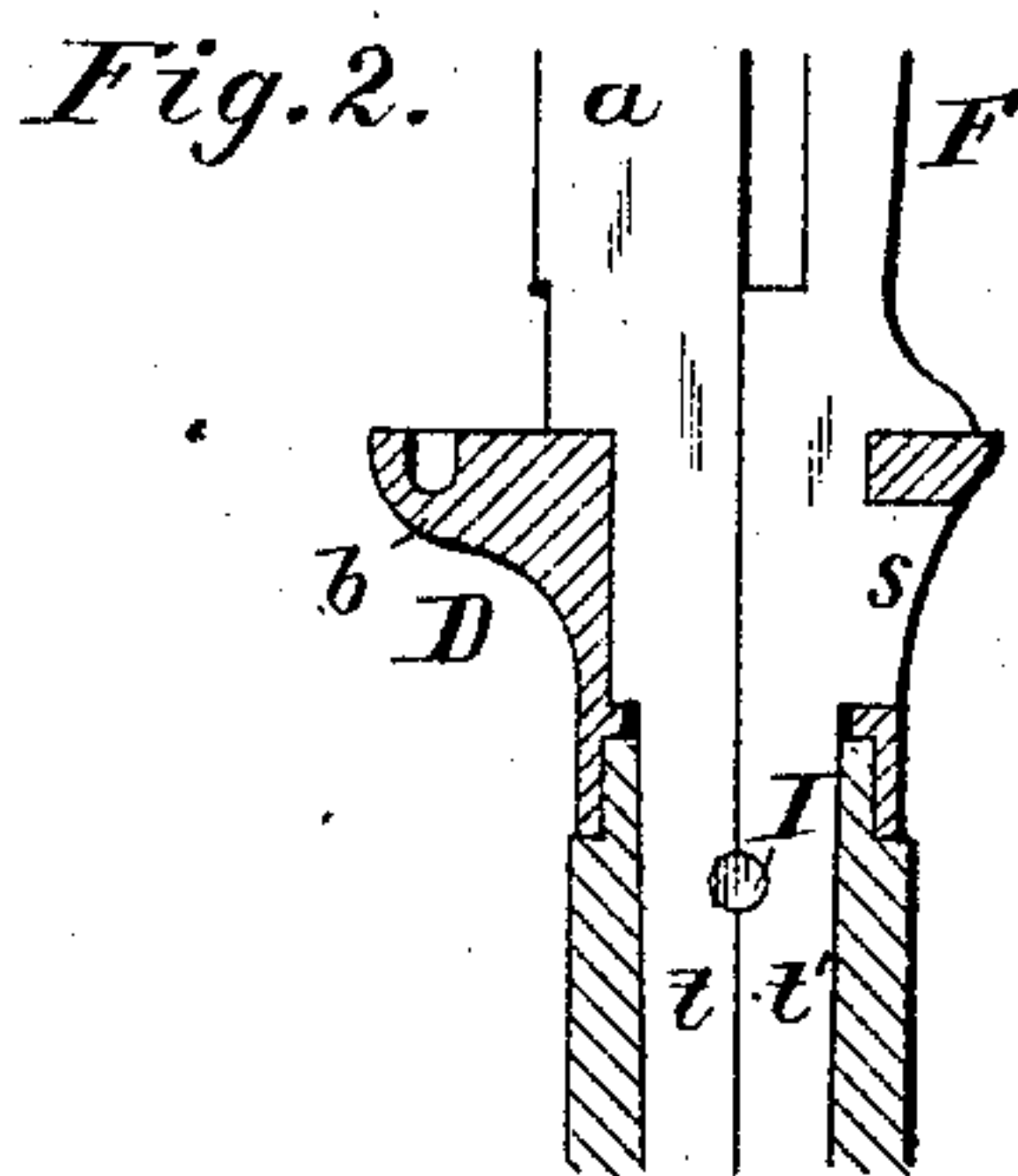
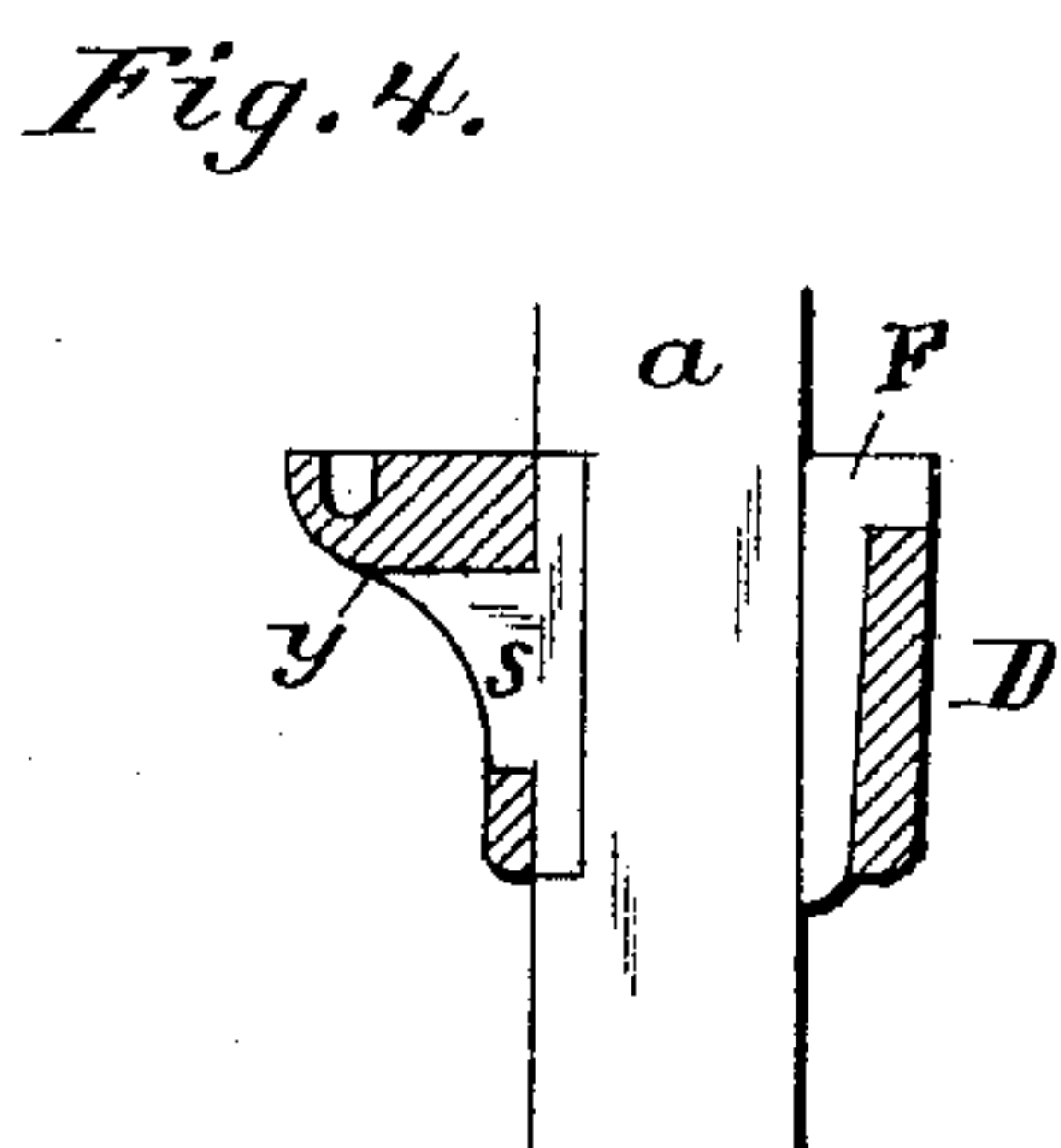
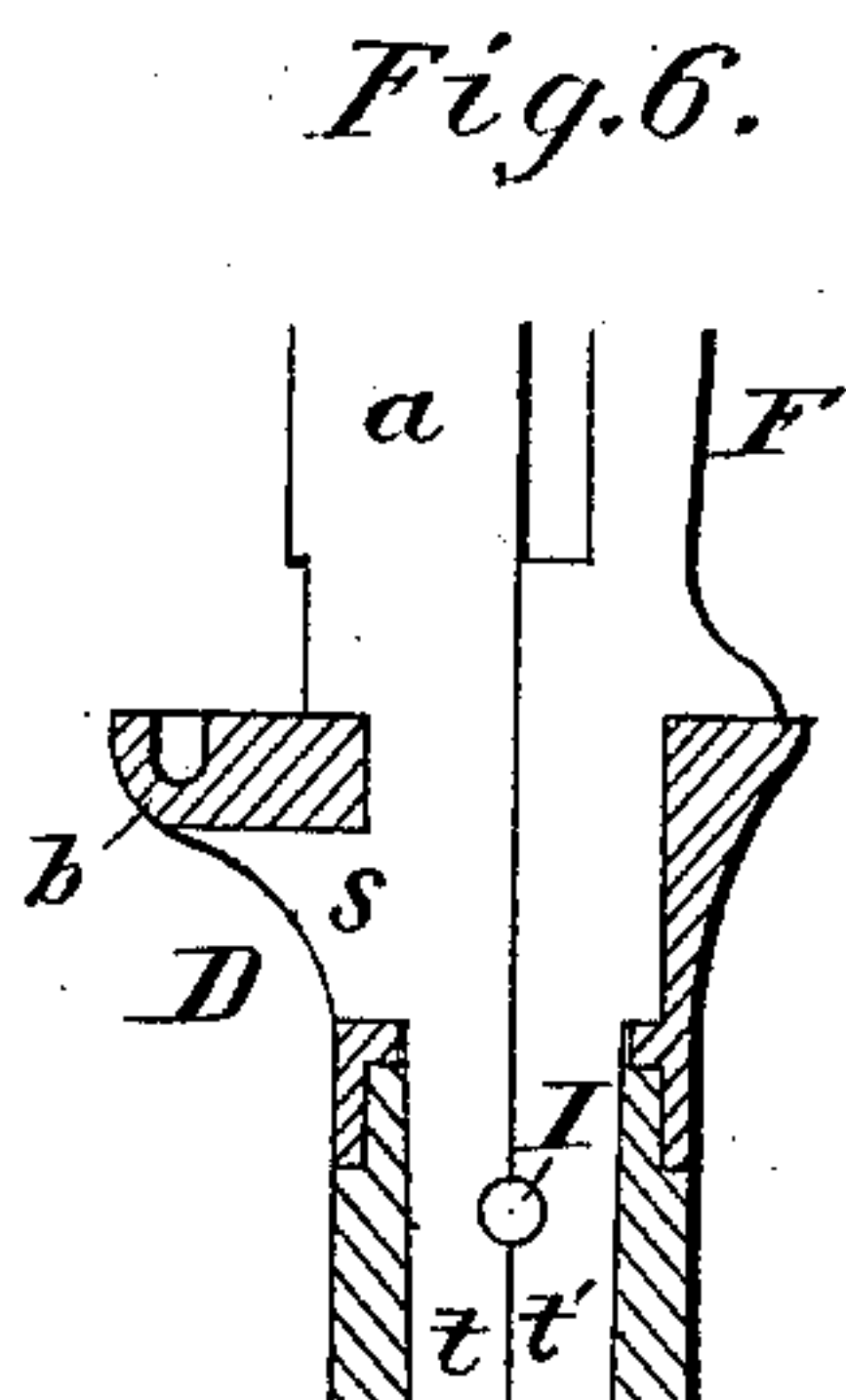
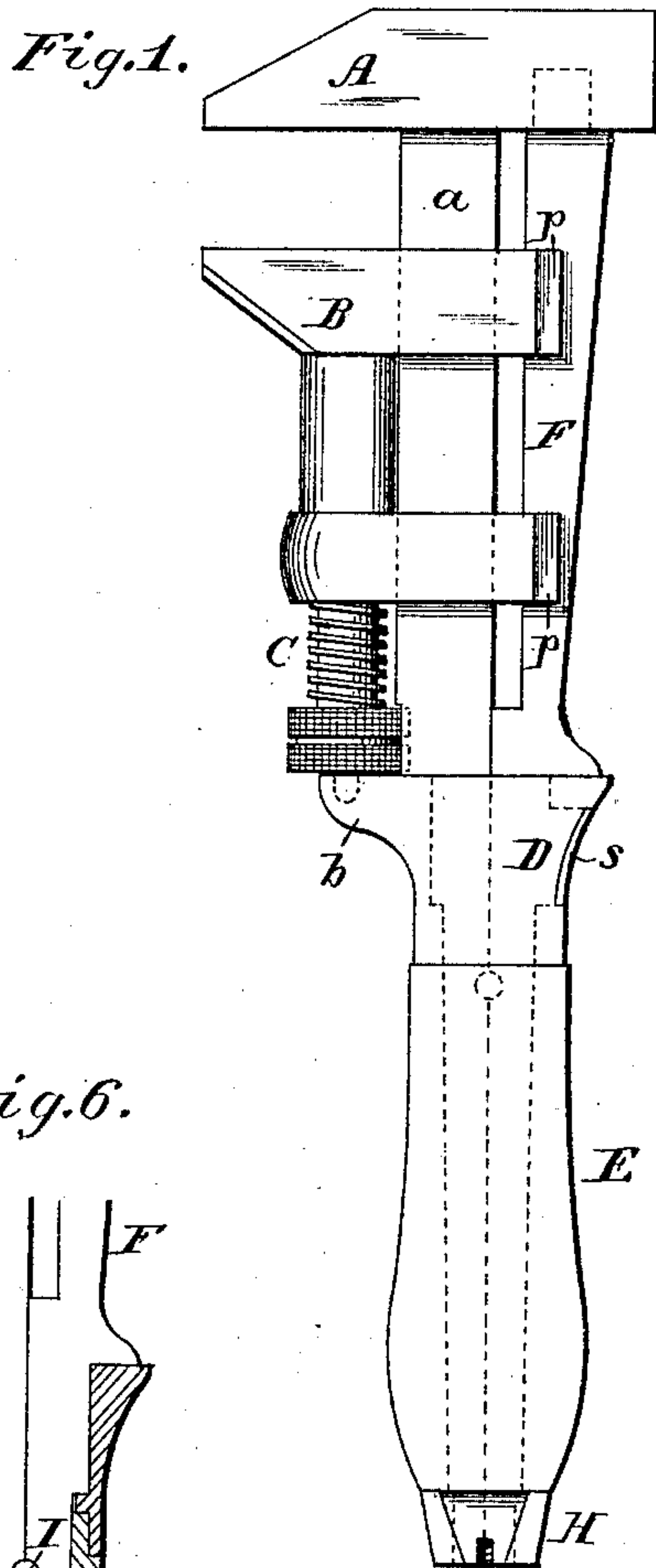
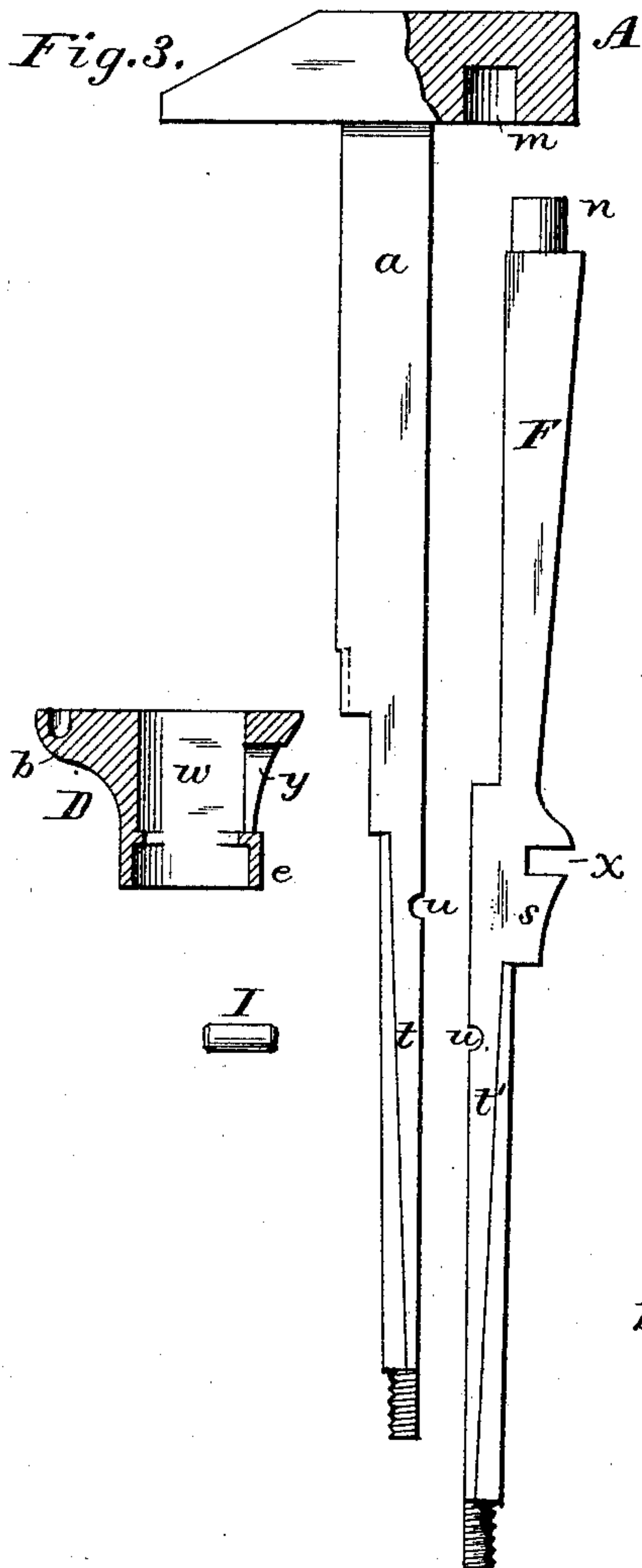
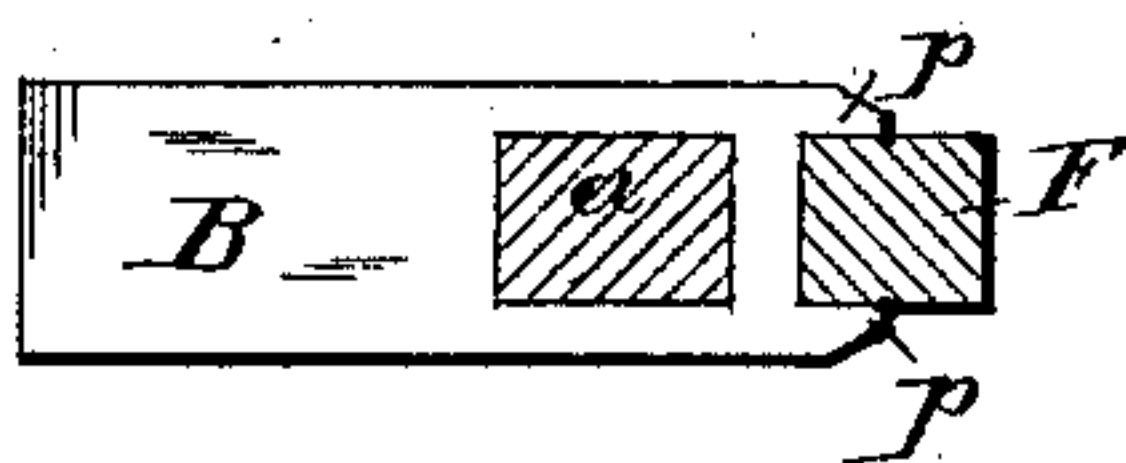


Fig. 5. Wm E. Lawrence
Inventor:



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UNITED STATES PATENT OFFICE.

WILLIAM E. LAWRENCE, OF NEW YORK, N. Y.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 285,415, dated September 25, 1883.

Application filed June 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. LAWRENCE, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

My invention is a wrench constructed, as fully described hereinafter, so as to secure increased durability and efficiency and reduce the cost of manufacture.

In the drawings, Figure 1 is a side view of a hand-wrench, illustrating my improvements. Fig. 2 is a detached sectional view of parts of the wrench. Fig. 3 is a view showing parts of the wrench detached from each other. Fig. 4 is a sectional view, showing a modification. Fig. 5 is a face view of the jaw B, the parts on which it rides appearing in section; and Fig. 6 is a modification.

The wrench is provided with the usual fixed jaw or hammer-head, A, connected to a stem or shank, *a*, and with the traveling jaw B, perforated to receive the stem *a*, and sliding thereon under the action of a screw, C, the lower end of which is stepped in a projection or lip, *b*, upon the collar or ferrule D, through which the tang extends, and which is provided with a flange, *c*, to receive the upper end of the handle E.

In the wrench illustrated in Figs. 1 to 3, I provide means whereby the strain which ordinarily comes upon the head A is transferred to the ferrule or collar D. This I effect by means of a brace, F, having a connection at the upper end with the rear end of the head-piece A, and extending downward and bearing upon a projection of the collar D in the manner shown, or in any other manner whereby the strain tending to force up the forward end of the jaw A will cause the rear end to bear upon the brace F, which thereby prevents any tilting of the head and the wrenching of the same from its shank under any ordinary pressure. As the collar D must resist the strain transferred to the brace F, as well as that to which the jaw B is subjected in the construction of wrench shown, it is necessary to secure the said collar very firmly in its position. This I effect by providing the collar and stem with a projection upon one

fitting a recess in the other, and using a key to lock the two together. A construction suitable for ordinary wrenches is shown in Fig. 4, where the collar has a recess, *y*, adapted to receive a projection, *s*, of the stem, the end of which conforms to the outer surface of the collar, and the opening in the collar through which the stem passes is large enough to receive not only the stem which is first inserted, but also a key or wedge, F, which is then introduced at one side of the stem in the said opening, so as to hold the parts in place after the projection has entered the recess. This projection may form part of a detachable block inserted in a recess in the stem, as shown. In the wrench shown in the remaining figures the stem and brace together constitute a double shank, and the prolongation of one acts as a key or wedge to lock the collar to the other, the two lower portions, *t t'*, of the stem *a* and brace F constituting together the tang which extends into the handle E, a nut, H, screwing upon the two ends, holding the tang-pieces together and retaining the handle in its place. In the construction shown in Figs. 1, 2, and 3 the projection *s* on the brace F fits an opening, *y*, in the collar, and the prolongation of the stem serves as a wedge to hold the parts in the position shown in Fig. 1. In Fig. 6 the projection *s* is shown as being on the stem *a*, and the prolongation of brace F serves as a wedge or key to hold the parts in position. It will be seen that by thus keying the clamp to the stem an abutment capable of supporting any strain brought upon it is secured. To insure a uniform strain upon all the parts, the two tang-pieces *t t'* have coinciding recesses or notches *u u*, in which fits a key, I, covered by the handle E when the parts are in position, and serving to prevent the movement of the parts independently of each other.

The construction above described facilitates the manufacture of the wrench, inasmuch as the parts may be readily made, easily put together, and securely retained when in position. For instance, in the arrangement shown in Figs. 1, 2, and 3, the brace F is inserted into the collar D, so that the projection *s* fits into the opening *y* of the collar, when the stem *a*, having the head A secured thereto by welding or otherwise, is passed through the opening of

the jaw B and into the opening of the collar D, and the parts pushed together until a projection, *n*, at the upper end of the brace enters a hole, *m*, in the head-piece A. The pin I is then put in place, the handle E slipped upon the tang, and the nut H then screwed upon the end of the tang, so as to hold all the portions firmly in place. When the construction in Fig. 4 is used, the projecting block *s* is first inserted into the opening *y* in the collar D, then the stem is put in position, and the key or wedge inserted to hold them in place. In the construction shown in Fig. 6 the stem carrying the projection *s* is first inserted, and the brace F is used as a key. In this construction the head A is attached to the stem *a* after the stem and brace-piece are fitted to the recessed collar.

I do not limit myself to the precise construction of parts above described and shown. For instance, the brace F may be inclined or parallel to the stem; or it may be inclined upon one side only and arranged between lips *p p* of the jaw B, to serve as additional guides for the latter. The stem may be recessed to receive a projection upon the collar, and such projection may be at the side, with a key upon the other side, the result, however, being the same in locking the collar to the stem portion of the wrench, so as to secure the positive bearing of the collar thereon, which will resist the strains coming upon either or both of the jaws. The pin *n* may, if desired, extend entirely through the cross-head A, and may be expanded or riveted at the upper end. I claim—

1. The combination, in a wrench, of a stem or shank, a collar having an opening larger than the stem, with a projection upon one adapted to a recess in the other, and a detachable key fitting between the collar and the stem, and a handle independent of the other portions, substantially as and for the purpose set forth.

2. The combination of a recessed collar, a stem, and a brace-piece, one of the latter being provided with a projection entering the recess in the collar, and the other serving as a key or wedge to secure the parts together, substantially as described.

3. The combination of the head-piece and stem of a wrench, a collar, D, and a brace, F, the collar and brace having corresponding projection and recess, the parts being fitted and adapted to each other substantially as described, so that the portion of the stem passing through the collar will serve to lock the latter to the brace, substantially as specified.

4. The combination, in a wrench, of a stem, a brace, each extended to form part of the tang, a collar, D, keyed thereto and serving as a ferrule for the handle, a handle, E, and nut H, fitted to the end of both sections, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM E. LAWRENCE.

Witnesses:

FRED. F. NUGENT,
JOHN McCORMICK.