

No. 638,957.

Patented Dec. 12, 1899.

J. H. COES.

WRENCH.

(Application filed July 7, 1899.)

(No Model.)

Fig. 1.

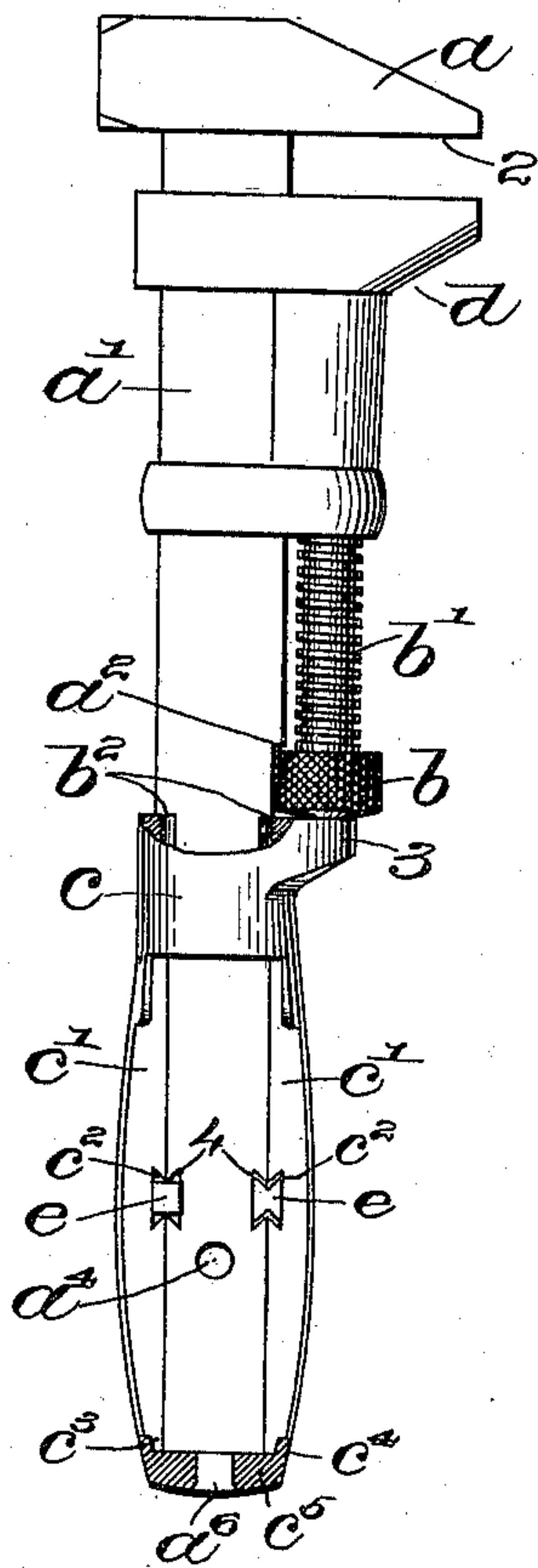
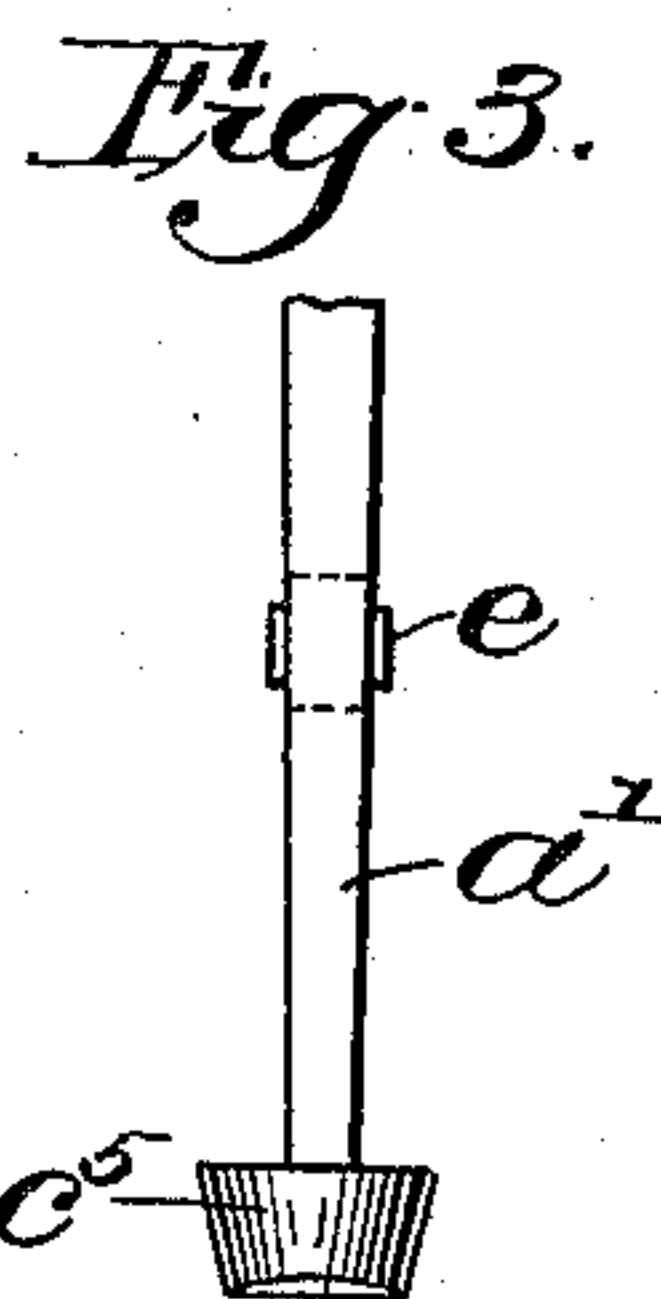
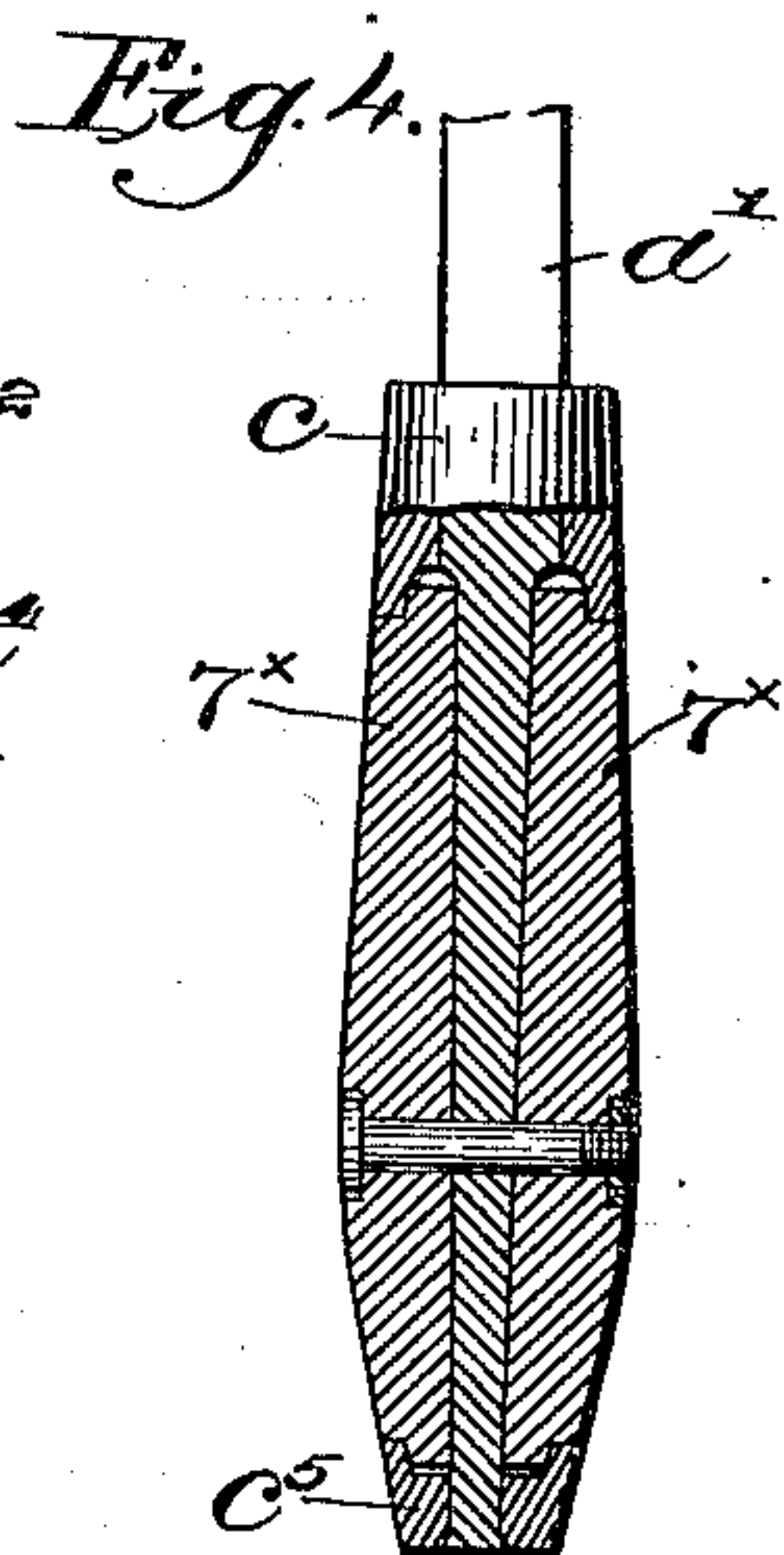
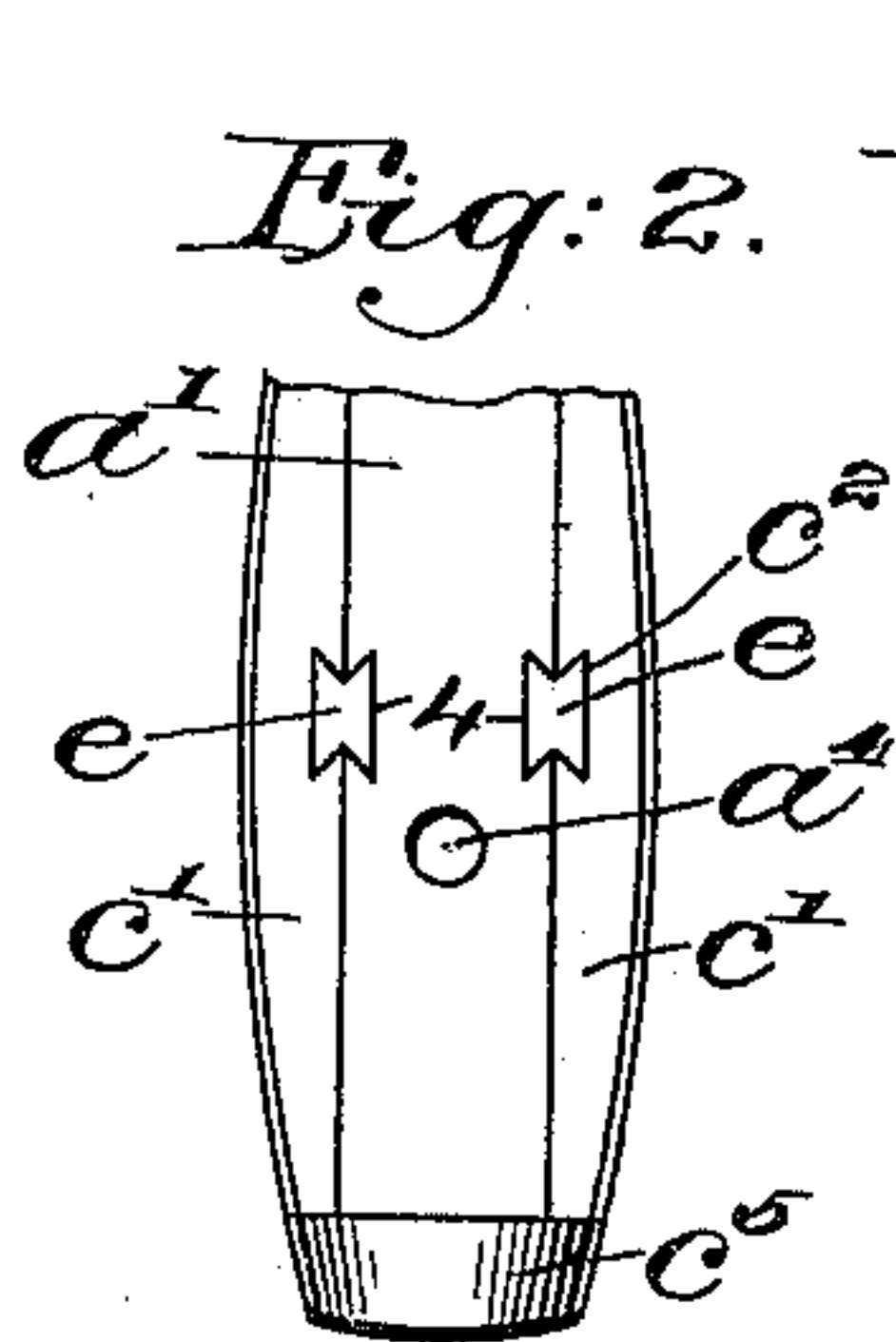


Fig. 5.



Witnesses.  
Gustave F. Magnitzky  
Edward H. Allen

Invention  
John H. Coes.  
by Crosby & Gregory  
Attys.



# UNITED STATES PATENT OFFICE.

JOHN H. COES, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE COES  
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## WRENCH.

SPECIFICATION forming part of Letters Patent No. 638,957, dated December 12, 1899.

Application filed July 7, 1899. Serial No. 723,023. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. COES, of Worcester, county of Worcester, and State of Massachusetts, have invented an Improvement in Wrenches, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention has for its object the production of an improved wrench wherein the handpiece embracing the end of the shank is permanently fixed in a novel manner to the shank in registered position to sustain the  
15 wrench-screw for operating the movable jaw in such position that the movable jaw may be made to meet the fixed jaw and work accurately without any lost motion.

In the embodiment of my invention herein  
20 shown shoulders formed in the shank are abutted by a collar located at one end of a handpiece composed, preferably, of two legs and said collar, the shanks and legs being oppositely notched to receive a locking-key inserted transversely through opposite notches  
25 of a leg and the shank, said key firmly locking said legs and shank together and maintaining the collar referred to in contact with the registered shoulders of the shank.

30 Figure 1, in side elevation with one of the handle-scales removed, represents one practical embodiment of my invention in the best form now known to me, said figure showing the locking-keys unexpanded. Fig. 2 shows  
35 part of the shank and legs of the handpiece provided with the openings filled with the expanded locking-keys. Fig. 3 is an edge view showing one leg of the handpiece with a key in its notch, said key being of a greater length  
40 than the thickness of the leg of the handpiece, so that said key when struck by a hammer or other suitable device may be expanded in and made to fill the notch in the shank and leg. Fig. 4 is a vertical section of  
45 the shank and shells applied to the sides thereof, and Fig. 5 shows a key detached.

The fixed jaw *a* has a shank *a'* provided at one edge with the usual recess *a<sup>2</sup>*, in which may enter the usual nut *b* of the screw *b'*, and  
50 said shank has two like shoulders *b<sup>2</sup>* accurately placed or registered with relation to

the face 2 of the fixed jaw to thereby determine the position of the top of the extension 3 of a collar, which constitutes a seat for said screw, the latter entering a threaded part and  
55 actuating the movable jaw *d*.

The parts so far referred to, with the exception of the collar briefly mentioned, are and may be all, as usual in wrenches, of the kind herein represented, and said shank may  
60 have a bolt-hole *a<sup>4</sup>* to receive a suitable bolt, which in practice will be extended through suitable shells or plates 7<sup>x</sup>, (see Fig. 4,) which constitute a part of the exterior of the handle.

In accordance with my present invention I  
65 provide the shank *a'* with one or more notches 4 (herein represented as of dovetail shape) and I provide the collar *c* with preferably a plurality of like legs *c'*, each leg having made in its inner edge, next the edge of the shank,  
70 a notch, as *c<sup>2</sup>*, also preferably of dovetail shape in cross-section, said notches *c<sup>2</sup>* being made in said legs between the ends of the legs and the under side of the collar from  
75 which they extend. The lower ends of the legs are notched, as at *c<sup>3</sup>*, and said notched ends are overlapped by a flange *c<sup>4</sup>*, extended from a cap or end piece *c<sup>5</sup>*, fitted over a tang  
80 *a<sup>6</sup>* at the extremity of the shank *a'*, said tang being preferably upset in a hole in said cap. The notches 4 and *c<sup>2</sup>* are so located as to coincide, and having applied the collar, with its  
85 legs, to the shank and abutted the upper end of the collar against the registering shoulders *b<sup>2</sup>* thereof I then preferably fix the handpiece, composed of the collar and legs, positively to the said shank, with the end of the collar firmly abutted against the said shoulders, by or through the expansion of a suitable  
90 key *e*, preferably composed of ductile steel or metal and of a size to enter and substantially fill the coinciding notches 4 and *c<sup>2</sup>*, and said keys when in such position may be struck by a drop-hammer or other device and by a swaging operation be shortened in  
95 their length, and at the same time be expanded, causing the said keys to fill the notches referred to, as represented in Fig. 2.

Fig. 3 shows a key inserted in a notch of a leg, the key being shown as longer than the  
100 thickness of the leg.

Preferably two edges of the keys may be



notched, as shown in Fig. 5 and at the right in Fig. 1; but, if desired, the key might be quadrilateral or four-sided in cross-section, as at the left in Fig. 1. These keys, longer than the thickness of the shank, may be inserted in the coinciding slots 4 and  $c^2$  and may be expanded by a blow to fully or substantially fill the dovetail notches made, respectively, in the shank and leg, thus firmly fixing the handpiece to the shank, with the collar in registered position at the shoulders  $b^2$ , the expansion of the keys tending to crowd and seat the collar against said seat.

I believe that I am the first to employ a separate detached key and expand the same to fill notches formed in the shank and in the legs embracing the shank, so that this invention is not limited to the precise shape shown for the notches in the shank or legs nor to the precise shape shown for the keys in cross-section, as such notches may be of any shape to present a narrower outlet than bottom so long as the notches present walls against which a key expanded or swaged into and to fill said notches will have a tendency when expanded to force the inner walls of the legs firmly in contact with the outer edges of the shank.

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

1. In a wrench, a shouldered shank provided at its edge with a notch, combined with a handpiece having an extended leg provided between its ends with a notch which registers substantially with a notch in the shank, and an independent transverse key entering said notches and acting to bind the legs and shank together.

2. A shank and a handpiece oppositely notched between their ends, combined with a key grooved at its edge in line with the junction of the handpiece and the edge of the shank.

3. A shank having shoulders and notched between said shoulders and its end; combined with a handpiece having a leg notched at its side next the shank and between the ends of

the leg, and a key entering said coinciding notches, said key being expanded to fill said notches and retain said leg and shank in locked condition one with relation to the other.

4. A shank having notches at its opposite edges, combined with a handpiece composed of a collar and legs notched between their ends at their inner sides, said notches being opposed to the notches of the shank; combined with an independent key inserted in said notches and fitting the inner walls thereof snugly, said key constituting a locking device to maintain the legs in fixed relation to the shank.

5. A shank having shoulders and provided at its opposite edges between said shoulders and the ends of the shank with key-notches; and a handpiece composed of a collar to meet said notches, and two legs notched between their ends, the notches of the legs coinciding with the notches of the shank, and expanded keys in said notches and filling the same snugly, thereby locking the legs to the shank.

6. A shank having shoulders and provided at its opposite edges between said shoulders and the ends of the shank with key-notches, and a handpiece composed of a collar to meet said notches, and two legs notched between their ends, the notches of the legs coinciding with the notches of the shank, and expanded keys in said notches and filling the same snugly, thereby locking the legs to the shank, and a flanged cap at the end of the shank to keep the ends of the legs in position at the end of the shank.

7. The combination with the shank and a handpiece presenting legs keyed to the shank by detachable keys, of means for holding said legs together, causing the inner edges thereof to fit the handpiece.

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

JOHN H. COES.

Witnesses:

GEO. W. GREGORY,  
ALEXANDER C. PROUDFIT.