

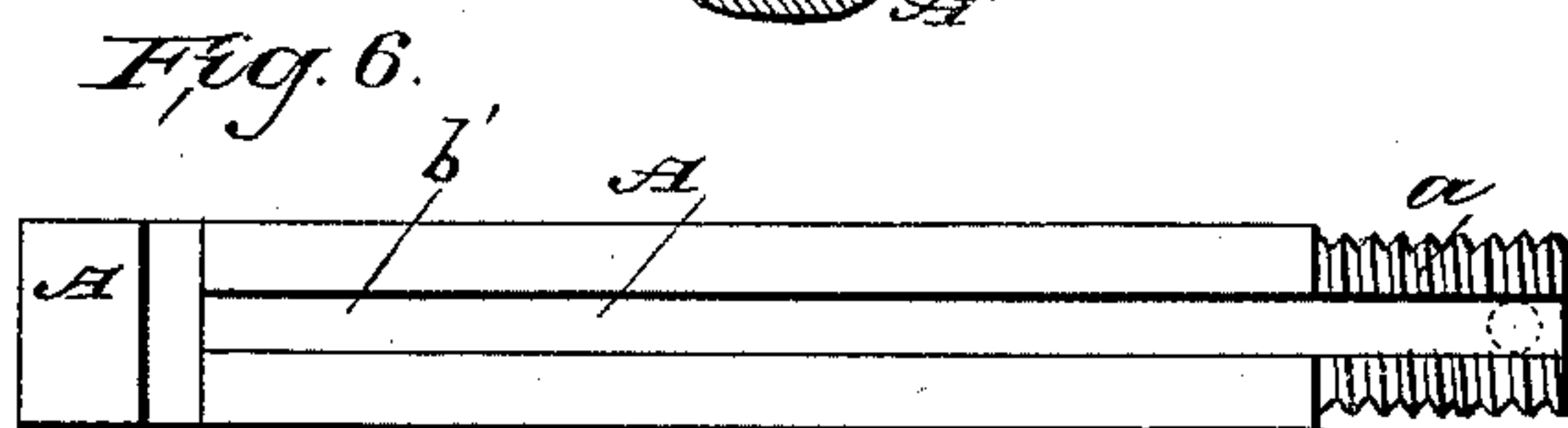
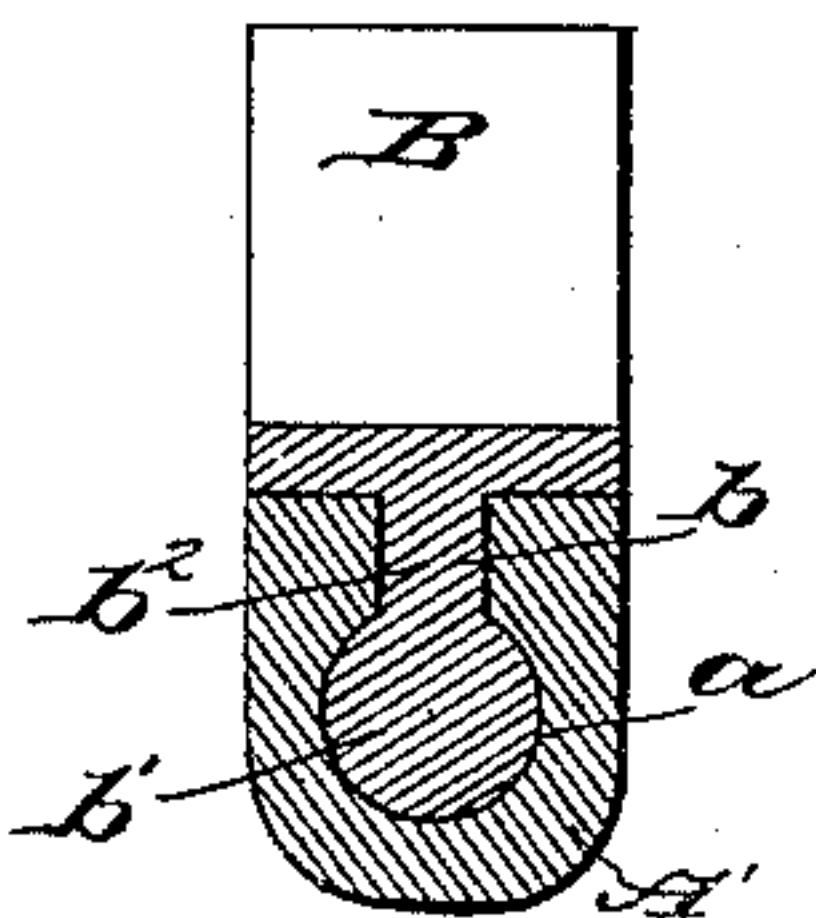
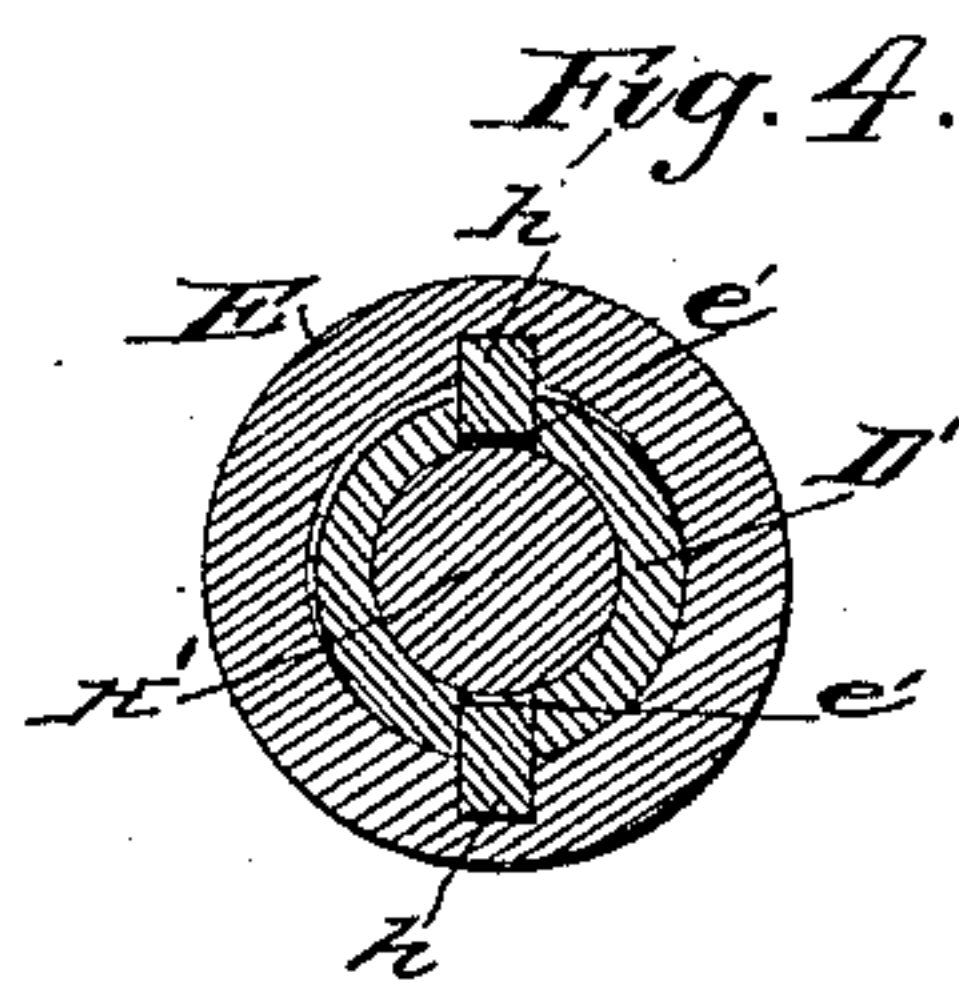
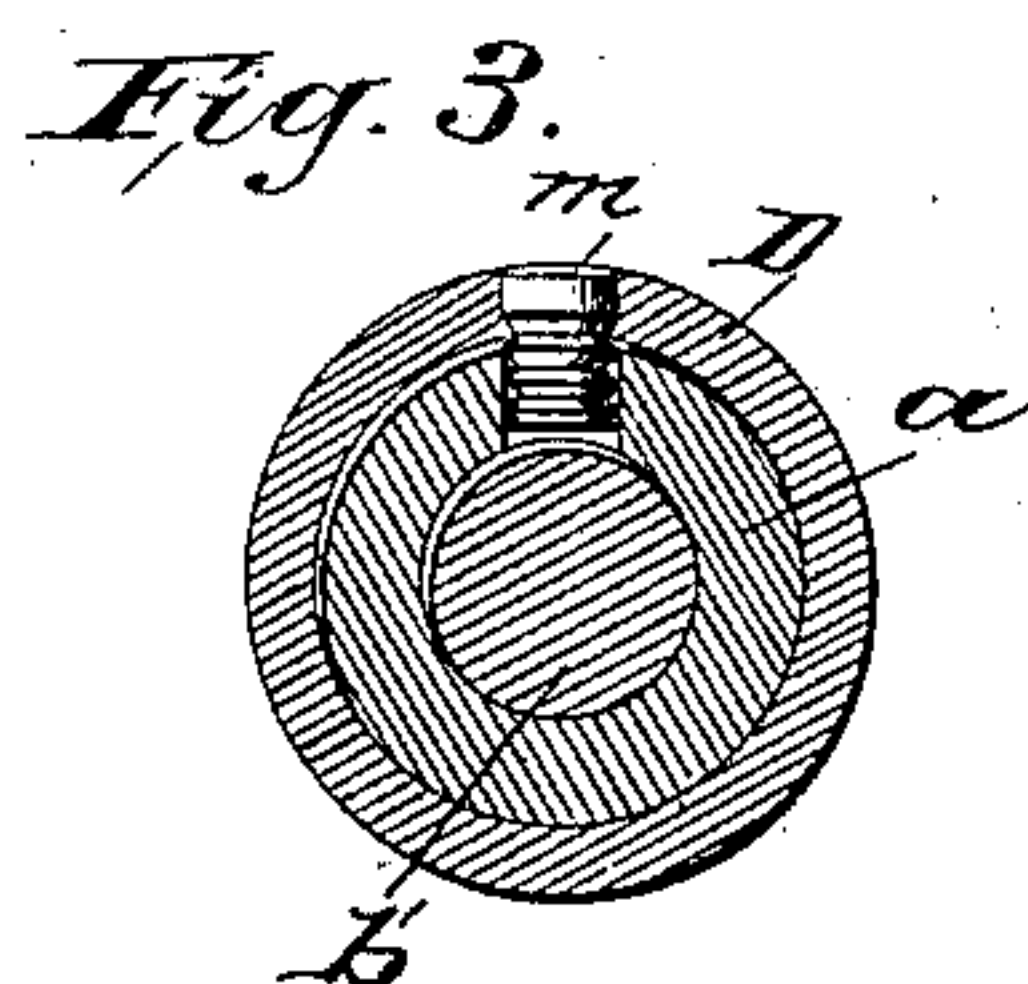
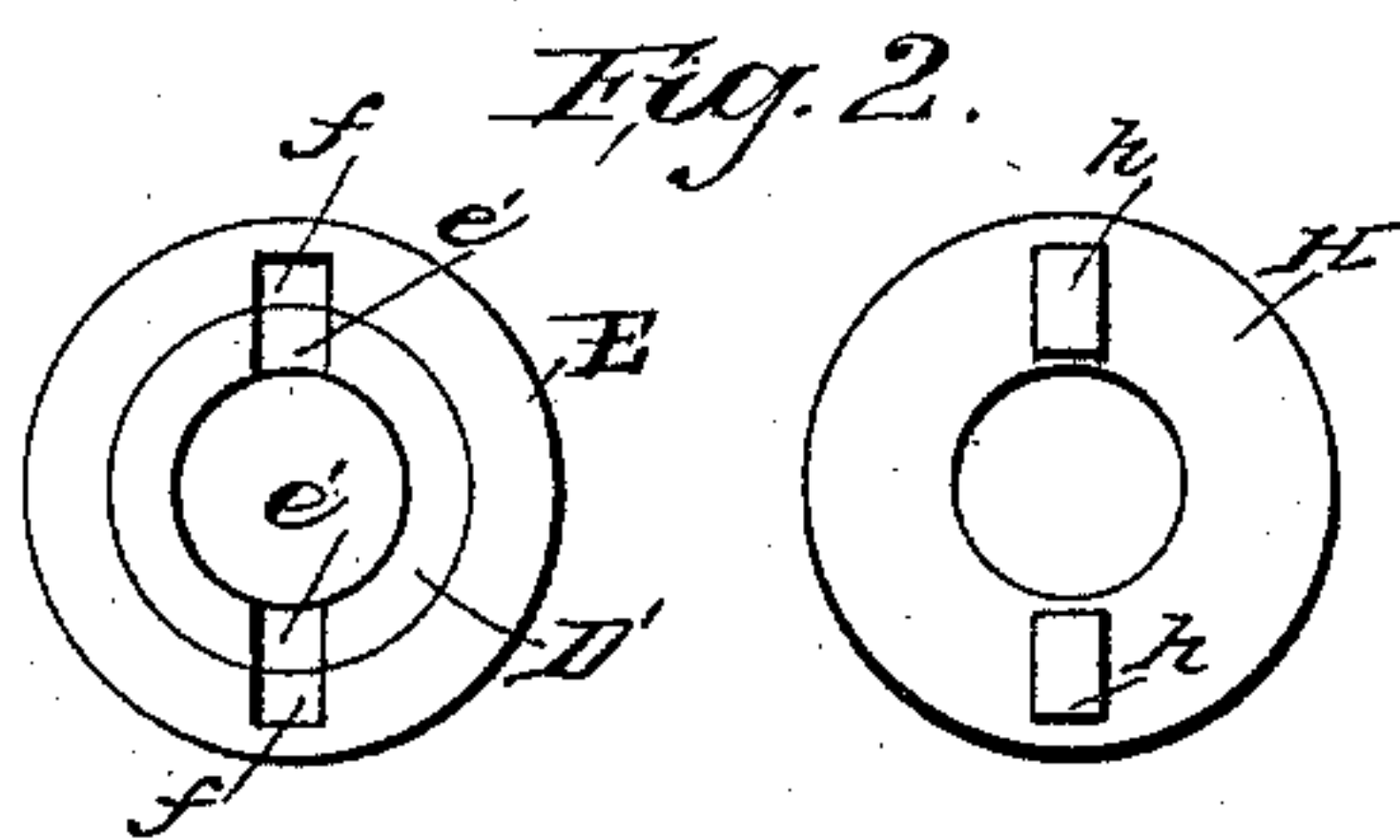
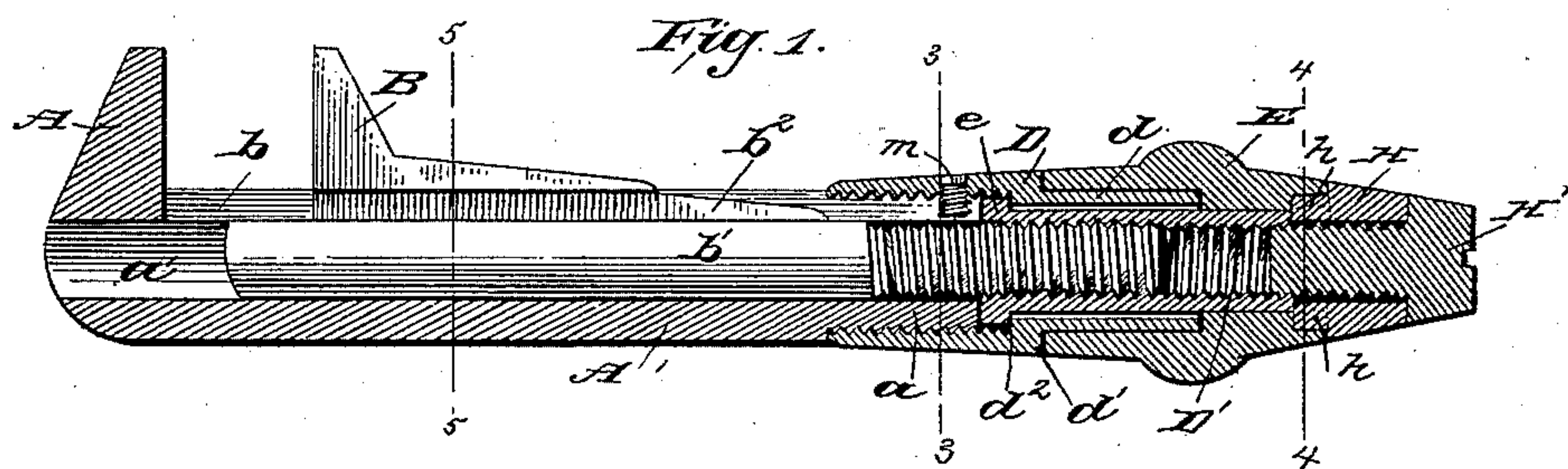
(No Model.)

G. GAVIN & L. W. CROMER.

WRENCH.

No. 378,584.

Patented Feb. 28, 1888.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

GEORGE GAVIN AND LAWRENCE WASHINGTON CROMER, OF EUREKA,  
NEVADA, ASSIGNORS TO THEMSELVES AND FRED M. HEITMAN, OF  
SAME PLACE.

## WRENCH.

SPECIFICATION forming part of Letters Patent No. 378,584, dated February 28, 1888.

Application filed June 3, 1887. Serial No. 240,137. (No model.)

*To all whom it may concern:*

Be it known that we, GEORGE GAVIN and LAWRENCE WASHINGTON CROMER, of Eureka, in the county of Eureka and State of Nevada, have invented a new and Improved Wrench, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in wrenches, and has for its object to provide a simple and convenient tool which may be quickly and readily applied and also manipulated in a comparatively small space.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a central longitudinal and vertical section through the complete wrench; Fig. 2 is a plan view of the abutting sleeves; Fig. 3 is a section through line 3 3 of Fig. 1. Fig. 4 is a transverse section through line 4 4 of Fig. 1. Fig. 5 is a transverse section through line 5 5, also taken through Fig. 1; and Fig. 6 is a plan view of the upper jaw and body detached.

In carrying out the invention the upper jaw, A, is formed integral with the outer end of the body A', which body is provided at its inner end with a reduced tubular and exteriorly-threaded extension, *a*. The body is further provided with a longitudinal circular recess, *a'*, of a diameter equal to the inner diameter of the extension *a*, which recess is made to project through the upper end of the body, as shown in Fig. 1. A longitudinal slot, *b*, is also cut in the upper surface of the body from the inner face of the upper jaw through the extension *a*, the said slot *b* intersecting the recess *a'*, as also shown in Fig. 1.

The lower jaw, B, is of a width equal to the width of the body A', upon which it is adapted to slide, which jaw is attached near one end of a rod, *b'*, or made integral therewith, the other or inner end of the rod being externally threaded. Intervening the central under side of the lower jaw and the rod *b'*, a longitudi-

nal neck, *b<sup>2</sup>*, is provided of an elevation and thickness equal to the width and depth of the body-slot *b*, as illustrated in Fig. 5.

In placing the parts constituting the body in operative position the rod *b'* is entered the recess *a'* in such a manner as that the flat surfaces of the jaws will oppose each other, the neck *b<sup>2</sup>* traveling in the slot *b*, and the under face of the projecting portion of the lower jaw sliding upon the upper face of the body each side of the aforesaid slot *b*, the threaded portion of the rod *b'* projecting beyond the extension *a*.

In forming the shank of the wrench whereby the lower jaw is operated a sleeve, D, is provided having a reduced outer end, *d*, whereby an exterior shoulder, *d'*, is produced and an interior shoulder, *d<sup>2</sup>*, as shown in Fig. 1. Within the sleeve a tube, D', is entered, the inner end of which tube is fitted with an annular flange, *e*, and interiorly threaded, the outer end of the tube, adapted to project out beyond the reduced portion *d*, being provided with two aligning end slots, *e'*, as shown in Figs. 2 and 4. The flange *e* of the tube is adapted to bear against the inner shoulder, *d<sup>2</sup>*, of the sleeve D. The inner end of the sleeve D, which is interiorly threaded, is thereupon screwed upon the extension *a* of the body, and the threaded end of the rod *b'* into the tube D'. To retain the sleeve in position upon the extension *a*, and also to limit the downward movement of the lower jaw, B, a threaded aperture is made in the sleeve, aligning the lower end of the body-slot *b*, and a screw, *m*, is entered said aperture and slot, as shown in Figs. 1 and 3. A collar, E, is now entered loosely over the reduced portion *d* of the sleeve, and also over the projecting portion of the tube D', flush with its slotted end, the said collar being provided with end slots, *f*, aligning the slots *e'* in the tube, as shown to the left in Fig. 2. The tube D' and the collar E, which may be serrated upon its outer surface, are made to turn together by the lugs *h*, integral with the under side of a tubular cap, H, being entered the aligning slots *e'* and *f*, as shown in Fig. 4, and the said cap is held in position by a screw, H', passing through the same and into the tube D'.

It will be observed that by turning the col-



lar to the right or left, the jaws are made to approach each other or separate, as desired.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a wrench, the combination of the body A, provided with a stationary jaw, and having a longitudinal recess and slot intersecting said recess, a rod carrying a movable jaw and having a neck between it and the jaw working in the said slot, and provided with an outer screw-threaded end, an internally screw-threaded sleeve held to turn on the outer screw-threaded end of the said rod, and a collar connected to the said sleeve, substantially as herein shown and described.

2. In a wrench, the combination, with the body A, provided with an integral upper jaw, A', a central longitudinal recess,  $a'$ , and an intersecting longitudinal surface slot,  $b$ , the rod  $b'$ , adapted to slide in said recess, the integral lower jaw, B, and intervening neck,  $b^2$ , of the sleeve D, adapted to engage said body, the flanged tube D', adapted to turn in said sleeve and receive the end of said rod, and a grip-

collar, E, attached to said tube, operating substantially as herein shown and described.

3. In a wrench, the combination, with the body A, provided with an integral upper jaw at one end and a reduced exteriorly-threaded portion,  $a$ , at the other, a central circular recess,  $a'$ , and an intersecting longitudinal surface slot,  $b$ , the sliding rod  $b'$ , exteriorly threaded at one end and carrying the lower jaw, B, at the other, and a neck,  $b^2$ , intervening said jaw and rod, of the sleeve D, provided with shoulders  $d'$   $d^2$ , the flanged and slotted tube D', adapted to revolve in said sleeve, the grip-collar E, and cap H, all arranged to operate substantially as herein shown and described.

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