E. L. BROWN.

WRENCH.

APPLICATION FILED JAN. 29, 1910.

978,688.

Patented Dec. 13, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

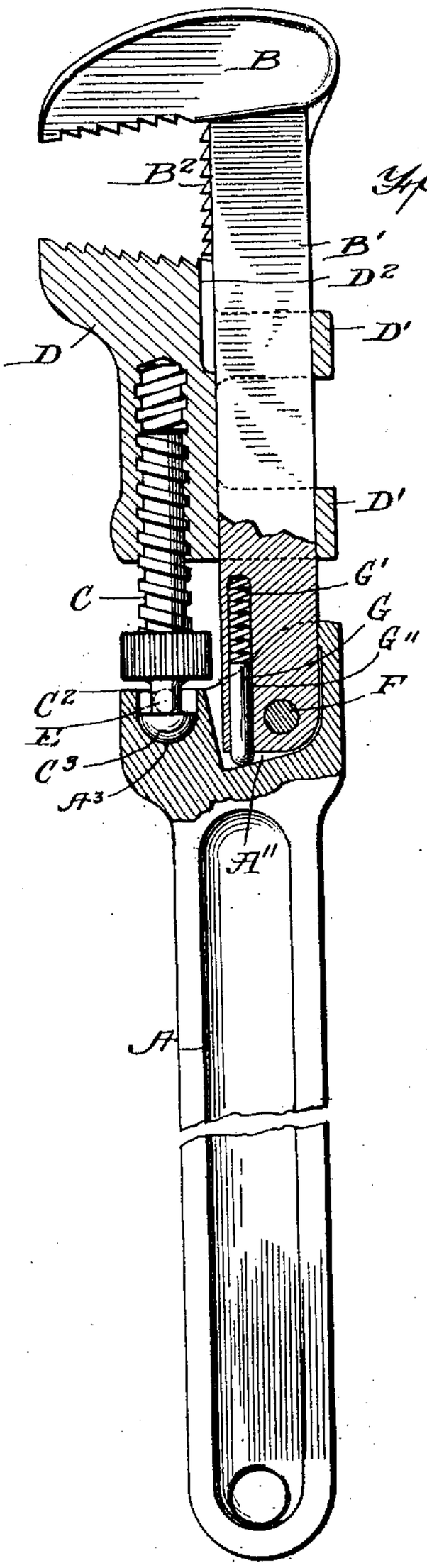



Fig. 9.

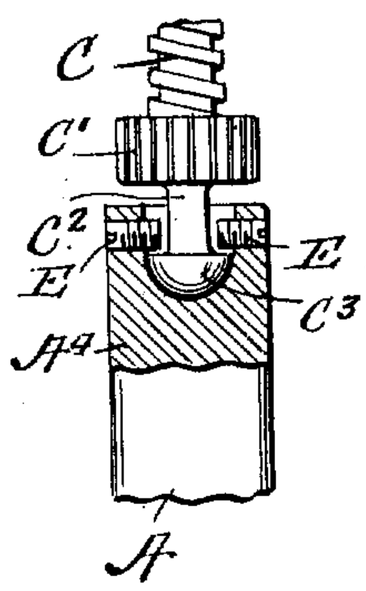



Fig. 7.

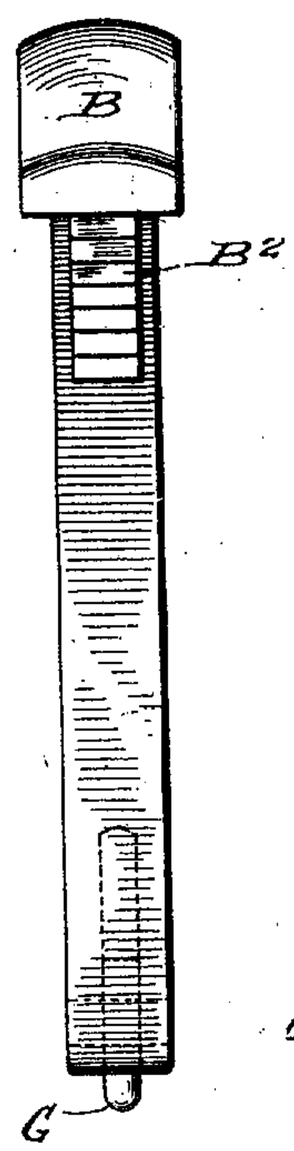
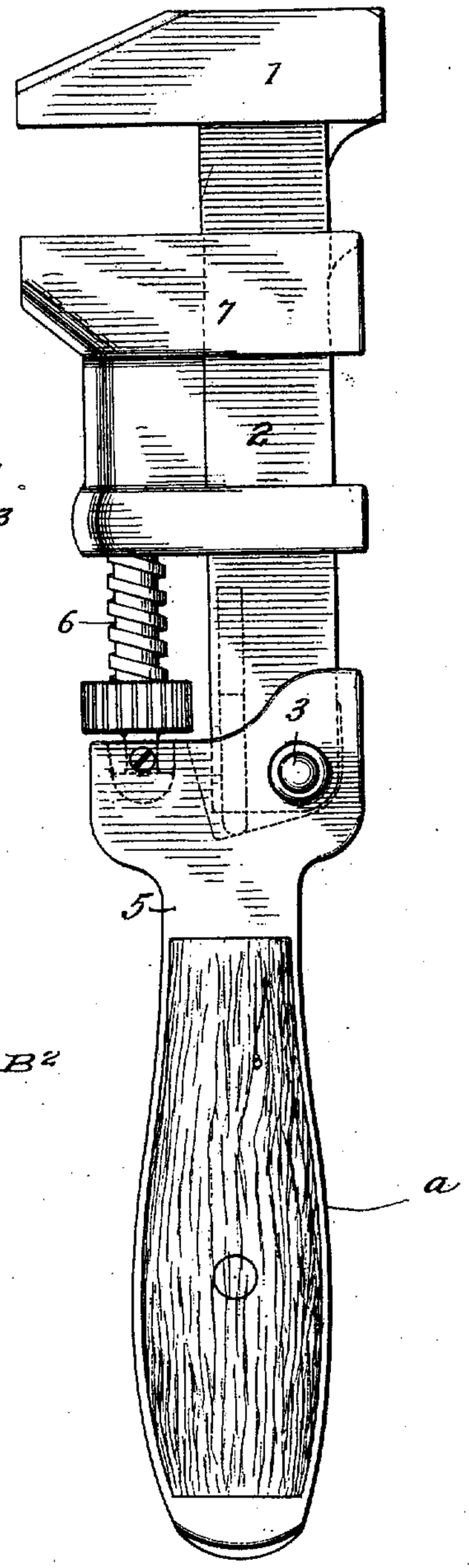



Fig. 8.




WITNESSES

L. H. Schmidt.

Percy B. Turpin

INVENTOR

EDWARD L. BROWN,

BY Munn & Co.

ATTORNEYS

E. L. BROWN.

WRENCH.

APPLICATION FILED JAN. 29, 1910.

978,688.

Patented Dec. 13, 1910.

2 SHEETS—SHEET 2.

Fig. 2.

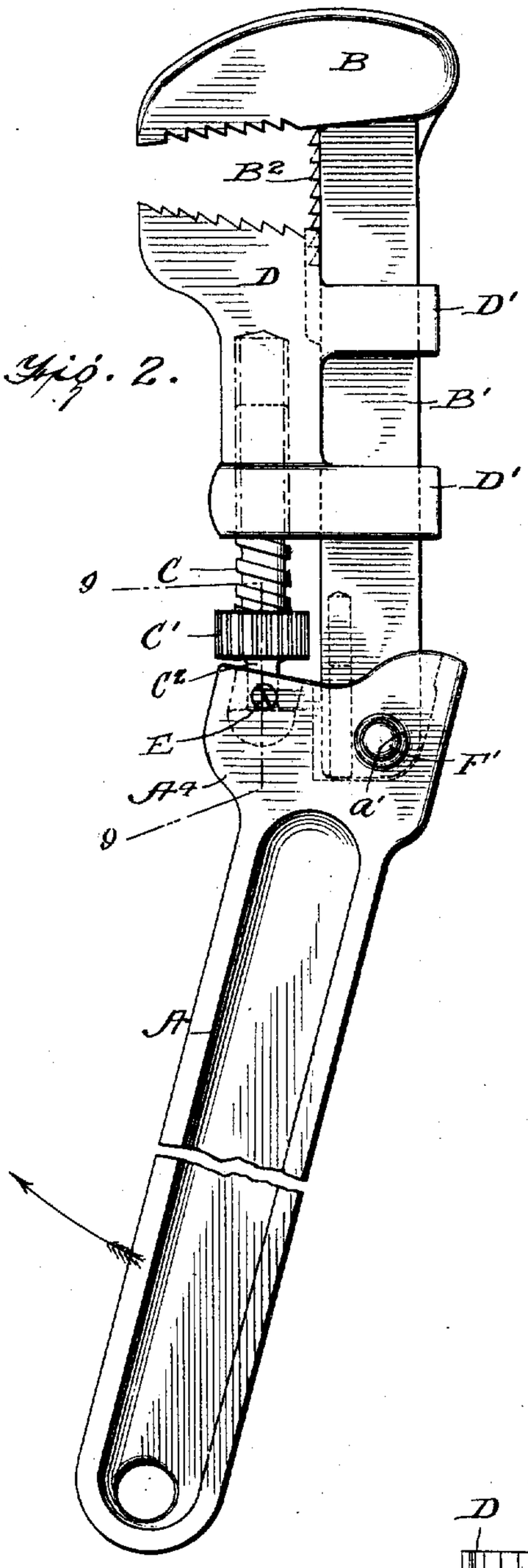



Fig. 3.

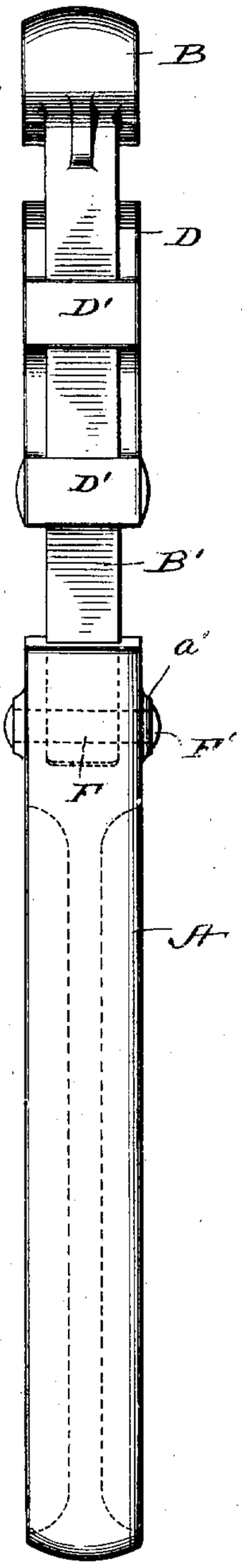



Fig. 4.

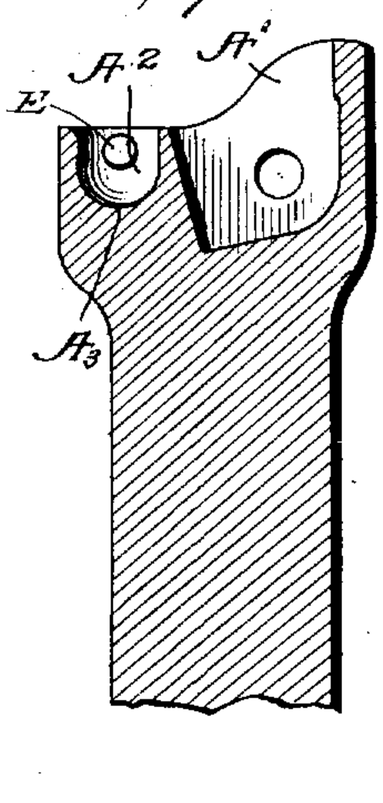



Fig. 5.

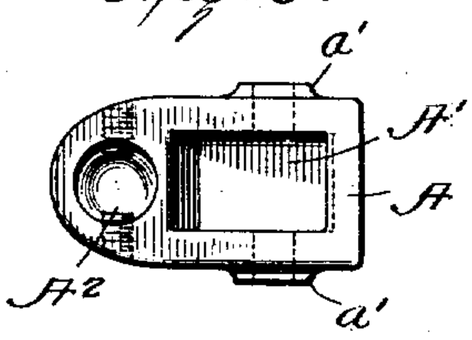
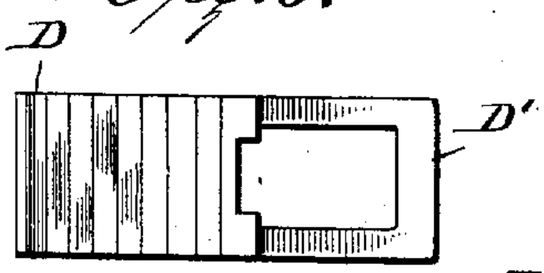



Fig. 6.




WITNESSES

L. H. Schmidt.

Percy B. Turpin

INVENTOR

EDWARD L. BROWN,

BY Munn & Co.

ATTORNEYS

# UNITED STATES PATENT OFFICE.

EDWARD L. BROWN, OF WABUSKA, NEVADA.

## WRENCH.

978,688. Specification of Letters Patent. **Patented Dec. 13, 1910.**

Application filed January 29, 1910. Serial No. 540,876.

*To all whom it may concern:*

Be it known that I, EDWARD L. BROWN, a citizen of the United States, and a resident of Wabuska, in the county of Lyon and State of Nevada, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention is an improvement in wrenches, and the invention consists in certain novel constructions and combinations of parts as will be hereinafter described and claimed.

In the drawings Figure 1 is a side view partly in section of a wrench embodying my invention and showing the jaws open. Fig. 2 is a side elevation of the wrench showing the sliding jaw in its forward position. Fig. 3 is an edge view of the back of the wrench. Fig. 4 is a detail sectional view of the inner or socketed end of the handle. Fig. 5 is an end view of the handle. Fig. 6 is a face view of a sliding jaw. Fig. 7 is a front edge view of the fixed jaw and its shank. Fig. 8 shows some of the principles of my invention embodied in a monkey wrench. Fig. 9 is a detail sectional view on about line 9—9 of Fig. 2.

In the construction shown in Figs. 1 to 7 the wrench comprises a handle A which may be preferably of metal channeled out in its sides as illustrated in Figs. 1, 2 and 3 or the handle may be of the knife handle form shown in Fig. 8 in which the wooden side pieces *a* are applied to the metallic handle. At its inner end the handle is socketed at A′ and $A^2$. The socket A′ receives the inner end of the shank B′ of the fixed jaw B while the socket $A^2$ receives one end of the screw C, the other end of said screw C being threaded in the sliding jaw D so the said screw C when held to the handle A, as presently described, may be turned by its knurled head C′ to adjust the sliding jaw D back and forth along the shank B′. The screw C has an extension $C^2$ which projects into the socket $A^2$ and has a rounded head $C^3$ which bears against the rounded base wall $A^3$ of the socket $A^2$. Screws E extending over the shoulder above the head $C^3$ retain the screw C in connection with the handle A, the mouth of the socket $A^2$ being of sufficient size relatively to the extension $C^2$ to permit the rocking movement of the handle A as shown in Fig. 2, in the operation of the wrench.

In practice I prefer to have the bottom wall of the socket $A^2$ from about $\frac{5}{32}$ to $\frac{1}{8}$ of an inch below the center of the pin F when the wrench is in its open or straight position so that the wrench will have a throw of about $\frac{1}{4}$ to $\frac{5}{16}$ of an inch on the movable jaw in operating the wrench to its full stroke. I also prefer to have the socket $A^2$ about $\frac{1}{2}$ of an inch deep but manifestly these proportions may be varied in the practical production of the wrench in different sizes of wrenches and to suit the manufacturer.

Manifestly the handle A may be made of any suitable length and be made in any suitable design without departing from the principles of my invention.

The jaw shank B′ fits at its inner end in the socket A′ and is pivoted to the wrench handle by a cross pin F, the side walls of the socket A′ having bosses *a′* reinforcing the openings for the pin F which pin F may be of any suitable form and may preferably be riveted at its ends at F′ as shown in Fig. 3.

As will be understood from Figs. 1 and 2, the handle A is rockable relative to the shank B′ swinging on the pin F, a space being left at $A^{11}$ below the shank B′ to permit the rocking movement of the parts and a spring actuated pin G is slidable longitudinally in the shank B′ in advance of the pivot F and is pressed by a coil spring G′ outwardly to the position shown in Fig. 1 and operates to re-adjust the parts from the position shown in Fig. 2 to that shown in Fig. 1 when pressure on the handle A is released after operative movement of the wrench. The pin G and its spring G′ operate in a socket $G^{11}$ formed in the inner end of the shank B′ as shown in Fig. 1 of the drawings.

The sliding jaw D has straps D′ upon the shank B′ of the fixed jaw B and when the parts are formed to operate as a pipe wrench it is preferable to serrate the opposing faces of the jaws B and D as shown in Figs. 1, 2 and 6 of the drawings. To increase the gripping hold upon a pipe it may be preferable in some instances to provide teeth or serrations at $B^2$ upon the inner face of the shank B′ adjacent to the jaw B as shown in Figs. 1, 2 and 7 of the drawing, but where desired these serrations $B^2$ may be omitted.

In order to permit the sliding of the jaw D without interfering with the serrations $B^2$, I form the inner side of the jaw D adjacent to its serrated face with a longitudinal

recess or groove at $D^2$ which receives the serrations $B^2$ when the sliding jaw is moved toward the fixed jaw as shown in Fig. 2 of the drawings.

It will be noticed that the tapered forms of jaws are useful in that they will hold the end of the wrench on the pipe after the jaws are adjusted and there is no danger of the jaws slipping off while in use. It will also be understood that the form of adjusting screw C as shown and before described may be varied without departing from some of the principles of my invention.

As shown in Figs. 1 and 2 one of the straps D′ is lowered considerably below the serrated face of the jaw D, the purpose of this construction being to permit the tempering of the serrations without overheating the strap D′. Instead of the handle standing straight when at rest as shown at Fig. 1, the parts may be adjusted so that the handle A will incline off to the right when at rest so that when pushed forward to position to cause the jaw D to clamp a pipe against the jaw B, the handle will stand in the straight position shown in Fig. 1 instead of in the inclined position shown in Fig. 2.

In the operation of the described construction, it will be noticed that when the parts are assembled as shown and before described, the sliding jaw D may be adjusted to fit upon a pipe by properly turning the screw C. Then the screw C may be slacked slightly to allow enough play between the jaws so the wrench will work freely around the pipe and if a pipe should happen to be very thin, the throw of the sliding jaw can be regulated by the screw so that the serrations will not press into the pipe far enough to flatten or crush it. Then the wrench may be operated by rocking the handle A from the position shown in Fig. 1 to that shown in Fig. 2 which will cause the jaws B and D to grip the pipe, when further movement of the wrench handle in the same direction, being that indicated by the arrow in Fig. 2, will operate to forcibly turn the pipe as will be understood by those skilled in the art. In this operation, it will be noticed I provide in connection with the fixed jaw having a shank, a jaw which slides along the said shank, a handle which is rockably connected with the fixed jaw shank and has a crank like projection at $A^4$ beyond its pivotal connection with the shank and a connection between the said crank like projection $A^4$ and the sliding jaw so the rocking of the handle on the shank will operate to slide the movable jaw along the shank of the fixed jaw, the connection between the crank projection of the handle and the sliding jaw being preferably effected by means of the adjusting screw as shown and before described.

Manifestly my invention may be embodied in its broad principles in a monkey wrench and I show such embodiment in Fig. 8 in which the fixed jaw 1 has the shank 2 pivoted at 3 to the handle *a* which latter has the crank projection 5 connected by the screw 6 with the sliding jaw 7, the parts 2, 3, 4, 5 and 6 operating as in the other figures of the drawings but the faces of the jaws 1 and 7 being smooth so they may operate upon a square or other angular nut. In the operation of this construction, it will be noticed the jaws will be clamped by the rocking handle upon a nut thus avoiding in a measure the marring of the corners or other portions of the nut. Also the monkey wrench construction shown in Fig. 8 may be used upon the hexagonal nut and slip back from face to face by permitting a sufficiently loose fit of the jaws upon the nut to enable the adjustment of the jaws past the corners of the nut in the movement incident to the rocking connection of the handle as shown and before described.

I claim:

The improved wrench herein described comprising a handle provided at its inner end with a crank projection to one side and having in said end a socket in alinement with the handle and also a socket alongside the said first socket and in the crank projection of the said handle, a fixed jaw provided with a shank fitting at one end in said first socket, a cross pivot connecting said shank with the handle whereby the handle and shank are rockably connected, a spring actuated readjusting pin operating longitudinally in the inner end of the shank and pressing against the base wall of the socket for said shank, a movable jaw sliding upon the shank of the fixed jaw, an adjusting screw threaded at one end in the movable jaw and having at its other end a rounded head bearing in the socket in the crank projection of the handle and means retaining said head in the said socket, all substantially as and for the purposes set forth.

EDWARD L. BROWN.

Witnesses:

A. J. WEBSTER,

P. J. STACEY.