(No Model.) 2 Sheets—Sheet 1.

B. F. BENNETT.

WRENCH.

No. 450,707. Patented Apr. 21, 1891.

FIG. 1.

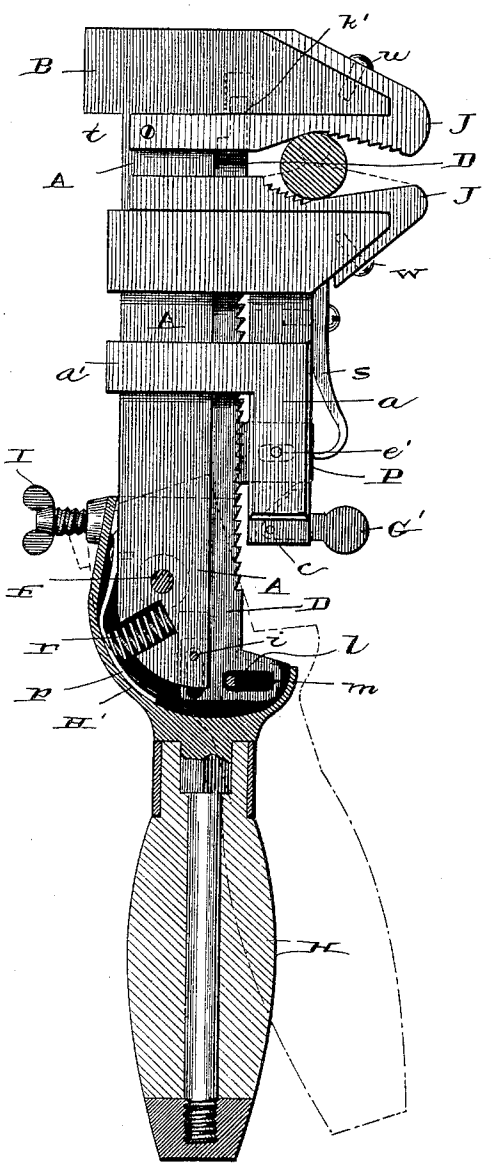


FIG. 2.

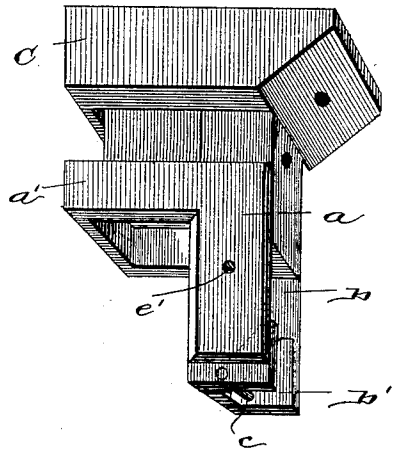


FIG. 3.

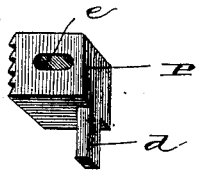
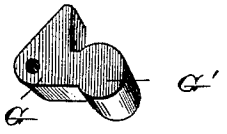


FIG. 4.



Witnesses

H. D. Healy

Geo. A. Burnett

Inventor

Benjamin F. Bennett

By his Attorney

J. R. Drake.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

2 Sheets—Sheet 2.

B. F. BENNETT.

WRENCH.

No. 450,707. Patented Apr. 21, 1891.

FIG. 5.

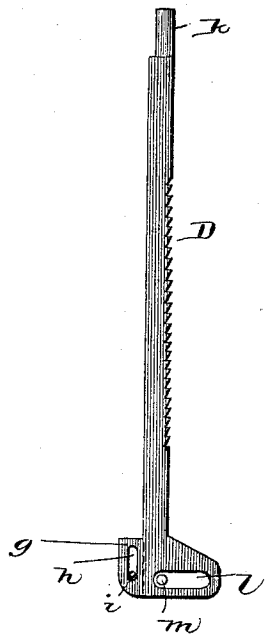


FIG. 7.

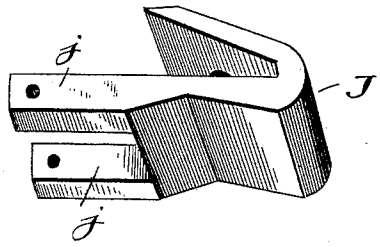
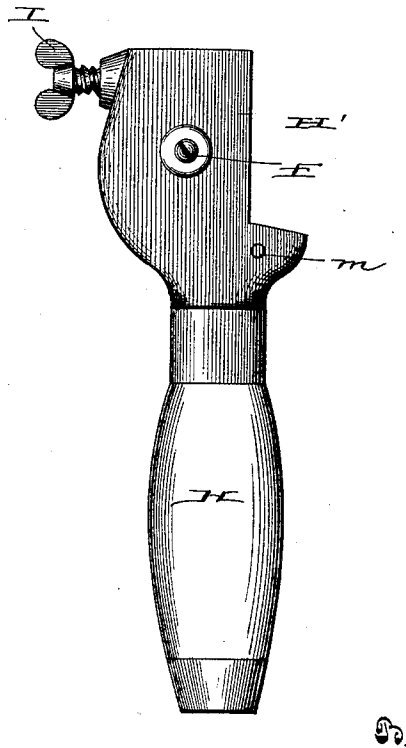


FIG. 6.



Witnesses
J. D. Healy.
Geo. A. Burnett

Inventor.
Benjamin F. Bennett,
By his Attorney
J. R. Drake.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

BENJAMIN F. BENNETT, OF LOCKPORT, NEW YORK.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 450,707, dated April 21, 1891.

Application filed August 4, 1890. Serial No. 360,948. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. BENNETT, a citizen of the United States, residing at Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Wrenches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in wrenches by which positive action is had, preventing any recession of the adjustable jaw when under duty, and also in combining therewith independent jaws for pipe-work, easily put on and off.

The main object of the invention is to get every fraction of leverage exerted to squeeze the nut or pipe, &c., and make slipping of the jaws impossible.

The device as constructed and applied will be understood by reference to the following specification and claims.

In the drawings, Figure 1 is a side elevation of the whole wrench, partly in section, and having the pipe-jaws attached; Fig. 2, a perspective of the sliding jaw removed; Fig. 3, a perspective of the resistance-plug removed from the sliding-jaw frame; Fig. 4, a perspective of the pivoted dog; Fig. 5, a side elevation of the toothed sliding bar removed; Fig. 6, a side elevation of the handle and its base-section removed from the wrench; Fig. 7, a perspective of removable pipe-jaw.

A represents the main arm having the fixed jaw B thereon.

C is the sliding jaw moving on arm A, having a short arm *a* extending backward, and from it a depending sleeve *a'* incloses the main arm A in the same manner as the jaw C.

In the short arm is a vertical square opening *b* clear through, the same width as the toothed sliding bar D beneath, and which rests on the top of the arm A, as in Fig. 1. The rear portion of arm *a* has a narrow opening *b'*, leading from the square opening *b* to the extreme end of the bar, but not through the bottom, from which it slants upward to the rear of the square opening *b*, and in this space *b'* is set a dog G, (see Figs. 2 and 4,) its lower part slanting upward and resting on the incline in the arm, its top having a flat step a little below the surface of the arm *a*, the back rising above the short bar and having a thumb-piece G'. It is pivoted in the arm by a pin *c*.

In the square opening *b* is set a toothed operating resistance-plug P, exactly fitting therein, with a short arm or lug *d* extending back and set on the flat step of the dog G, (see Figs. 1, 3, and 4,) the top being flush with the top of arm *a*. Its lower part is supplied with teeth exactly fitting the teeth of the bar D. Through the side of the plug is a vertical oblong slot or opening *e*, and through it and the sides of the arm *a* passes a pin *e'*, which allows the up-and-down movement of the plug to engage and disengage its teeth with the toothed bar D, but prevents its being thrown unnecessarily high when operated. A spring *s* is fastened at the forward end on top of the sliding jaw-section, the free end in contact with the top of the plug P, as in Fig. 1, to return the plug after being thrown up by the dog.

H is the handle-section, cast in one piece or made with a shank and wooden handle, as shown. The base-section H' of the handle is hollowed out in a segmental circular manner, as in Fig. 1, to receive the rear portion of the main arm A, which is held therein by a central pivot *f*, passing through the sides of the section H', and through the rear part of the arm A, which not only holds the two together, but allows of a pivotal upward movement of the handle, as shown in dotted lines Fig. 1, the rear bottom portion of arm A being rounded to conform to the circular recess in section H'.

The toothed bar D, before referred to, slides on top of the arm A by means of a downwardly-projecting central lug *g* set in a longitudinal recess in the rear end of arm A. (See dotted lines, Fig. 1.) In this lug is a longitudinal slot *h*, Fig. 5, and a pin *i* through it and the sides of arm A allows a forward-and-back movement. At the front end the sliding bar is rounded at K, and projects into a round hole K' in the jaw B, allowing just as much play as the slot *h*. At its rear end the

bar is enlarged upward and has a vertical slot *l* therein, with a pin *m* through it and the sides of the handle-section H′, the object to be presently explained.

Through the under side of the forward end of the section H′ is set a thumb-screw I, penetrating the solid bottom and working against the under side of the main arm A, the object being to throw or push the handle-section up out of line with the main bar, and as it does so the pin *m* in slot *l* pushes the sliding bar D forward as far as additional squeezing capacity is required to set the jaws, the thumb-screw, which has been gradually throwing up the handle and thereby pushing the bar D forward, setting the whole and absolutely preventing any back movement or fractional slipping of the jaws when at work. This is in addition to the setting of said jaws by the teeth on the sliding bar and the toothed resistance-plug P.

Another great advantage is that when at work, with the jaws pointed downward and the handle strain a lateral one, the jaws would not squeeze, unless the operator bore down on the handle; but by the use of this thumb-screw this objection is avoided and the jaws kept immovable against any back-pressure and squeeze tighter and tighter as the screw is moved. The handle-section can be thrown up, as described, on its pivot *f* without using the thumb-screw; but the screw sets it there. The handle is thrown back into line by a flat spring *p*, resting on the bottom of section H′, and is fastened at one end to the under side of the arm A, and has an interposed spiral spring *r* partly setting in a recess in the arm A and resting on top of spring *p*, as shown in Fig. 1, so that the spiral spring is not affected by the frictional movement of the handle only through the spring *p*. These two springs, however, are not indispensable.

To turn this device into a pipe-wrench, extra jaws J J′ are combined with the jaws B C, as in Fig. 1, Fig. 7 showing the jaw J detached. This is made to set over the front and rear face of jaw B, and having legs *j j′*, that straddle the sliding bar D and arm A, and confined to the latter at the bottom by a removable pin or screw *t*, but allowing a free movement of the sliding bar D between the legs. A screw *u* confines the pipe-jaw to the nut-jaw, as shown.

The jaw J′ is similar in construction to the other, except that it is only confined to the movable jaw C by screw *u′*, as it must slide forward and back with said jaw. The pipe-faces of the pipe-jaws slant toward each other at top and bottom, having teeth across the upper portion of the fixed jaw and teeth across the lower portion of the movable jaw, as shown, the teeth of the former pointing downward and the latter pointing upward. These teeth may be all the way, if desired.

The face of the pipe-jaw J′, if desired, can be pointed forward, as shown in dotted lines, Fig. 1, for use when a very small pipe or rod is to be turned. This would also allow both jaw-faces to meet, if desired. These jaws can be put on or off in a moment.

I claim—

1. In a wrench, the arm A, provided with the fixed jaw B, a toothed bar D on arm A, its front end set in fixed jaw B at K and its rear end provided with a longitudinally-slotted lug *g h*, setting in a recess in the top of arm A, held therein by a pin *i*, the sliding jaw C, having short arm *a*, the toothed plug P *d*, working up and down therein by means of vertical slot *e*, pin *e′*, spring *s*, and pivoted dog G G′, in combination with the handle H and section H′, having pivot *f*, pivot *m*, and the slot *l* in the upper rear end of sliding bar D, all arranged and operating substantially as specified.

2. In a wrench, the combination of the jaw B, arm A, sliding jaw C, its arm *a*, toothed plug P, and dog G, the sliding toothed bar D, having vertical slot *l*, and pin *m* therein, lug *g*, having longitudinal slot *h*, and pin *i* therein, handle H, hollow curved section H′, pivot *f*, and thumb-screw I, all arranged and operating substantially as specified.

3. In a wrench, the combination of the jaw B, arm A, sliding jaw C, its arm *a*, toothed plug P, having the slot *e*, pin *e′*, dog G, spring *s*, the sliding toothed bar D, having vertical slot *l*, and pin *m* therein, lug *g*, having longitudinal slot *h*, and pin *i* therein, the handle having a hollow section H′, pivot *f*, thumb-screw I, and springs *p r*, all arranged and operating substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN F. BENNETT.

Witnesses:
J. R. DRAKE,
SAMUEL K. ELLIOTT.