(No Model.)

F. L. SANDERS.

WRENCH.

No. 560,938. Patented May 26, 1896

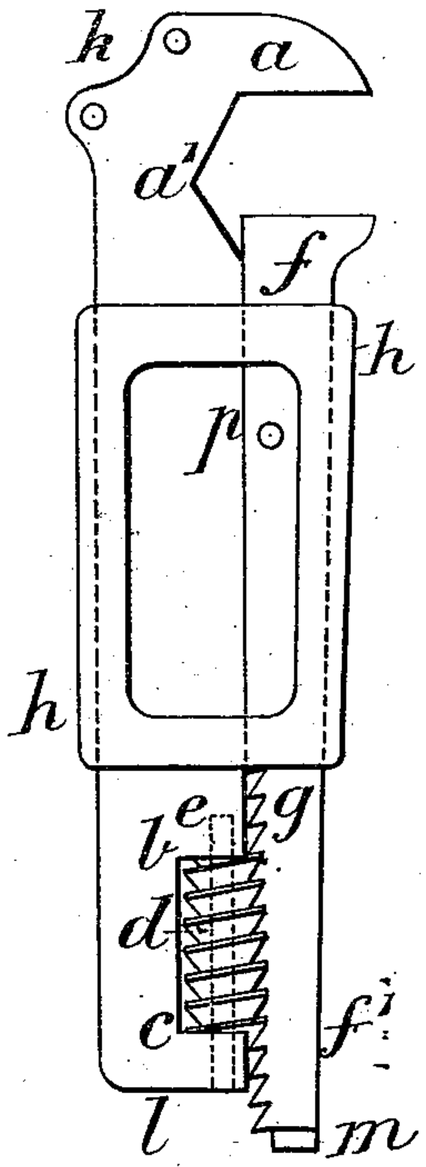

Fig 1

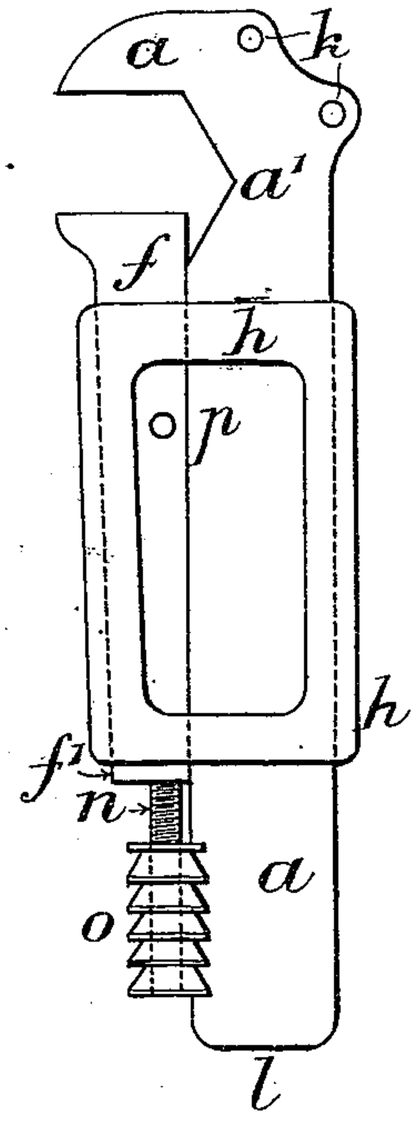

Fig 2

Witnesses:
L. C. Hills
F. B. Keeler

Inventor:
Francis L. Sanders
by Wells & Dick
his atty

UNITED STATES PATENT OFFICE.

FRANCIS LEWIS SANDERS, OF NOTTINGHAM, ENGLAND.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 560,938, dated May 26, 1896.

Application filed November 22, 1895. Serial No. 569,845. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS LEWIS SANDERS, a subject of the Queen of Great Britain, residing at Nottingham, in the county of Nottingham, England, have invented certain new and useful Improvements in Wrenches; and I do hereby declare that the following is 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.

This invention relates to an improved wrench for bolts, nuts, and screws, which may be adjusted to different sizes, and if provided with teeth on the jaws may be used as a pipe-wrench; and the object of this invention is the provision of means for enabling the movable part of the wrench-jaw to be rigidly fixed with regard to the stationary part of the wrench-jaw after the wrench has been adjusted to the required size.

Two wrenches made according to this invention are shown in the accompanying drawings, which are referred to in the following detailed description.

Figure 1 is a side view of a wrench embodying my invention. Fig. 2 is a side view of a modification of the same.

In the wrench shown in Fig. 1 the main part *a* has parallel sides and is recessed at *a'* to fit the largest nut for which the wrench is designed. At the opposite end to the jaw there is a recess *b c* for the reception of a screw *d*, which is preferably milled on the top of the threads for facilitating turning of the same. The other part of the jaw is wider at the end *f* than at the end *f'* and has a number of teeth *g*, which act as a nut for the screw *d*. There is also a cover or slide *h*, tapered internally to correspond with the taper of the two parts of the wrench, and the movement of the slide in one direction is limited by a pin *p*. The screw is fitted to rotate on a pin *e*, while the end *l* may be used for removing the cover of a cycle-tire and the end *m* as a screw-driver. The upper part of the wrench may be provided with pins *k*, so as to form a key for the cones in cycle bottom brackets. In a modified arrangement the screw *d* is placed nearer the center of the wrench between the cross-bars of the slide *h*, the axle *e* being let into recessed grooves and fastened therein.

In the wrench shown in Fig. 2 the parts *a*, *a'*, *f*, *f'*, *h*, *k*, *l*, and *p* correspond to the parts similarly lettered in Fig. 1. In this wrench the end *f'* is provided with a circular tapped piece *n*, fitting a nut *o*, which may be in the form of a rack-nut, as shown, or an ordinary milled nut, fitting a recess in the part *a*.

When constructed for use as a pipe-wrench, the surfaces of the jaw are provided with teeth, and the jaw may be wedge-shaped instead of parallel. To adjust the relative position of the two jaws, the slide or cover is first moved from the jaws, so as to release the two parts of the wrench. The screw *d* in Fig. 1 or nut *o* in Fig. 2 is then turned until the two sides of the jaw fit the two parallel sides of the nut, after which the cover is pushed toward the jaw and the two parts of the wrench held firmly together.

The wrench may be of steel, wrought stampings, malleable cast-iron, or other suitable material, and the material may be treated by any usual process. In modifications the part *a* of the wrench may be tapered instead of the part *f f'*, or both parts may be tapered, while the screw *d*, Fig. 1, may be attached to either part, and in larger-sized wrenches the slide may be provided with a mechanical device for moving the same.

Having thus described my invention and the means for carrying out the same, what I desire to claim and secure by Letters Patent in the United States is—

The combination in a wrench, of two jaws, one of said jaws having a screw and the other jaw having a rack, and a wedge-shaped cover for holding the parts together, substantially as described.

FRANCIS LEWIS SANDERS.

Witnesses:
JOSEPH ABBOTT,
W. W. POTTER.