No. 676,288. Patented June 11, 1901.

J. H. VICKERS.

WRENCH.

(Application filed Mar. 18, 1901.)

(No Model.)

Fig. 1

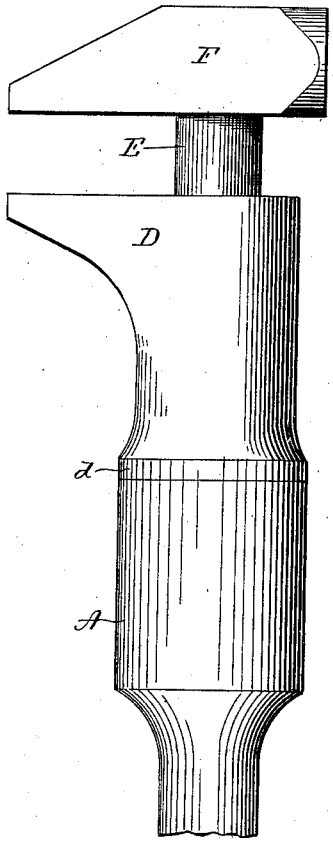

Fig. 2

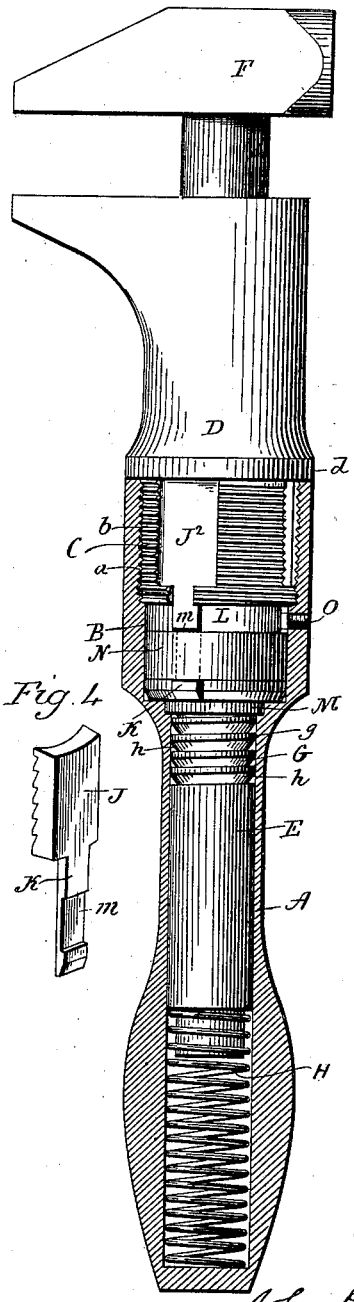

Fig. 3

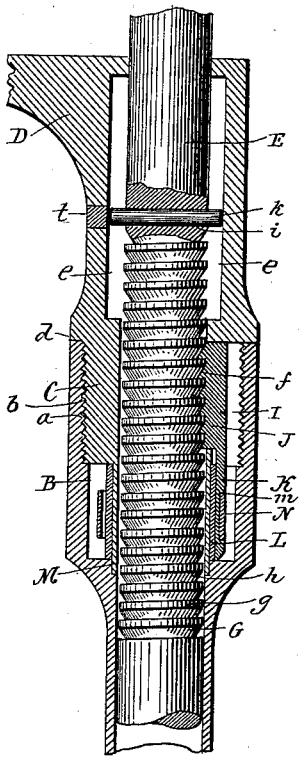

Fig. 4

Fig. 5

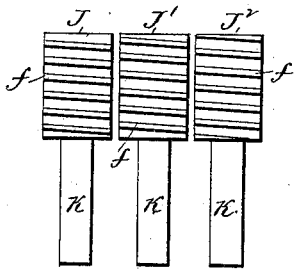

Fig. 6

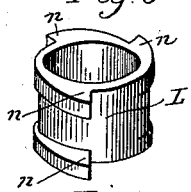

Fig. 7

Witnesses,
J. H. Shumway.
Lillian D. Kelsey.

John H. Vickers
Inventor.
By Atty's Seymour & Earle

UNITED STATES PATENT OFFICE.

JOHN H. VICKERS, OF SOUTHINGTON, CONNECTICUT.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 676,288, dated June 11, 1901.

Application filed March 18, 1901. Serial No. 51,715. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. VICKERS, of Southington, in the county of Hartford and State of Connecticut, have invented a new Improvement in Wrenches; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the upper portion of a wrench embodying my invention with the jaws partially open; Fig. 2, a similar view of a complete wrench with the handle portion in section; Fig. 3, a broken sectional view of the operating parts of the wrench; Fig. 4, a perspective view of one of the dogs detached; Fig. 5, a face view of the three dogs; Fig. 6, a perspective view of the cam-sleeve detached; Fig. 7, a perspective view of the spring for holding the dogs in engagement with the cam-sleeve.

This invention relates to an improvement in wrenches, and particularly to that class in which the outer jaw is movable with relation to the handle in contradistinction to wrenches in which the inner jaw is movable upon the handle or shank, and the invention further relates to that particular class of wrenches in which the outer jaw is adapted to be thrown outward under the action of the spring when released, yet held in various positions of adjustment, as required, the object of the invention being a simple arrangement of parts whereby the jaws may be securely held in their various positions, yet easily adjusted with relation to each other; and the invention consists in the construction, as hereinafter described, and particularly recited in the claims.

In carrying out my invention I employ a hollow handle A, formed with a chamber B in its upper end, the internal walls of the chamber being formed with threads *a*, adapted to engage with threads *b*, formed upon the exterior of a neck C, which depends from the fixed jaw D, which is formed with an annular shoulder *d*, against which the upper edge of the chamber B may abut. Longitudinally through the jaw D is a circular passage for the shank E of the outer or movable jaw F, and in opposite sides of this opening are grooves or channels *e*, the purpose of which will hereinafter appear. The lower portion of the shank E is formed with threads G, said threads presenting a flat upper face *g* and inclined lower faces *h*, and within the handle A, below the shank E, is a spiral spring H, the tendency of which is to force the shank outward. In the upper unthreaded portion of the shank a transverse hole *i* is made, into which a pin *k* is passed through an opening formed in the jaw D and intersecting one of the channels *e*, which opening is closed by a plug *t*. The said pin is of sufficient length to enter the grooves or channels *e* and so as to limit the outward movement of the shank and prevent the shank turning in the lower or fixed jaw. In the sleeve C are preferably three recesses or openings I, in which dogs J J′ J² are arranged, the said dogs having threads *f*, adapted to engage with threads G on the shank E, and, as shown in Fig. 5 of the drawings, the threads are differently arranged on each dog, so that at least one of them will always engage with the threads on the shank and so that the adjustment of the outer jaw may be made very close. These dogs have depending tails K, which extend downward over a cam-sleeve L, which rides upon a collar M, formed integral with and depending from the neck C. On this cam-sleeve are cams *n*. Surrounding the cam-sleeve L and overlapping the tails of the dogs is a spring-ring N, which rests in notches *m*, formed in the tails of the dogs, and tends to normally force them into engagement with the shank when they are released by the cams *n*. The upper end or chamber B of the handle is connected with the cam-sleeve L by a pin or screw O, and so that the turning of the handle will rotate the cam-sleeve.

The operation of the device is as follows: In the normal position the threads on at least one of the dogs engage with the threads on the shank and hold the shank in a fixed position with relation to the lower jaw. Upon rotating the handle, however, the upper end being coupled to the cam-sleeve L will rotate that sleeve and cause the cams *n* to lift the dogs, so as to throw the threads thereon out of engagement with the threads on the shank, leaving the shank free to be thrown outward under pressure of the spring H.

When thrown out, the handle is rotated in the opposite direction, which permits the dogs to be forced inward, and one or more of them will immediately engage with the threads on the shank. The pitch of the threads on the shank and dogs is such that the shank may be readily forced inward, but rigidly held against outward movement until released by the dogs, and, as before stated, by varying the arrangement of the threads on the several dogs at least one of them is always in position to engage with the threads on the shank.

It will be understood from the foregoing that I am aware that wrenches having movable jaws adapted to be projected under action of a spring when released are old, and I therefore do not wish to be understood as claiming such as my invention; but,

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

1. In a wrench, the combination with a fixed jaw of a hollow handle having threaded engagement with the fixed jaw, a movable jaw having a shank extending downward through the fixed jaw, and into the handle, dogs within the handle adapted to engage with the shank, a cam for lifting said dogs out of engagement with the shank, and connection between the handle and said cams, substantially as described.

2. In a wrench, the combination with a fixed jaw, having an externally-threaded neck, of a hollow handle adapted at its upper end for engagement with the said neck, a movable jaw having a screw-threaded shank extending through said fixed jaw, and into the handle-recesses in the said neck, and dogs in said recesses adapted to engage with the threads on the shank, a cam-sleeve adapted to lift said dogs out of engagement with the shank, said handle and ring coupled together, whereby the rotation of the handle will operate said dogs, substantially as described.

3. In a wrench, the combination with a fixed jaw, having an externally-threaded neck, of a hollow handle adapted at its upper end for engagement with said neck, a movable jaw having a screw-threaded shank extending through said fixed jaw and into the handle-recesses in the said neck, dogs in said recesses and having depending tails, a cam-ring coupled with the handle and adapted to lift the dogs, and a spring surrounding the cam-ring and tails of the dogs, substantially as described.

4. In a wrench, the combination with a fixed jaw having a neck and internal longitudinal grooves, a hollow handle having threaded engagement with said neck, a shank extending through said fixed jaw and into the handle, dogs within the handle adapted to engage with the shank, a cam for lifting said dogs out of engagement with the shank, connection between the handle and said cam, and a transverse pin in the shank, the ends of which extend into the grooves in the fixed jaw, substantially as described.

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

JOHN H. VICKERS.

Witnesses:
JOHN H. BRADBURY,
JOSEPH P. JACKSON.