

A. E. SMILEY.

WRENCH.

APPLICATION FILED JULY 26, 1910

979,805.

Patented Dec. 27, 1910.

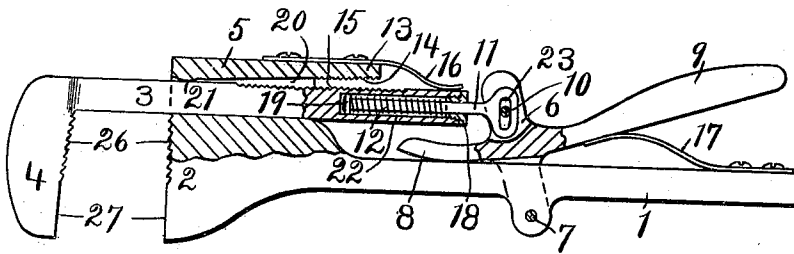


FIG. 1.

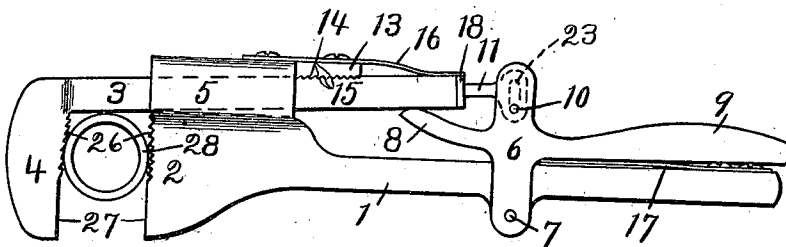


FIG. 2.

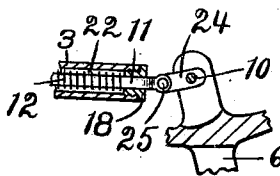


FIG. 3.

WITNESSES:

A. C. Fairbanks.
J. M. Davenport.

INVENTOR.

Arthur E. Smiley,

BY

Webster & Co.,

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ARTHUR E. SMILEY, OF SPRINGFIELD, MASSACHUSETTS.

WRENCH.

979,805.

Specification of Letters Patent.

Patented Dec. 27, 1910.

Application filed July 26, 1910. Serial No. 573,912.

To all whom it may concern:

Be it known that I, ARTHUR E. SMILEY, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Wrench, of which the following is a specification.

My invention relates to improvements in wrenches adapted for use with either pipes or nuts or both, and comprises, with jaw-provided fixed and movable shanks of suitable construction, a certain peculiar operating link or arm, and a flexible connection of special or peculiar construction between said arm and said movable shank, all as hereinafter set forth.

The primary object of my invention is to produce a strong and durable quick-acting wrench, which is simple in construction and operation, is comparatively inexpensive, and is withal practicable and efficient.

Other objects will appear in the course of the following description.

I attain these objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation with parts in section of a wrench which embodies a practical form of my invention, the members being normally disposed; Fig. 2, a side elevation of said wrench, showing it in gripping operative engagement with a pipe, and, Fig. 3, a fragmentary view of a slight modification of the connection between the operating arm and the movable shank.

Similar figures refer to similar parts throughout the several views.

Referring to the drawings, it will be observed that I have there shown a fixed shank 1 having a jaw 2 at one end, a movable shank 3 having a jaw 4 beyond said jaw 2 and in operative relation thereto, said movable shank being slidably mounted on a projecting part that forms a carrier 5 on top of said fixed shank at the forward or jaw terminal thereof, a link or arm 6 having its base pivoted at 7 to said fixed shank and provided with a forwardly-extending finger 8 and a rearwardly-extending handle 9, and a flexible connection between the upper terminal of said arm, to which it is pivoted at 10, and the adjacent or rear terminal of said movable shank, such connection consisting of a draw-bar 11 and a spring 12.

In addition to these elements there are a

rearwardly-extending overhanging piece 13 having serrations or teeth 14 on its under side, such piece projecting from and being a part of the top of the carrier 5, serrations or teeth 15 on the upper edge of the shank 3 in position to engage said teeth 14, a spring 16 fastened to said carrier and arranged to bear with its free terminal or top of said shank behind said teeth 15, a spring 17 fastened to the shank 1 adjacent to the back end thereof and arranged to bear with its free terminal against the bottom edge of the handle 9, and a nut 18 and collar 19 presently to be described.

There is a longitudinal passage 20 through the carrier 5, through which the shank 3 extends and in which it operates, such passage being tapered so that it is deeper at the back end than at the front end. The depth of the front end of the passage 20 is approximately the same as the depth of the shank 3. A transverse curved bearing rib 21 may be provided in the passage 20 at the front end for the upper edge of the shank 3. Thus it will be seen that the shank 3 not only has longitudinal movement through the carrier 5, but may also rock therein with either the rib 21 or the lower edge of the passage 20 at the front end serving as a fulcrum for said shank. The bottom of the passage 20, in the present case, is parallel with the shank 1, and the spring 16 acts to hold the shank 3 normally on such bottom throughout the entire length of the same, as shown in Fig. 1, and should be of sufficient strength to cause the teeth 15 to be disengaged from the teeth 14, after such engagement has been brought about (in the manner presently to be explained) and is no longer desired, and force said shank down into the aforesaid position relative to the bottom of said passage.

The spring 17 normally retains the arm 6 in the forwardly-inclined position which it occupies in the first view, with the finger 8 bearing on the upper edge of the shank 1.

The major portion of the draw-bar 11 is received in a longitudinal passage 22 in the shank 3. Said passage opens through the back end of said shank, and the nut 18 is tapped into such end to form an abutment or stop around the draw-bar for the spring 12. The collar 19 is on the inner terminal of the draw-bar 11, and the spring 12 is interposed between such collar and the nut 18.

Inasmuch as the shank 3 has a tilting

movement, it becomes necessary that there shall be some freedom at the pivot 10. This freedom of movement may be obtained in various ways, a slotted connection, an example of which appears in the first two views, and a link connection, as illustrated in the last view, being two of such ways. A vertical slot 23 in the head of the draw-bar 11 receives the pivot 10 in the first instance, while in the second instance a link 24 is introduced between the arm 6 and said draw-bar, being pivoted to the former at 10 and to the latter at 25.

By preference both terminals of the arm 6 are forked so as to enable said arm to straddle the shank 1 and to embrace the head of the draw-bar 11, or the rear portion of the link 24 if the latter be employed.

By serrating the adjacent or working faces of the jaws 2 and 4 in part, and leaving the rest of such faces plain, after the manner indicated in Figs. 1 and 2, wherein the serrations are represented at 26 and the plain portions at 27, the wrench is adaptable for use with either pipes or angular objects.

When the arm 6 is tilted forward by the spring 17 as far as the finger 8 will permit, the jaws 2 and 4 are separated as much as they ordinarily will be, although it is possible to force them still farther apart by drawing out the shank 3 against the resiliency of the spring 12. Under normal conditions and with all parts inactive, with the exception of the springs 17 and 16 which are always active, the spring 12 is inert, but when an object is introduced between the jaws 2 and 4 and the handle 9 pressed down against the resiliency of the spring 17, the arm 6 draws back the draw-bar 11 and with it the shank 3, through the medium of said spring 12 which intervenes between the collar on said draw-bar and the nut in the back end of the shank passage, until the jaw 4 is checked by reason of its contact with such object, it being assumed that such object is already in contact with the jaw 2, and then said spring 12 is compressed to whatever extent may be necessary in order to allow said handle to be moved into its lowest position.

In practice, the wrench while open is applied to a pipe 28 (for example) in the usual manner, then the arm 6 is rocked backwardly on its pivot 7 by means of the handle 9 and as far as said handle will permit. This action on the part of the arm 6 brings about the gripping of the pipe 28 by the jaws 2 and 4, owing to the compression of the spring 12 and to the force exerted thereby on the shank 3, as above explained, and at the same time causes said shank to be locked, since the front end of the finger 8 has been moved against the underside of said shank and has tilted the latter upwardly, against the resiliency of the spring 16, until the

teeth 15 engage the teeth 14, when the parts are locked and so remain as long as the handle 9 is held down. The teeth 14 and 15 now take the strain, relieving the hand of the operator, as the manipulation of the wrench on the pipe exerts a forward pressure on the jaw 4 and its shank.

When the arm 6 rocks rearwardly and until the finger 8 strikes the shank 3, the pivot 10 rises in the slot 23, but after that the slotted part of the draw-bar 11 moves upwardly on said pivot. Thus it is that the pivot 10 is in the upper end of the slot 23 at the end of the closing and the beginning of the locking operations, and, conversely, at the end of the unlocking and the beginning of the opening operations, only. It is seen, therefore, that the size and location of the slot 23 are such as to enable the arm 6 to move the draw-bar 11 with the shank 3 backward and forward without hampering the required upward and downward movement on the part of said draw-bar and shank.

To release the wrench from the pipe 28 simply free the arm 6 to the spring 17, which results in the tilting forward of said arm and in the disengagement of the teeth 14 and 15, the latter being accomplished by the spring 16 as soon as the finger 8 passes away from the shank 3. The tension on the spring 12 now having been removed, the jaws no longer grip the pipe and can be readily disconnected therefrom.

Obviously the link connection illustrated in Fig. 3 permits of the same operations as does the slotted connection illustrated in Figs. 1 and 2, such operations being those described above and pertaining to the practical use of the wrench as a whole.

I do not desire or expect to be restricted unduly to what I have herein shown and described, because the same is susceptible to changes which will or may affect the shape, size, construction, or arrangement, one or all, of some or all of the parts, without departing from the nature of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A wrench comprising a jaw-provided fixed shank, a jaw-provided movable shank slidably mounted in relation to said fixed shank, an arm pivotally connected with said fixed shank, and a longitudinally yielding connection between said arm and said movable shank, coupling them together so that the latter may move with the former.

2. A wrench comprising a jaw-provided fixed shank, a jaw-provided movable shank slidably mounted in relation to said fixed shank, an arm pivotally connected with said fixed shank, a yielding connection between said arm and said movable shank, coupling them together so that the latter may move

with the former, and means to lock said movable shank to said fixed shank and to release it therefrom.

5 3. The combination, in a wrench, of a jaw-provided shank, a second jaw-provided shank arranged in reciprocating and tilting relation to said first shank, a spring-pressed arm pivotally connected with said fixed shank and provided with a forwardly-extending finger and a rearwardly-extending handle, said finger projecting beneath said movable shank, and a flexible connection between said arm and said movable shank.

10 4. The combination, in a wrench, of a jaw-provided shank, a second jaw-provided shank arranged in reciprocating and tilting relation to said first shank, a spring-pressed arm pivotally connected with said fixed shank and provided with a forwardly-extending finger and a rearwardly-extending handle, said finger projecting beneath said movable shank, a flexible connection between said arm and said movable shank, and

engaging means for said movable shank to hold it against longitudinal movement when said shank is tilted upwardly by said finger. 25

5. The combination, in a wrench, of a jaw-provided shank, a second jaw-provided shank arranged in reciprocating and tilting relation to said first shank, a spring-pressed arm pivotally connected with said fixed shank and provided with a forwardly-extending finger and a rearwardly-extending handle, said finger projecting beneath said movable shank, a flexible connection between said arm and said movable shank, engaging means for said movable shank to hold it against longitudinal movement when said shank is tilted upwardly by said finger, and disengaging means for such shank when the latter is released by said finger. 30 35 40

ARTHUR E. SMILEY.

Witnesses:

F. A. CUTTER,

A. C. FAIRBANKS.