

March 2, 1943.

A. A. WESTMAN

2,312,947

WRENCH

Filed June 9, 1941

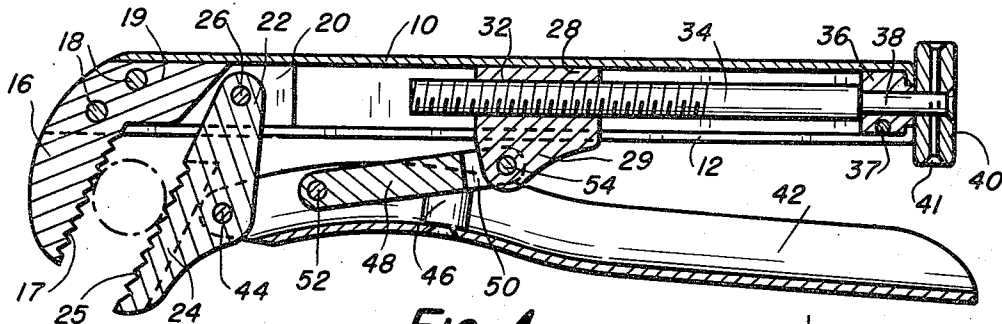


Fig-1

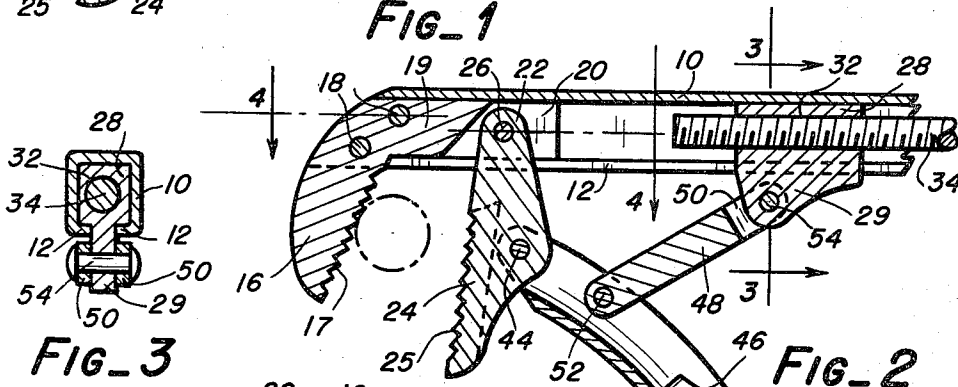


Fig-2

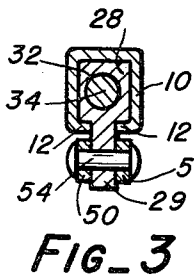


Fig-3

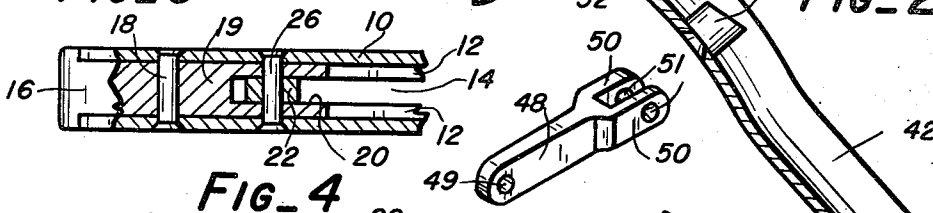


Fig-4

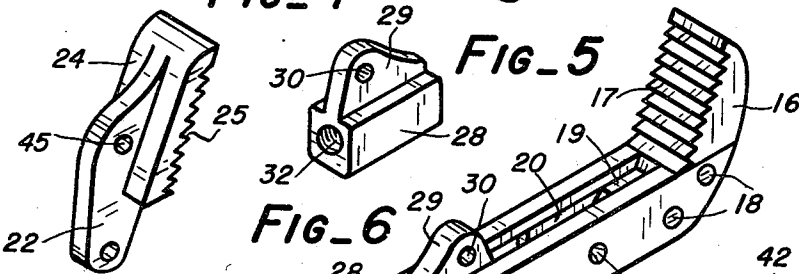


Fig-5

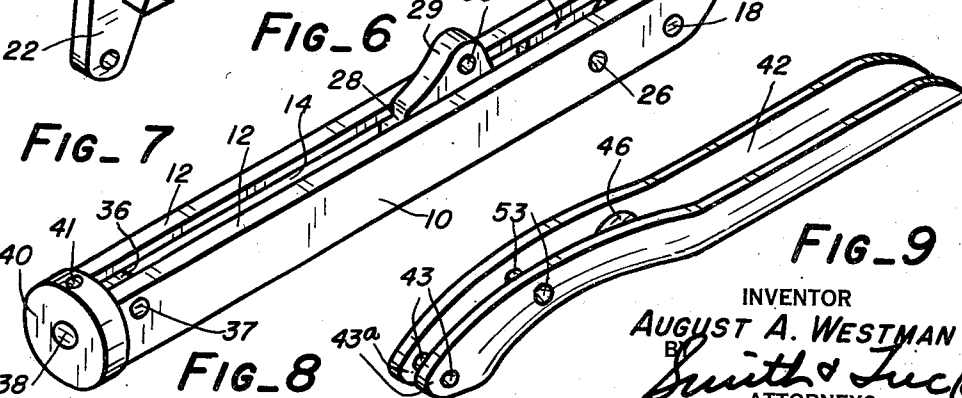


Fig-6

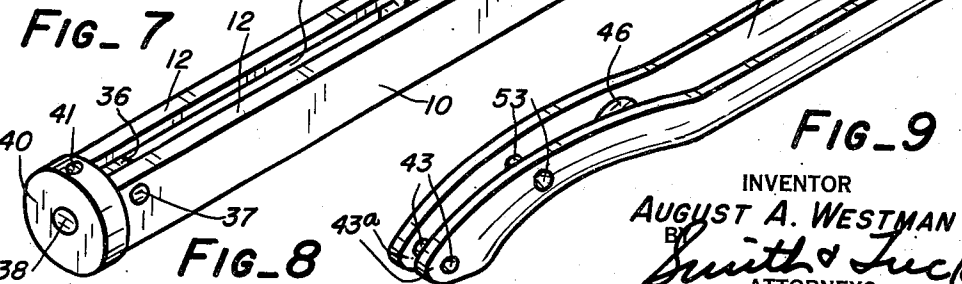


Fig-7

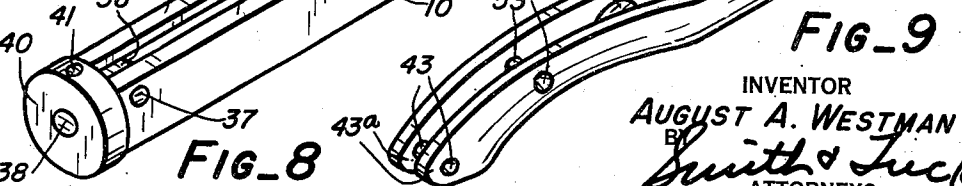


Fig-8

Fig-9

INVENTOR
AUGUST A. WESTMAN
BY
Smith & Tuck
ATTORNEYS

UNITED STATES PATENT OFFICE

2,312,947

WRENCH

August A. Westman, Carnation, Wash.

Application June 9, 1941, Serial No. 397,199

1 Claim. (Cl. 81—84)

This invention relates to improvements in a wrench of the type commonly referred to as a vise-wrench wherein a pair of jaws are manually locked in a closed position to securely and firmly grip an object.

It is well known in the art that various types of swinging-jaw devices have been produced wherein the jaws may be brought to a closed position and then, to function with a fixed jaw through the instrumentality of various arrangements of pivoted linkage, lock so that they will securely and immovably grip an object without the employment of a manual gripping pressure by an operator.

Many of these devices have operated satisfactorily to a degree but they have been characterized by undue amounts of wear because of the unnatural strain produced in the devices when they are employed by persons who, although they may be skilled to a degree, are not conscious that they may be imparting unnecessary strains upon the parts of the wrench.

It is an important object of my invention to produce a wrench having jaws immovable with relation to each other by reason of a fixed lever and articulated lever arrangement wherein the locking means for the jaws and lever is wholly contained within a fixed handle and operable in a manner to eliminate strains and stresses upon the operating parts thereof to the end that a long and useful life of the tool will result.

Another object of the invention is to provide a novel and improved wrench having a traveler pivot nut and a fixed rotatable feed screw for said nut which is adapted to adjust and operate the fixed and articulated lever arrangements efficiently and practicably.

A further object of the invention consists in details of construction and operation of the several parts of my improved wrench, whereby certain important advantages may be obtained.

Other objects and advantages of the invention will be more apparent during the course of the following description, wherein is set forth and described a preferred embodiment of my invention.

In the drawing forming a part of this specification, and in which like reference numerals refer to like parts throughout the same,

Figure 1 is a longitudinal sectional view taken through the device comprising my wrench,

Figure 2 is a similar, fragmentary sectional view showing the jaws in the open position,

Figure 3 is a cross-sectional view taken on line 3—3 of Figure 2,

Figure 4 is a fragmentary sectional view taken on lines 4—4 of Figure 2,

Figure 5 is a perspective view of a link member employed in my wrench,

Figure 6 is a perspective view of a traveller pivot nut employed in my wrench,

Figure 7 is a perspective view of the swinging jaw of my wrench,

Figure 8 is a perspective view of the stationary lever and jaw of my invention, and

Figure 9 is a perspective view of the movable hand lever of my wrench.

The numeral 10 designates a channel member or handle of generally U-shaped cross section having over-lapping lips 12, 12 forming therebetween the slot 14.

The handle 10 may be tapered or shaped according to varying conditions to be met to strengthen it where desired. In one end of the member 10 I mount the fixed jaw 16 which is provided with teeth 17 on its inner face. The rivets 18 secure the jaw shank 19 in place. The shank 19 is bifurcated at 20 a width substantially equal to that of the slot 14 for the reception of the tongue 22 of the movable jaw 24 which has teeth 25 on its gripping face.

A pivot pin 26 passing through the bifurcated shaft 19 and the tongue 22 permits swinging movement of the jaw 24 with relation to the jaw 16.

A traveler nut 28 having a general cross-sectional size substantially that of the cross-section of the member 10 and is slidable therein. Nut 28 also has an upstanding ear 29 through which the threaded bore or opening 30 is provided longitudinally of the member. The nut 28 slides longitudinally in the member 10 and the screw 34 is threadedly engaged in the passage 32 to advance and retract the nut upon rotary motion of the screw.

A bearing block 36 fixed in the outer end of the handle by means of the pin 37 receives a reduced portion 38 of the screw 34 and journals it. When turning or rotary motion is applied to the screw by means of the knob 40 pinned thereto at 41, the screw will merely rotate and not advance or retract as is the case in many wrenches.

The movable hand lever 42 is generally U-shaped in cross-section and has pivot holes 43 for the reception of pin 44 which engages in the pivot hole 45 of the movable jaw 24. The ears 43a provided with the opening 43 straddle the tongue of the movable jaw and make a very strong and yet simple connection therewith.

The handle 42 is provided with the interior

stop 46. The link 48 shown in Figure 5 has the pivot hole 49 at one end and the bifurcated ears 50 at the other end which are provided with the pivot holes 51. A pivot pin 52 passes through the pivot holes 53 of the handle and the pivot hole 49 of the link to secure these two elements together—and the bifurcated ears 50, 50 of the link straddle the ear 29 of the nut 28 and the pin 54 secures these elements together.

In adjusting the wrench to a specific object to be gripped, the jaws are swung open as shown in Figure 2 so that the mouth therebetween can be readily engaged over the object. By imparting pressure upon the movable handle to draw it toward the fixed handle as suggested in Figure 1, the jaws will be brought close to the object. It will often be found necessary to adjust the position of the traveler nut 28 and its pivot 54 longitudinally of the fixed handle so that the jaws can be brought into the clamping position. By "clamping position" is meant that position where an operator needs no longer apply pressure in the manner of a pair of pliers to the fixed and movable handle. He can secure a very powerful grip manually but if it is desired that the wrench be released in a tightened position on an object and remain in that tightened position, certain adjustments must be made to the parts. By maintaining pressure, usually through the tips of the fingers on the movable handle 42 and by moving the traveler nut one way or the other usually toward the journaled end of the screw 34—this jaw adjustment is made.

The object of the adjustment is to bring the pivots 44, 52, and 54 as nearly in line as possible. When they are still slightly out of line, or as when the pivot 52 is away from a straight line between the pivots 44 and 54, on the side away from the fixed handle 10, the jaws are unclamped. At such times as the pivots are approximately in line a slight pressure will force the pivot 52 inside of a line between pivots 44 and 54, the jaws will be clamped to a pressure depending upon the degree of misalignment between the three pivots.

Of course lateral pressure is imparted to the traveler nut under such circumstances and it is within an important object of my invention to provide the traveler nut in the rectangular shape indicated in Figures 3 and 6 so that it will be guided in its sliding movement and so that the ways on the inner faces of the fixed handle 10

will maintain it against twisting motion imparted through the link 48. Thus with the traveler nut 28 having a fixed and firm mounting in the handle 10, the end of the screw 34 cannot be distorted as is so often common with the other devices of the art. Thus also is eliminated undue strain and subsequent wear upon the journals of the screw 34 and the outer end of the handle 10. By thus journaling the screw 34 in a fixed position within the handle, the knob 40 does not move lengthwise and is always closely associated with the end of the handle so that the length thereof does not vary according to the set of the jaws. This eliminates the possibility of the handle striking obstructions in swinging about an object when in use as a wrench or plier.

The foregoing description and the accompanying drawing are believed to clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that such changes in the invention may be made as are fairly within the scope and spirit of the following claim.

I claim:

25 A wrench, comprising: a fixed handle formed of a tubular member having a slot along one side thereof, a fixed jaw secured to the forward end of the handle and projecting from the side thereof having said slot, a movable jaw hinged at one end to said fixed handle so as to cooperate with said fixed jaw to hold objects therebetween, a movable handle pivoted at one end to the mid portion of said movable jaw, said movable handle being shaped and adapted to lie along side of said fixed handle and to move to and from said fixed handle, an adjusting block having a sliding fit with and lying on the inside of said fixed handle, said block having a lug projecting through and adapted to slide along the slot in said fixed handle and said block having a threaded opening therethrough and parallel to the longitudinal axis of said handle, a threaded bolt engaged in said block and projecting beyond the rear end of said fixed handle with an adjusting knob on the rear end thereof, means for journaling and retaining said bolt in said fixed handle against displacement therealong, and a link between the lug on said block and the forward portion of said movable handle to form therewith a toggle link 50 between said block and said movable jaw.

AUGUST A. WESTMAN.