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WRENCH

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Fig. 2.

Fig. 5.

Fig. 6.

Fig. 1.

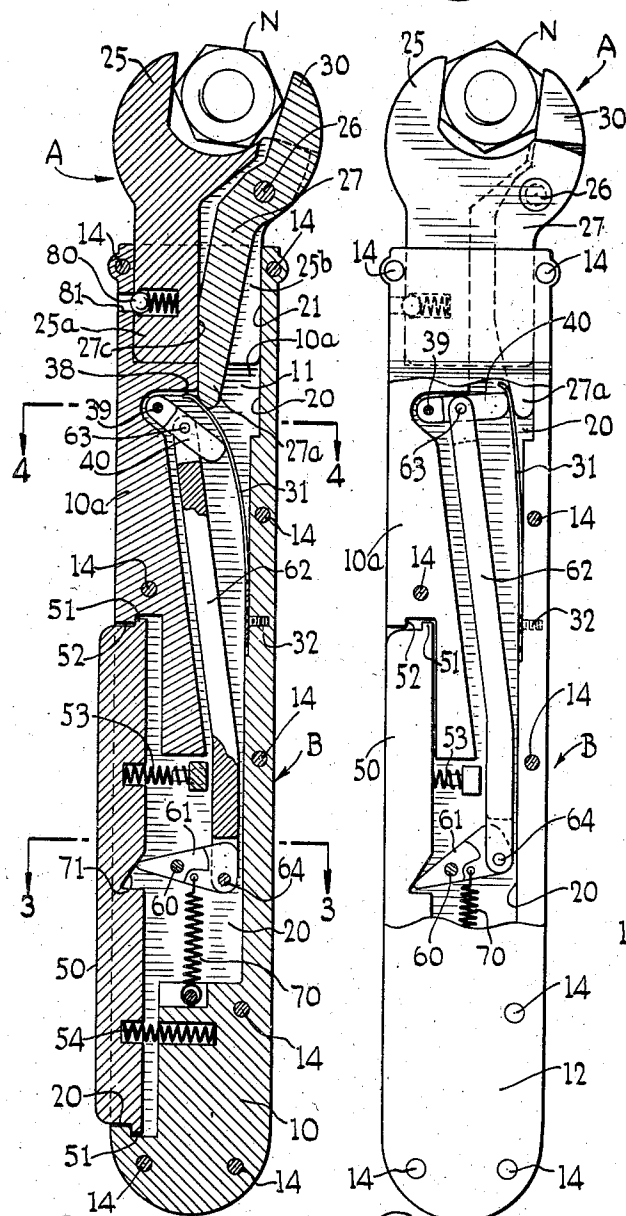
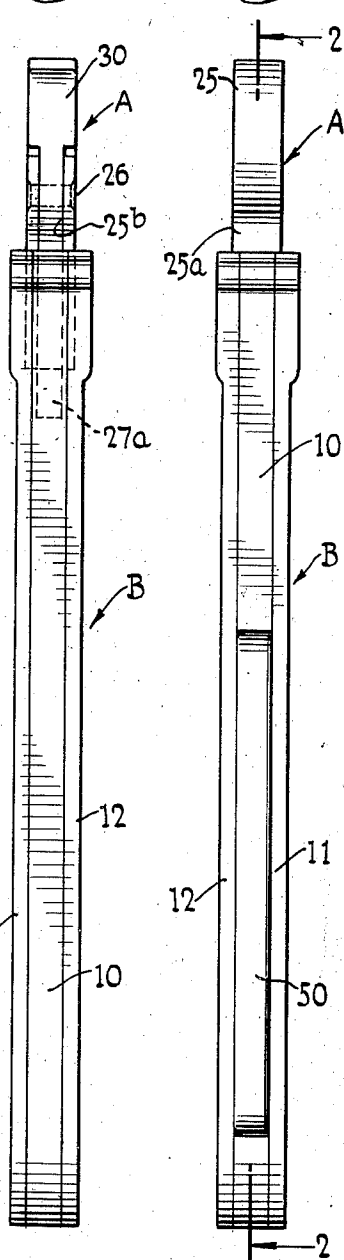


Fig. 3.

Fig. 4.

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WRENCH

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This invention relates generally to wrenches. More particularly my invention is directed toward an improved construction for wrenches of the type having a stationary jaw and a jaw movable with respect thereto.

One of the objects of my invention is to provide a highly improved construction for a wrench of the character described in which novel means are provided to positively lock the movable jaw against undesired movement while the wrench is being effectively used and in which the normal action of gripping the wrench handle will automatically render the said locking means effective while the release of the grip on the wrench handle will automatically permit relative movement between the jaws.

Another object of my invention is to provide a highly improved construction for a wrench of the character described in which the head thereof comprising the jaws is so constructed that it may be removed and replaced by another head of different size or shape.

Still another object of my invention is to provide a novel and improved construction for a wrench of the character described which shall comprise relatively few and simple parts, which shall be easy to assemble and which shall at the same time represent a general improvement in the art.

Further objects of my invention will hereinafter be pointed out or will become apparent in the following detailed description thereof.

In the accompanying drawings,

Fig. 1 is an edge elevational view of a wrench constructed and arranged in accordance with my invention;

Fig. 2 is a cross-sectional view taken substantially along the line 2—2 of Fig. 1;

Figs. 3 and 4 are cross-sectional views taken substantially along the lines 3—3 and 4—4 respectively of Fig. 2;

Fig. 5 is a side elevational view of the wrench shown in Fig. 1, but with certain portions of the wall broken away to disclose the interior construction thereof; and

Fig. 6 is an edge-elevational view thereof, similar to Fig. 1, but showing the opposite edge of the wrench.

Referring now in detail to the drawings, I have shown a wrench constructed and arranged in accordance with my invention and comprising generally a head portion A and a handle or shank portion B made of any suitable material customarily employed for making wrenches. The handle portion B may comprise a pair of longitudinal body plates 10 and 10a and a pair of longitudinal side cover plates 11 and 12. The said cover plates 11 and 12 and body plates 10 and 10a may be held in assembled relationship by welding in the well known manner or by the rivets

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14 as shown in the drawings. It is noted that the body plates 10 and 10a are so constructed and arranged that when the cover plates are properly assembled, there will be provided the hollow areas 20 and 21, the function and purpose of which will soon become apparent. The hollow area 21 is open to the top of the wrench and is designed to releasably receive therein the shank portion 25a of wrench head A. Integral with the shank 25a is a single permanently fixed jaw 25 of customary wrench design. A portion 25b of one surface of the head A, adjacent the right hand edge thereof (as viewed in Fig. 2) is notched to form a bifurcated area into which there is pivotally mounted, by means of the pivot 26, a lever member 27 having an integral jaw portion 30 enlarged to the same thickness as that of the fixed jaw member 25 and of such design as to effectively co-operate therewith for the customary wrench usage. It is noted that a portion of the hollow area 20 adjacent the upper end of the wrench handle B, communicates directly with the hollow area 21 and that a portion 27a of the lever member 27 extends into the said hollow area 20. Lever 27 is so mounted that it may pivotally move to thereby move the jaw 30 toward and away from the fixed jaw 25. The amount of pivotal movement of the said jaw 30 is limited in one direction (away from the fixed jaw 25) by the shoulder 27c of the bifurcated area and in the opposite direction (toward the fixed jaw 25) by the wall 10a of the body member 10. The movable jaw 30 is normally urged into movement in a direction toward the fixed jaw 25, as for example, in the position shown in Fig. 5, by means of a leaf spring 31 fixed at one end to the body 10 by the screw 32 and having its upper free end contactively engaging the lever portion 27a.

It is thus seen from the above described construction that when it is desired, the wrench may be used so that it will have a ratchet action for tightening nuts, etc., in the well known manner, due to the ability of the movable jaw 30 to move from the position shown in Fig. 5 to the position shown in Fig. 2, with respect to the nut N against the action of the spring 31.

However, it is noted that at such times when it is desired to effectively turn the nut N, to either loosen or tighten the same, it is necessary that the movable jaw 30 be held against movement in a direction away from the fixed jaw 25. To this end, and in accordance with my invention, I have provided the following mechanism designed to automatically lock the movable jaw against movement away from the fixed jaw when the user of the wrench tightens his grip on the handle for effective use and to automatically again permit free movement of the jaw 30 against the action of the spring 31, when the user releases his grip on the handle.

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Pivotally mounted between the cover plates 11 and 12 by means of pivot 39, and disposed for movement within the hollow area 20, is a link 40. The movement of the said link 40 is limited in a counter-clockwise direction (as viewed in Figs. 2 and 5) by a shoulder portion 38 of the body part 10a, and is of such size that when in said last named limited position, it will snugly abut the lever portion 27a and thus form a positive lock against movement of the jaw 30 in a direction away from the jaw 25.

As clearly shown in Fig. 2 of the drawings a portion 20a of hollow area 20 communicates with the outside of the handle at one edge thereof and in this communicating space there is freely slidably mounted a bar 59. A pair of flanges 51 engaging abutments 52 hold the bar captive to the wrench handle B and limit its outward movement. A pair of springs 53 and 54 normally tend to urge the said bar 59 outwardly so that it projects slightly beyond the edge of the plates 11 and 12 and the body 10, 10a. Pivotally mounted between the plates 11 and 12 by means of the pivot 60, and disposed in the space 20, is a link 61.

A lever 62 pivotally interconnects the links 40 and 61 by means of the pivots 63 and 64.

It is therefore seen that when the link 61 is rotated in a counter-clockwise direction (as viewed from Figs. 2 and 5), the link 40 will also be rotated in a counterclockwise position, or in other words, to its effective locking position. A spring 70 fixed at one end thereof to the link 61 and at the other end thereof to the body 10, normally maintains the link 40 in its ineffective position as shown in Fig. 2. The bar 59 is provided with a cammed notch 71 so disposed and designed that when the said bar 59 is slidably moved inwardly it will cause the link 61 to rotate which in turn will raise the link 40 to effective locking position as shown in Fig. 5.

The user, in normal course of tightening his grip on the handle of the wrench will cause the inward movement of the bar 59 to automatically lock the movable jaw 30 against movement.

The head A of the wrench may be releasably held in proper position by any well known releasable locking means, such as for example, the spring pressed ball 20 in the head A, co-operating with a detent 21. Therefore it is noted that different sized heads may be used with the same handle and comes within the scope of my invention.

In accordance with the provisions of the patent statutes, I have herein described the principle and operation of my invention, together with the construction which I now consider to represent the best embodiment thereof, but I desire to have it understood that the construction shown is only illustrative and that the invention can be carried out by other means. Also, while it is designed to use the various features and elements in the combination and relations described, some of these may be altered and others omitted without interfering with the more general results outlined, and the invention extends to such use.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. A wrench of the character described comprising a gripping handle provided with a hollow area, an opening in the top end of said handle communicating with said hollow area, a wrench head having a shank portion mounted in said opening, said wrench head comprising a fixed

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jaw, a slotted opening in said head, a movable jaw pivotally mounted on said head and having a shank portion freely slidable in said slotted opening, said shank of said movable jaw having an end portion thereof extending into said hollow area, a spring in said hollow area having a portion thereof contactively engaging said last named extending shank portion to normally urge said movable jaw in a direction toward said fixed jaw and means within said hollow area cooperating with said extending shank portion to releasably lock said movable jaw against pivotal movement for effective use as a wrench, said last named means comprising a rigid member movably mounted on said handle, an abutment link pivotally mounted within said hollow area, a lever pivoted at one end to said link, means comprising a spring for normally urging said link to ineffective position, said means associated with said lever whereby the manual movement of said rigid member will cause said link to move to effective position.

2. A wrench according to claim 1 in which the movement of said movable jaw toward said fixed jaw is limited by the shank thereof abutting the bottom wall of said slotted opening in said head and in a direction away from said fixed jaw by said shank of said movable jaw abutting the wall of said opening in said handle, and in which the said releasable locking means maintains said movable jaw shank frictionally against said last named wall of said handle opening.

3. In a wrench of the class described, the combination of a handle portion, a head portion comprising a fixed jaw and a movable jaw, resilient means for normally urging said movable jaw in a direction toward said fixed jaw, means for limiting the movement of said movable jaw toward said fixed jaw and means for locking said movable jaw against movement in said last named limited position, said last named means comprising a link pivotally mounted on said handle portion and normally held out of the path of movement of said movable jaw by resilient means, and means for automatically causing said link to be moved into abutting relationship with said movable jaw to lock the same against movement whenever the said handle is gripped for effective use, said last named means comprising a bar slidable with respect to said handle portion and carried thereby and a linkage system interconnecting said sliding bar with said pivotally mounted link.

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