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TOGGLE ACTUATED AND ADJUSTABLY MOUNTED PIVOTED JAW WRENCH

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Fig. 1.

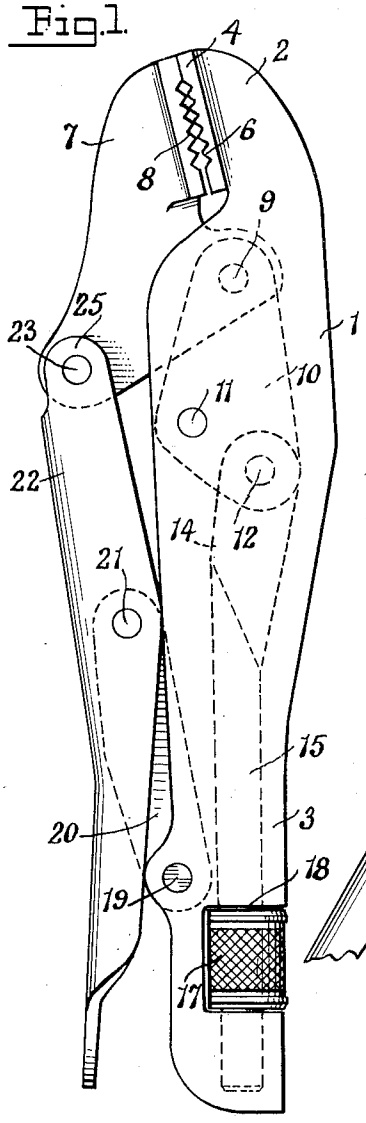


Fig. 2.

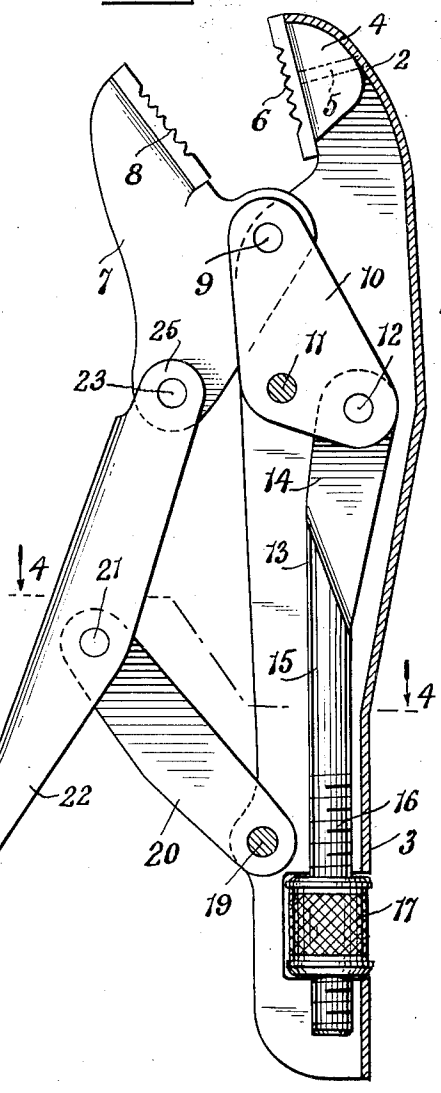


Fig. 3.

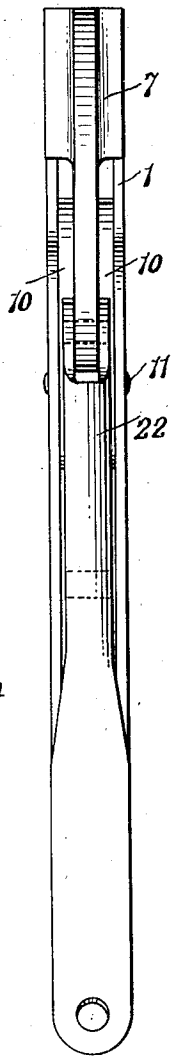
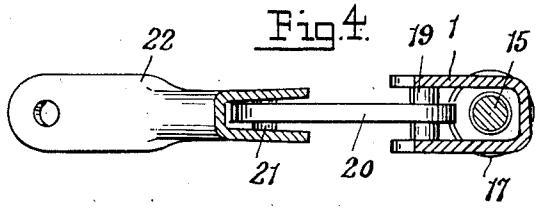


Fig. 4.



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TOGGLE ACTUATED AND ADJUSTABLY MOUNTED PIVOTED JAW WRENCH

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2 Claims. (Cl. 81—84)

1

This invention relates to wrenches, and more particularly to those of the type disclosed in Patent No. 2,388,580, dated November 6, 1945, and issued to F. A. Snell.

In that patent is shown a wrench in which a movable jaw is brought to a parallel clamping relation with a fixed jaw, regardless of the spacing of the jaws, by movement of an actuating handle, and the present invention contemplates a construction by means of which similar results are obtained through a simplified and less expensive construction. The present invention relates to improvements in the type of wrench referred to, and it contemplates the provision of a simple, sturdy mechanism by means of which a movable jaw may be set at a selected distance from a fixed jaw in order to grip an object of given size, and by means of which said object may be firmly clamped between the jaws by movement of the actuating handle.

One of the objects of the present invention is to provide a structure of this character in which the number of parts employed is materially reduced; no springs are required, and the parts employed are of substantial size and strength, thus resulting in a wrench which is entirely reliable and unlikely to get out of order despite the hard use which a tool of this character is generally given.

Another object of the invention is to provide a novel and sturdy means for the adjustment of the movable jaw of the wrench relative to the fixed jaw thereof, wherein such adjusting means is disposed longitudinally of the handle portion of the wrench and is housed therein and is at all times protected by the handle.

These and other objects are attained by the invention, a more particular description of which will be hereinafter set forth and more particularly pointed out in the claims appended hereto.

In the accompanying drawing, wherein an illustrative embodiment of the invention is disclosed, Fig. 1 is a side elevation of a wrench constructed in accordance with the invention, the jaws being shown in closed position; Fig. 2 is a side elevation of the wrench in a partly open position, with one side of the frame broken away to show the operating parts of the wrench; Fig. 3 is an edge view of the wrench as seen from the left side of Fig. 1, and Fig. 4 is a sectional view on the line 4—4 of Fig. 2, looking in the direction of the arrows.

In the embodiment of the invention disclosed in the drawing, 1 indicates the main frame of the wrench, and which may be composed of a single

2

section of heavy sheet metal formed into channel or U-shape, substantially as shown in the cross-sectional view of Fig. 4. The frame includes a fixed jaw portion 2, located at one end, and a suitably shaped handle portion 3 at its opposite end, the frame being substantially channel-shaped for its full length.

The fixed jaw portion 2 of the frame is stiffened and reinforced by an insert 4 of solid metal, which may be secured in place as shown in Fig. 2, by being brazed in position or by the use of a rivet 5 or any other equivalent fastening means. The jaw insert 4 is provided with a gripping face which can be roughened or serrated as shown at 6.

The movable jaw is shown at 7 and the same consists of a substantially triangular member having a serrated or roughened gripping surface 8. At one end the movable jaw 7 is pivoted, as indicated at 9, to a rocking or segmental lever 10, pivoted on pin 11 extending between the walls of the frame 1. At its opposite end, the rocking lever 10 is pivotally secured by pin 12 to the flattened and offset end 14 of an adjusting link 13. Rocking lever 10 is composed of two companion plates, as clearly noted in Fig. 3, and the flattened and offset end 14 of the adjusting link 13 is pivotally disposed between said plates on the pin 12. Similarly, the end portion of the movable jaw 7 is pivotally disposed between the plates of lever 10 on the pin 9.

The main portion or body of the adjusting link 13 is cylindrical, as indicated at 15, and this portion 15 is screw-threaded, as at 16, to thereby threadably engage the internal threads of an adjusting nut 17. Frame 1 is notched or cut-out, as indicated at 18 to maintain the nut 17 and permit of its rotation by the fingers to thereby adjust the link 13 longitudinally of the frame 1 and to accordingly determine the spacing of the movable jaw 7 from the fixed jaw 2 to thus accommodate the wrench to nuts or other objects of various sizes to be gripped between the jaws. It will be noted that the adjusting link 13 is contained within and concealed by the frame 1 and by manual operation of the nut 17 is adjusted longitudinally of the frame. The adjusting link is so proportioned that at all times it is wholly contained within the frame, having no parts protruding outside of the same, even when the wrench is in its fully closed position, as shown in Fig. 1.

At 22 is shown the actuating lever for the wrench, the same being a channel-shaped element provided at one end with a clevis 25, straddling an end portion of the movable jaw 7 and being piv-

oted thereto by means of the pivot pin 23. The actuating lever 22 is coupled to the frame 1 by means of a link 20 which has one end pivotally connected to the actuating lever 22 by means of the pin 21, and has its other end pivoted in the frame 1 on the pin 19.

It will be seen from the structure described, that when the actuating handle 22 is moved toward the fixed handle portion 3 of the frame 1, it will cause the movable jaw 7, through the arrangement of linkage described, to swing toward the fixed jaw 2 to an extent determined by the angular position of link 10 which is controlled by the position of the adjusting screw 13. The movable jaw 7 will always assume a position of substantial or very nearly parallelism to the fixed jaw 2 when the movable jaw 7 reaches the limit of its inward swing and then, when pivot pin 21 passes the over-center position, the parts will be locked in close clamping relation with any object to be grasped between the jaws.

When releasing the object by swinging the handle 22 outwardly, or to the position shown in Fig. 2, and beyond, the lever 22 imparts a swinging movement to the movable jaw 7, thus swinging said jaw about the pivot 9 to bring its gripping face 8 to the angular or open position shown in Fig. 2, permitting the release of the object then located between the jaws.

In the construction described, it will be noted that the use of springs is avoided; that the adjustment of the movable jaw to the fixed jaw is secured by screw-thread means located in the lower part of the handle, allowing an accurate and precise setting of the jaws, and that the number of parts employed, as well as the shape and nature of the same is such that a sturdy and rugged structure results.

What is claimed is:

1. A wrench including a channelled frame, a fixed jaw at one end of the frame, a handle at the other end, an adjusting link disposed within the frame, and extending longitudinally of the same, said link being threaded at one end, the handle portion of the frame being provided with a notch, an adjusting nut having its axis disposed longitudinally of the handle and located in the notch, said nut being in threaded engagement with the threaded part of the adjusting link, a rocking lever pivoted between the walls of the frame adjacent to the fixed jaw thereof, one end of said rocking lever being pivotally attached to an end of the adjusting link, the latter end of the adjusting link being flattened and being offset from the threaded portion of said adjusting link, a movable jaw adjustably and swingably mounted with respect to the fixed jaw, said movable jaw having one end pivotally attached to the second end of the rocking lever, an actuating lever having an end pivotally attached to the movable jaw, and a coupling link having one end pivotally attached to the actuating lever and its second end pivotally attached to the handle.

2. A wrench including a channelled frame, a fixed jaw at one end of the frame, a movable jaw adjustable and swingable in respect to the fixed jaw, a handle at the other end, an adjusting link disposed within the frame and extending longitudinally of the same, said link being threaded at one end, the handle portion of the frame being apertured, an adjusting nut exposed in said aperture, said nut threadably engaging the threaded part of the adjusting link, a rocking lever pivoted between its ends to the side walls of the frame and positioned between said walls, one end of the rocking lever being pivoted to one end of the movable jaw, the second end of the rocking lever being pivotally attached to the end of the adjusting link remote from the threaded-end of said link, an actuating lever having an end pivotally attached to the movable jaw, and a coupling link having one end pivotally attached to the actuating lever and its second end pivotally attached to the handle.

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