Oct. 20, 1942. H. C. BORCHERS 2,299,454

WRENCH

Filed Feb. 18, 1941

Fig. 1

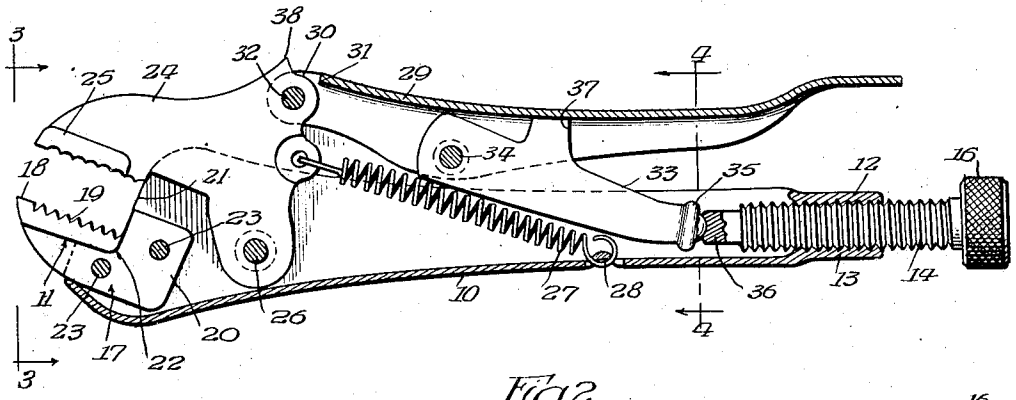


Fig. 2

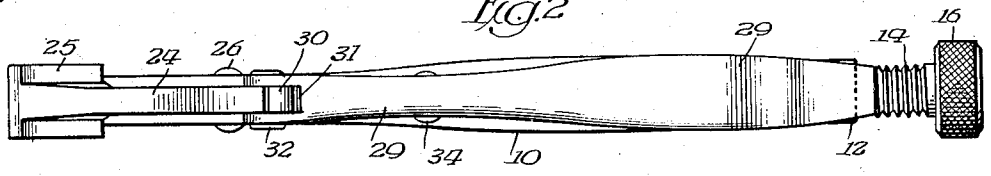


Fig. 3

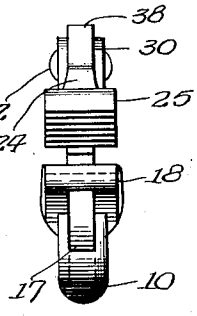


Fig. 4

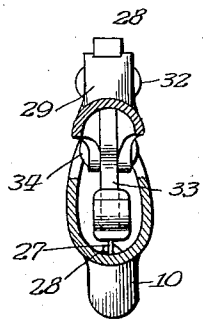
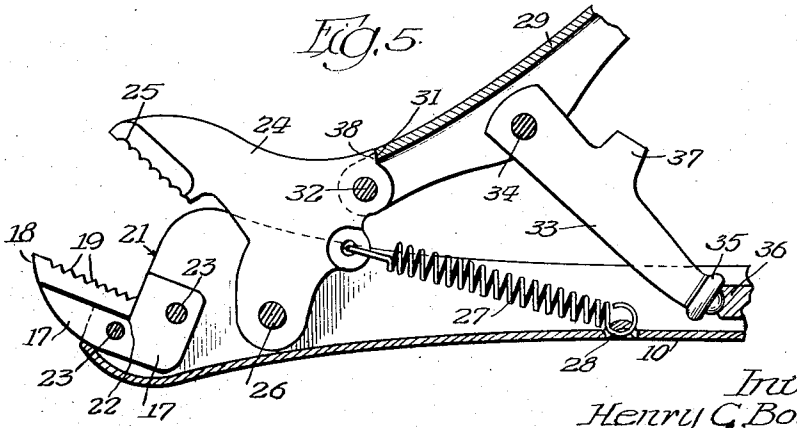


Fig. 5



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UNITED STATES PATENT OFFICE

2,299,454

WRENCH

Henry C. Borchers, Chicago, Ill., assignor of one-half to Martin Loeber, Chicago, Ill.

Application February 18, 1941, Serial No. 379,504

1 Claim. (Cl. 81—84)

In the wrench disclosed in United States Patent #1,489,485 issued April 8, 1924, there is disclosed a movable jaw which is actuated by an articulated lever, one section of which is pivotally connected with the movable jaw, and the free end of another section extends into and is movable within the handle to which the stationary jaw member is connected.

This free end of the lever section contacts an element in the form of a screw which forms a fulcrum and such fulcrum is adjustable to vary its position in directions lengthwise of the handle, as may be desired or when the necessity may require.

In use with such a construction it has been found that at times the said free end of the lever moves out of the handle and out of engagement with the fulcrum, which is not only undesirable but is exceedingly inconvenient for many reasons which will be obvious.

It is one of the objects of the present invention to overcome these difficulties and objections and to provide improved means whereby the said free end of the lever will be maintained within the handle and against displacement with respect thereto, and at the same time not interfere with the free operation and adjustment of the said free end of the lever.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawing illustrating this invention, and in which—

Figure 1 is a longitudinal sectional view of a wrench of this character constructed in accordance with the principles of this invention.

Figure 2 is a top plan view of Figure 1.

Figure 3 is an end elevation taken on line 3—3 Figure 1.

Figure 4 is a detail sectional view taken on line 4—4 Figure 1.

Figure 5 is a view similar to Figure 1 with parts broken away, and showing the parts in a different position.

The wrench consists essentially of a handle 10 which is constructed of any suitable material, preferably sheet material and is bent into a substantially U-shape or channel formation. The forward end of the handle is reduced to provide a jaw support 11 and the rear end 12 of the handle is closed and is shaped to provide a threaded opening 13 which communicates with the interior of the handle.

A bolt 14 is threaded into the opening 13 and the forward extremity of the bolt projects into the handle. The rear extremity of the bolt is enlarged, as at 16, to provide a head and the periphery thereof may be knurled so as to facilitate rotation of the screw to adjust the same in directions lengthwise of the handle 10.

The forward end of the handle embodying the support 11 is hollow and is adapted to receive a web or projecting portion 17 which depends from a separate jaw member 18 that is provided with teeth 19 extending entirely across the surface of the jaw member. The web 17 is of a width slightly less than the width of the jaw member 18 and is adapted to be inserted and seated within the hollow portion of the handle 10 so that the element 18 will rest upon the shoulder 11 while the web 17 will project into the handle and this web has a rear portion 20 which is of a configuration to extend for a substantial distance above the seat 11 and along the end wall 21 of the stepped portion at the front end of the handle 10.

In the formation of the support or seat 11 the forward edge of the handle is reduced with the result that ordinarily at the point or in the zone 22 where considerable stress is exerted upon the stationary jaw there will be provided a weakened zone. It has been found in practice that ordinarily when excessive pressure is exerted upon the jaw 18 the wrench will break in the zone 22. By providing the web 17 and the rear portion 20 on the present jaw 18, this portion or zone will be reinforced or strengthened by reason of the fact that the web 17 bridges or extends across the weakened zone and the fastening devices 23 which extend through the handle and also through the web for securing the jaw 18 in position, are so located that they will be outside of the weakened zone.

The numeral 24 designates a movable jaw provided with a face 25 that cooperates with the jaw 18 and this movable jaw 24 projects into the handle 10 and is pivotally connected thereto, as at 26.

A spring 27 is connected by one end to the jaw 24 and is anchored, as at 28, to a portion of the handle, the spring being also located within the handle.

The normal tendency of this spring is to move the jaw 24 away from the stationary jaw. The jaw 24 may be swung about its pivot by means of a handle 29 which is bifurcated at one end, as at 30, to form a shoulder 31. A portion of the

movable jaw 24 projects into the bifurcation and the handle 29 is pivotally connected to the jaw 24, as at 32. A link or member 33 is pivotally connected, as at 34, to the handle 29 intermediate the ends of the latter and at a point spaced a considerable distance from the pivot 32. The free end 35 of this link or member 33 projects into the handle 10 and abuts the extremity of the end 36 of the screw 14. A stop 37 may be provided on the link or member 33.

The tendency of the spring 27 is also to hold the end of the link or member 33 against the extremity of the screw 14 and provided on the movable jaw 24 adjacent the pivot 32 is a stop or projection 38 which is also disposed in proximity to the bottom 31 of the bifurcation 30 of the handle 29.

In use and assuming the parts to be in the position as shown in Figure 1, the wrench is opened by raising the free end of the handle 29 to swing it about its point of pivotal connection 32 with the movable jaw 24 and as the tendency of the spring 27 is to hold the end of the link or member 33 against the extremity of the end 36 of the screw 14, such end will act as a fulcrum and as the handle 29 is raised it will swing about the pivot 34, at the same time causing the jaw 24 to swing about its pivot 26 to the position shown in Figure 5.

During the movement of the handle 29 and the jaw 24 into positions where the handles 10 and 29 will be separated and the jaw 24 will be moved away from the stationary jaw, the spring 27 maintains the end of the link or member 33 against the fulcrum formed by the end of the screw 14.

During this movement the jaw 24 will swing about its pivot 26 and the handle 29 will swing about its pivot 34 until the stop or projection 38 on the jaw 24 contacts the bottom 31 of the bifurcation 30, with the result that the movements of the handle and the jaw 24 will be arrested, with the further result that the end of the link or member 33 will always be maintained in proper position with respect to the handle 10 and the link or member 33 will not fly out of the handle or out of engagement with the end of the screw 14.

When the parts are moved from the position shown in Figure 5 back to the position shown in Figure 1 and when the pivot 32 passes over to the other side of the pivot 34, the spring 27 operating upon the jaw 24 will cause the parts to be locked in a closed position. The movement of the handle 29 in this last direction will be arrested by the engagement of the stop 37 on the link or member 33 therewith.

The extent of movement of the jaw 24 is controlled by the adjustment of the screw 14 as the end of this screw forms a fulcrum for the end of the link or member 33. Therefore by adjusting the screw 14 lengthwise this fulcrum point may be moved to any desired position, within certain limits, to vary its position and thereby vary the throw or the movement of the jaw 24 about its pivot 26.

While the preferred form of the invention has been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claim, without departing from the spirit of this invention.

What is claimed as new is:

A wrench embodying a handle provided with a jaw, a movable jaw pivotally connected with the handle, a second handle pivotally connected by one end to the movable jaw, a link one end of the link being pivotally connected to the said second handle intermediate the ends of the latter, the other end of the link having bodily shiftable and unanchored engagement with and being freely separable from the first said handle when said jaws are open, a spring tending normally to separate the jaws, said movable jaw and the end of the said second handle that is pivoted thereto being provided one with a stop and the other with a shoulder adapted to engage the stop for limiting the action of the said second handle in one direction, whereby to maintain the said unanchored end of the link against separation from the first said handle.

HENRY C. BORCHERS.