May 22, 1923.

1,456,290

K. G. TELL

ADJUSTABLE WRENCH

Filed Sept. 19, 1921

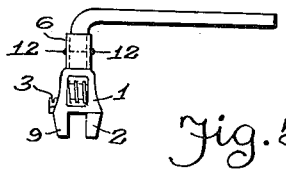


Fig.5.

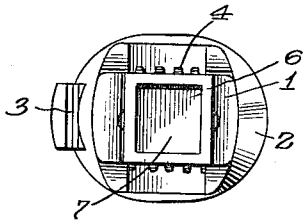


Fig.3.

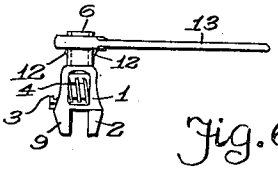
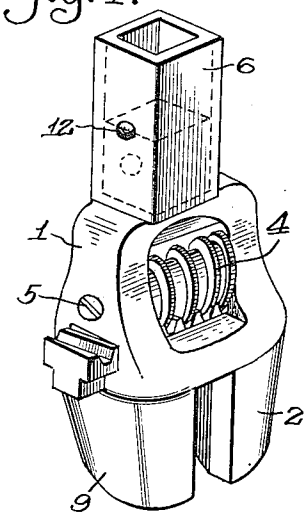


Fig.6.

Fig.1.



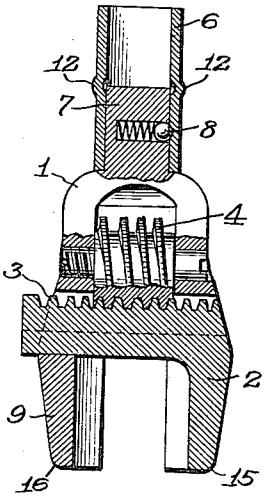


Fig.2.

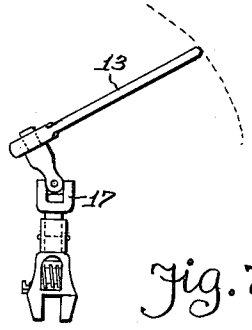


Fig.7.

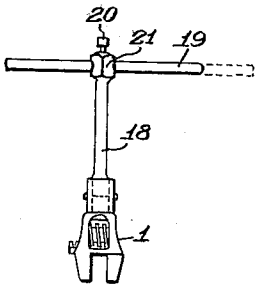


Fig.8.

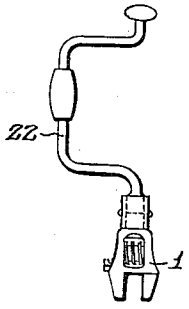


Fig.9.

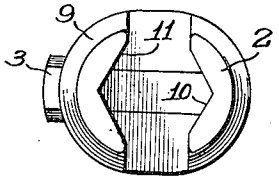


Fig.4.

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UNITED STATES PATENT OFFICE.

KARL G. TELL, OF HIGHLAND PARK, MICHIGAN.

ADJUSTABLE WRENCH.

Application filed September 19, 1921. Serial No. 501,514.

To all whom it may concern:

Be it known that I, KARL G. TELL, a citizen of the United States of America, residing at Highland Park, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Adjustable Wrenches, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to adjustable socket wrenches, and has for one object of the invention, the provision of a simple, strong and inexpensive structure by means of which the necessity of carrying an entire set of socket wrenches may be avoided.

A further object of my invention is to provide a compact form of wrench having a shank to which may be applied any desired form of handle according to the location in which the tool is to be used or the nature of the nut to which the tool is to be applied.

A still further object of the invention is to provide a device in which all of the parts may be constructed by inexpensive operations so that the cost of the completed article may be kept at the lowest possible figure.

The above and additional objects are accomplished by such means as are illustrated in the preferred embodiment of my invention shown in the accompanying drawing, in which

Figure 1 is a perspective view of the preferred embodiment of my invention;

Fig. 2 is a vertical central section;

Fig. 3 is a plan view;

Fig. 4 is a bottom view, and

Figs. 5, 6, 7, 8 and 9 are views illustrating the application to my device of various types of handles.

In the form of my invention herein illustrated, the socket wrench consists of five parts, a main body portion 1, within which is slidably mounted a movable jaw 2, provided with teeth 3 upon the portion which slides within the body; a worm 4 in mesh with the teeth 3; a pivot 5 upon which the worm 4 is mounted for rotation within a recess of the body 1, and a sleeve 6 secured upon a tang 7 formed upon the end of the body 1 remote from the sliding jaw 2. The sleeve 6 may be welded, brazed, riveted, or otherwise secured to the tang 7, but preferably is held in place by means of a spring pressed ball 8, engaging a depression on the inner side of the sleeve, this arrangement permitting the sleeve 6 to be removed for engagement of the tang 7 by a socketed handle of a size to receive it.

The body is formed at the end remote from the tang 7 as a jaw 9 co-operating with the movable jaw 2, the confronting faces of the jaws being recessed as indicated at 10 and 11 to engage polygonal nuts or cap screws. Since the ordinary nuts in use on automobiles are hexagonal, the included angle formed by the sides of each recess will preferably be one hundred twenty degrees. It will be obvious that the jaws may be made with a ninety degree included angle in cases where the wrench is intended to be used mainly with square headed cap screws or nuts and the angle will be correspondingly varied to suit other special conditions.

Upon the exterior of the sleeve, bosses 12 are struck up to act as stops limiting the distance to which a wrench may be slid, as indicated in Fig. 6, which shows a well known form of ratchet wrench 13 engaging the sleeve 6 and resting upon the bosses 12.

The teeth 3 are formed on a broad extension of the jaw 2, the extension being substantially T-shaped for engagement with a correspondingly shaped passage in the body 1.

The worm 4 is also made broad in proportion to its length for greater ease in manipulation by the finger and thumb. The upper portion of the body 1 is cut away on a bevel at 14 to permit ready access to the worm 4.

The jaws 2 and 9 are rounded at their lower outer edges as indicated at 15 and 16 to accommodate the wrench for entry into the limited spaces about the nuts in many machines.

It will be noted that the metal is distributed in the jaws in such manner as to resist the stresses to which the parts are subjected while in use and that the entire device is compact and small as compared with ordinary wrenches. Any suitable type of handle may be used capable of engagement either inside or outside of the sleeve 6 or upon the outside of the tang 7.

In Fig. 5, for example, an ordinary offset or bent handle is shown engaging the inside of the sleeve, but it is obvious that it might have a socket to engage the outside of the sleeve 6 or of the tang 7.

In Fig. 7, the wrench is shown as used with a universal joint 17, operated by means of a ratchet handle 13.

In Fig. 8, the wrench is shown as used

with a T-handle 18 having a cross bar 19 adjustably mounted therein and held in place by a set screw 20. The upper end of this handle 18 is made hexagonal as indicated at 21, so that by removing the handle 19 and the set screw 20, the hexagonal end 21 may be engaged by the socket of another handle, the handle 18 thus acting as an extension member for use when the nut is located in a place difficult of access.

In Fig. 9, a brace 22 is shown as applied within the socket 6, though if the ordinary bit-stock were used the chuck would engage the outside of the sleeve 6 or of the tang 7 in an obvious manner not illustrated.

It will be seen that the tool shown in the present embodiment of my invention may be used upon nuts of all sizes found in an ordinary automobile and by the use of an appropriate form of handle, substantially any bolt or nut may be reached with this wrench. Only a single tool need be carried instead of the heavy sets of socket wrenches of various sizes now ordinarily used.

There is thus provided a device possessing the advantages before enumerated as desirable but which obviously is susceptible of modification in its form, proportions, details of construction and arrangement of parts, without sacrificing any of its advantages.

It will therefore be understood that the invention is not limited to the specific details shown, that the invention is claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

I claim:—

1. A wrench comprising a body member having a fixed jaw integral therewith, a reduced non-circular tang formed at the end of the body member opposite the fixed jaw, a movable jaw, a portion integral with said movable jaw having a rack formed thereon and adapted for sliding movement within a groove in said body portion, a worm mounted upon a pivot within said body portion in mesh with said rack, and a non-circular sleeve secured to said tang, the tang extending through a portion only of the interior of the sleeve whereby to provide a socket adapted to receive a handle member.

2. A wrench comprising a body member having a fixed jaw formed at one end thereof, a movable jaw co-operating with said fixed jaw, a non-circular tang formed at the end of the body member opposite the fixed jaw, and a non-circular removable sleeve secured upon said tang, said sleeve being of greater length than said tang, whereby to provide a non-circular socket in the outer end thereof to receive a non-circular handle member.

In testimony whereof I affix my signature in presence of two witnesses.

KARL G. TELL.

Witnesses:
A. M. DORR,
A. MINNICK.