April 3, 1928. 1,664,391

R. E. ASHCROFT

WRENCH

Filed April 20, 1926

Fig. 1.

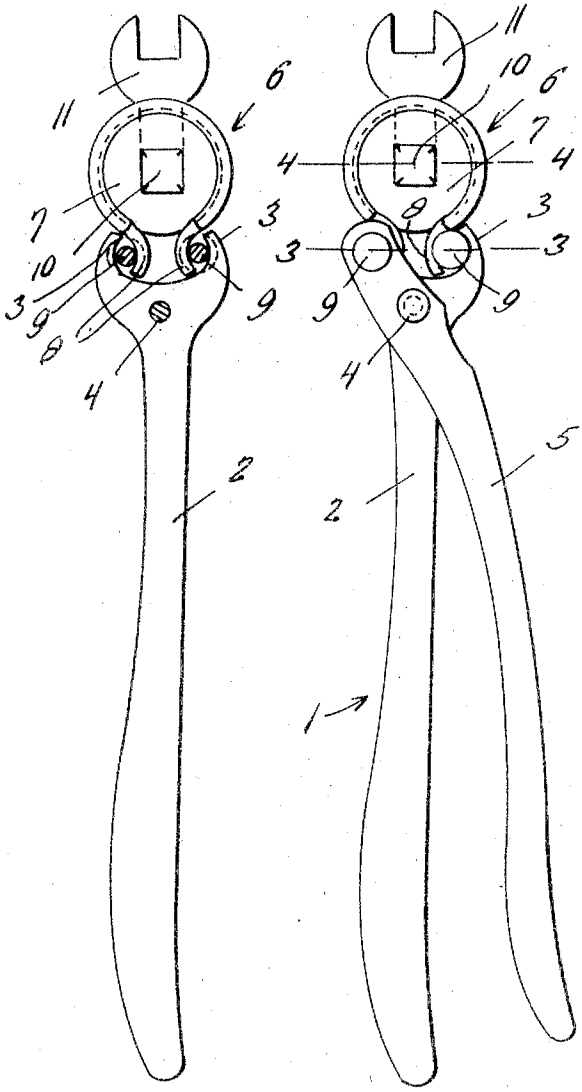


Fig. 2

Fig. 3

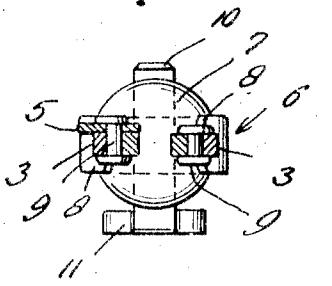
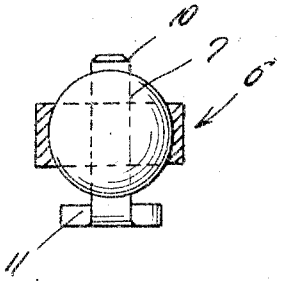


Fig. 4.



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UNITED STATES PATENT OFFICE.

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WRENCH.

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This invention relates to an improved wrench and has more specific reference to one wherein the work engaging means is mounted by a universal joint on the operating means for the purpose of permitting convenient leverage to be obtained on caps and bolts which are otherwise difficult of access.

Briefly, the invention comprises a tool including crossed pivotally connected handles, the outer ends of which have operating connection with a clamping band surrounding a ball connector or joint, and this connector is provided with a socket for reception of a shank of the work engaging head or element which is preferably in the form of a removable spanner wrench.

The object is to provide a tool of this kind wherein by simply pressing the handles of the tool together, the clamping band may be pressed firmly against the ball connector to maintain the spanner wrench in any position to which it has been moved, thus allowing the spanner wrench to be engaged with the work and the handles to be adjusted with respect to adjacent portions which render the work otherwise inaccessible.

An important advantage is derived by providing the ball connector with a central socket of polygonal cross section and using a multitude of spanner wrenches of different sizes, the work engaging head being disposed at right angles to the shank of the wrench and permitting the spanner wrench to be changed from time to time in order to accommodate the object being acted on.

Other features and advantages of the invention will become apparent from the following description and drawing.

In the accompanying drawing forming a part of this application and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is an incomplete view of the wrench showing one of the handles of the tool removed, and portions in section to disclose the details of construction plainly.

Figure 2 is a plan view of the entire wrench.

Figures 3 and 4 are cross sections taken approximately upon the planes of the lines 3—3 and 4—4 of Figure 2 respectively.

The operating tool is generally designated by the reference character 1, and it will be seen that this comprises a handle 2 having a substantially U-shaped head at its outer end. This head serves to provide a pair of jaws 3. Pivoted at 4 on the head is a cooperating handle 5. This handle 5 is disposed in crossed relation and is associated with one of the jaws 3 as indicated in Figure 2. This tool 1 serves as an operating means for compressing and releasing an elastic clamping band 6 which surrounds the spherical ball connector 7, at the point indicated in Figure 4. It will be noted that the free ends of the band are curved as indicated at the point 8 and confined between the oppositely curved jaws 3. Interposed between the band ends and the jaws are rivets 9. The rivets have heads on their ends which receive the band ends and jaws therebetween as shown plainly in Figure 3. One of the rivets has its upper headed end connected with the free end of the handle 5 as shown in Figures 2 and 3. The ball 7 is provided with a central hole of square cross section which receives the correspondingly shaped shank 10 of the spanner wrench 11.

It will be seen from the foregoing that by pressing the handles 2 and 5 toward each other, the left hand rivet 9 will force the adjacent end of the clamping band 7 toward the complemental band end and thus firmly clamp the band about the ball to hold it firmly. In using the device the spanner wrench 11 is first engaged with the part to be operated on and the operating handles are adjustdd about the ball until they assume a convenient operating position. Then the handles are pressed together to clamp the band and make a single unit of the device. Then it may be operated in the usual manner. By releasing the grip on the handle the band is automatically released and a new grip may be obtained.

In practice, a number of spanner wrenches are provided having standardized shanks and different sizes of heads, thus permitting the device to accommodate different sizes of bolts, nuts, and the like.

It is believed that by considering the description in connection with the drawings, persons familiar with inventions of this class will be able to obtain a clear understanding of the same. In view of this, a more lengthy description is thought unnecessary.

Minor changes coming within the field

of invention claimed may be resorted to without departing from the spirit and scope of the same.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a wrench of the class described, an operating device comprising pivotally connected crossed handles, a ball connector, a clamping device associated with said connector and with the outer ends of said handles, and a work engaging element carried by said connector.

2. In a wrench of the class described, an operating device comprising a pair of cross pivotally connected handles, a clamping band having operating connection with the outer ends of the handles, a ball joint, said band surrounding said joint, and work engaging means associated with said joint.

3. In a wrench of the class described, a ball joint having a central socket of polygonal cross section, a spanner wrench comprising a work engaging head and a shank, said shank being disposed at right angles to the head and being fitted snugly into the opening in said ball joint, a compressible clamping band surrounding said ball joint, and an operating device for moving the free ends of the band toward each other for clamping said band tightly about said ball.

In testimony whereof I affix my signature.

ROBERT E. ASHCROFT.