Sept. 6, 1960 A. ENGQUIST 2,951,405

MULTIPLE GRIP WRENCH

Filed Nov. 26, 1958

Fig.1

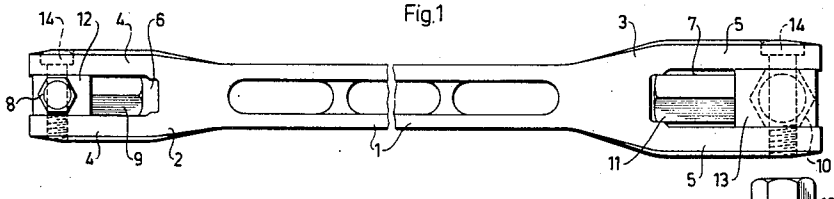


Fig.2

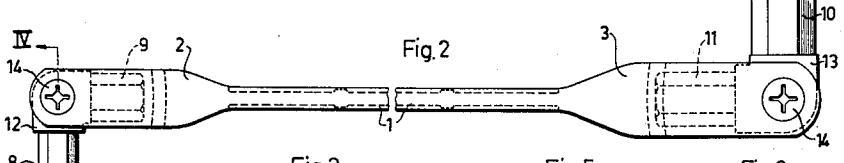


Fig.3

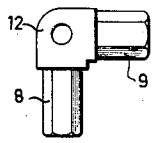


Fig.4

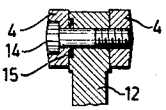


Fig 5

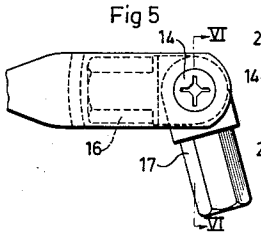
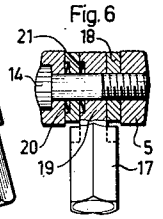


Fig. 6



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MULTIPLE GRIP WRENCH

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3 Claims. (Cl. 81—53)

The present invention relates to an improvement in wrenches of the type comprising a shank one or both ends of which are forked and which carries two or more pivotally mounted gripping members between the arms of each fork. Such gripping members may consist of solid studs of polygonal (such as hexagonal) circumference to tighten bolts or screws having a correspondingly recessed head or to tighten screws with usual heads by the aid of a socket fitted over the gripping stud. The gripping members may also be formed as sockets with a polygonal inner wall so that screws with usual polygonal heads may be tightened without the use of a separate socket. The gripping members may also be formed as screw-drivers, e.g. as screw-drivers of the type adapted to tighten screws the head of which have a cross-shaped recess.

Due to the forked structure the shank end is to a certain extent weakened, so that the fork arms are subjected to severe breaking stresses in spite of the fact that they are connected by a bolt for the pivotal mounting of the gripping members. To reduce such stresses the orifice defined by the fork arms is formed in each fork with a width decreasing by steps towards the inner end of the orifice and the length of the gripping members are so chosen in accordance therewith that a gripping member can fill completely a portion of the orifice when another gripping member is in its operative position. Thereby, the gripping member situated in the orifice will largely relieve the fork arms of stresses.

The invention will be described in detail below with reference to the embodiments shown on the accompanying drawing where the gripping members are shown as gripping studs of hexagonal cross-section.

Figures 1 and 2 illustrate one embodiment in two different elevations.

Figure 3 is a detail view showing two gripping studs rigidly joined to each other.

Figure 4 is a cross-section taken along line IV—IV in Figure 2.

Figure 5 illustrates a second embodiment in elevation.

Figure 6 is a cross-section taken along line VI—VI in Figure 5.

Referring to Figures 1–4, the numeral 1 designates the shank of the wrench and 2 and 3 are its two forked ends. 4 and 5 are the fork arms and 6 and 7 the orifices defined by the fork arms. In this embodiment there are two gripping studs 8, 9 and 10, 11, respectively, in each shank end, the two studs in each pair being formed integrally with a mounting member 12 and 13 respectively. The studs in each pair are at right angles to each other and the mounting member 12 or 13 is provided with a bore for a bolt 14 extending through the fork arms. As seen in Figures 1 and 2, each stud is so dimensioned relatively to its fork orifice that when situated in said orifice it forms a supporting body, which when the other gripping stud is in its operative position takes up part of the load and relieves the arms of breaking stresses or at least gives the breaking stresses a smaller lever arm. It has been found inadequate to rely entirely on the bolt 14 since it cannot be given a reliable size without giving the fork arms an otherwise unnecessarily large width. To achieve this strengthening action independent of the width of the gripping stud located in the fork orifice, a narrower gripping stud is formed longer than a wider one and the fork orifice is formed with a width correspondingly decreasing by steps toward its inner ends so that each stud will always fill completely a longitudinal section of the fork orifice. As shown in Figure 4, a friction washer 15 is inserted between the mounting member 12 or 13 and one fork arm, so that the gripping studs will not be swung unintentionally from one to the other position.

The embodiment of Figures 5 and 6 differs from that described above only in that the two gripping studs 16 and 17 at each end of the wrench 1 are independently pivoted. The mounting member 18 of the stud 16 is forked, while the mounting member 19 of the other stud 17 is inserted between the arms of the forked mounting member 18. Furthermore, a frictional washer 20 is inserted between the outer side of the mounting member 18 and one fork arm 5 and another frictional washer 21 is inserted between the mounting member 19 and the inner side of the mounting member 18.

The invention is not limited to the embodiments shown and described which are capable of many variations and modifications without departing from the scope and spirit of the invention.

I claim:

1. A wrench comprising, in combination, a shank having at least one bifurcated end defining a pair of spaced fork arms, a rigidly connected right angularly disposed pair of gripping members of different widths and lengths pivoted between the fork arms of said bifurcated end of said shank, the wider gripping member having the shorter length, pivot means supporting said gripping members between said fork arms for rotation about an axis extending perpendicular to the longitudinal axis of said shank, the distance between said fork arms decreasing by steps longitudinally inwardly of said shank to define a plurality of longitudinally stepped sections, each one of said stepped sections corresponding to the size and shape of one of said gripping members and slidably receiving said respective gripping members therewithin in torque transmitting relationship between said shank and each of said gripping members of the set.

2. A wrench as set forth in claim 1, wherein torque is transmitted to a gripping member from said shank through the other one of said gripping members.

3. A wrench as in claim 1 in which said gripping members are independently pivoted.

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