

[54] **KEEPER FOR SOCKET WRENCHES**

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[51] Int. Cl. **B25b 23/08**

[58] Field of Search..... 81/125, 180 R, 64, 3.43

[56] **References Cited**

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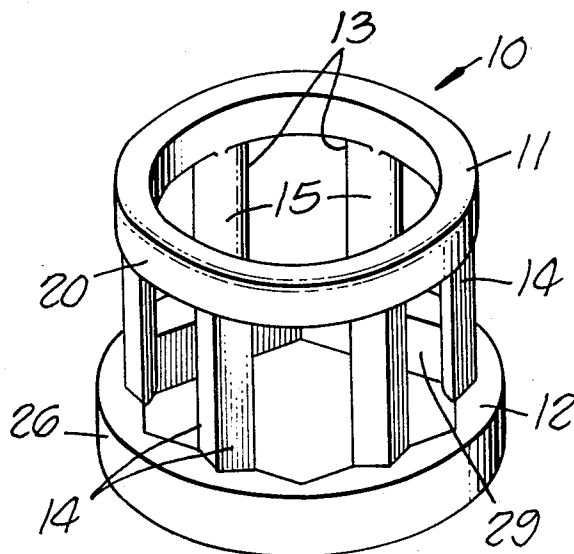
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[57] **ABSTRACT**

A keeper accessory for use on 12-point socket wrenches to hold a hex fastener captive without need for retainers or modification of a conventional wrench. The accessory is selectively usable with cylinder and box type wrenches and comprises at least one end ringlet preferably supporting two or more parallel legs shaped to lie along a respective point of a wrench with its radially opposed surfaces disposed to frictionally engage a hex face of a fastener and the juxtaposed point areas of the wrench thereby to grip and hold the fastener captive.

9 Claims, 5 Drawing Figures



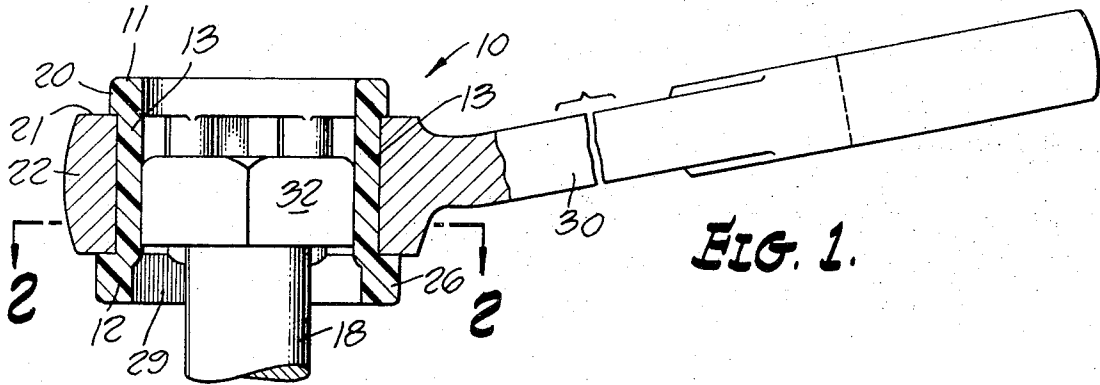


FIG. 1.

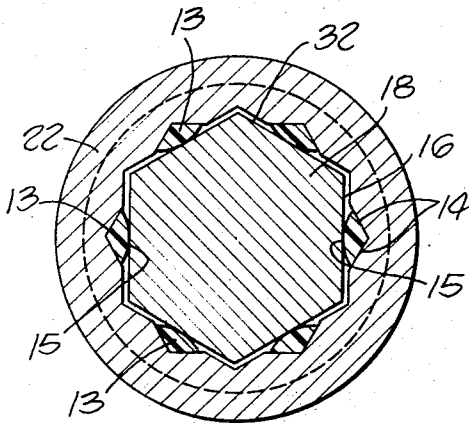


FIG. 2.

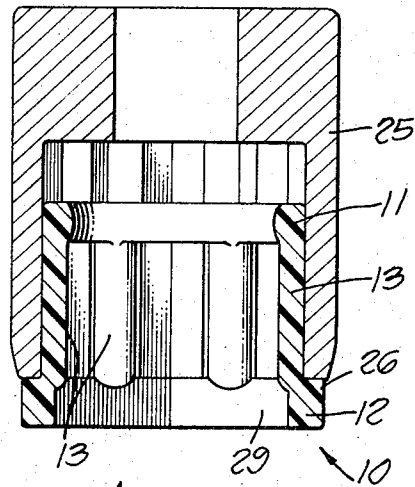


FIG. 3.

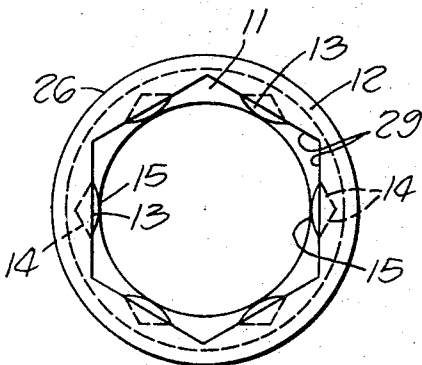


FIG. 4.

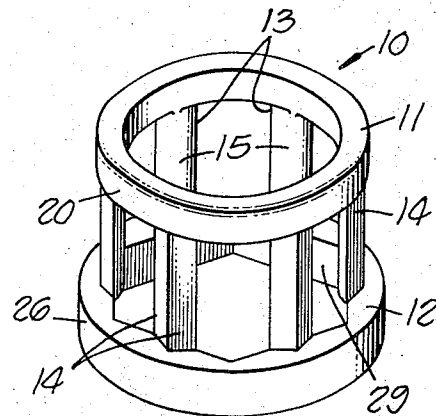


FIG. 5.

KEEPER FOR SOCKET WRENCHES

This invention relates to accessories for wrenches, and more particularly to an improved keeper accessory formed in one piece from non-metallic material and selectively installable in either a box or cylinder type socket wrench with portions thereof gripping the one or more faces of a hex fastener part.

This application is related to my copending application for U.S. Letters Pat. Ser. No. 187,684, filed Oct. 8, 1971, but embodies certain structural and functional advantages over that construction. As in my earlier design, the present invention is specially suitable for use with 12 point socket wrenches and is preferably molded in one piece from suitable resilient elastomeric material, such as polyethylene or any of numerous plastic compositions having similar characteristics. The one piece accessory is formed with at least one and preferably two end rings lying parallel to one another and interconnected by at least one and preferably a plurality of leg members shaped and sized to fit within a respective point of a socket wrench with the inner face thereof disposed to frictionally engage the hex face of a fastener inserted into the wrench. In an illustrative embodiment of the invention the accessory is provided with six equidistantly spaced legs suitably disposed to occupy a hexagonally related set of wrench points leaving the remaining set of points available to seat a hex fastener part. The end rings are preferably spaced apart sufficiently to rest against the opposite end of a box type socket wrench and one of the rings is sufficiently flexible to permit its insertion into the well of a cylinder type socket wrench with the other ring lying flush against the entrance end of the cylinder. The accessory is installed and removed as quickly and as easily as a fastener itself without interfering with the use of the tool with the particular fastener size for which it was designed while greatly increasing the efficiency and utility of the wrench.

Accordingly, it is a primary object of the present invention to provide a new and improved inexpensive keeper accessory selectively usable with either box or cylinder type 12 point socket wrenches.

Another object of the invention is the provision of a one piece keeper accessory of resilient non-metallic molded stock adapted to be retained assembled by an interference fit with a socket wrench and readily installable and removable therefrom.

Another object of the invention is the provision of a hexagonal fastener keeper accessory for use with socket wrenches and usable interchangeably with box and cylinder type wrenches.

These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawing to which they relate.

Referring now to the drawing in which a preferred embodiment of the invention is illustrated:

FIG. 1 is a side elevational view, partly in section, showing an illustrative embodiment of the keeper accessory in use on a typical 12 point box wrench;

FIG. 2 is a cross sectional view taken along line 2—2 on FIG. 1;

FIG. 3 is a cross sectional view showing the keeper accessory assembled to a typical 12 point cylinder type socket wrench;

FIG. 4 is a bottom end view of FIG. 3; and

FIG. 5 is a perspective view of the keeper accessory per se.

Referring now to FIGS. 1—5, there is shown an illustrative embodiment of the invention keeper accessory designated generally 10. As therein shown the keeper accessory is molded from suitable soft resilient elastomeric stock including rubber or a soft plastic composition. The keeper is preferably provided with a pair of end rings or ringlets 11,12 interconnected by at least one and preferably by a hexagonally-related set of radial legs or ribs 13 as is best shown in FIGS. 2 and 4. Legs 13 have flat exterior faces 14,14 interconnected between their remote edges by an inwardly bulging surface 15 adapted to have an interference fit with the face of a hex nut or bolt head 18.

Ringlet 11 at one end of the keeper accessory is provided with a low-height radial flange 20 adapted to engage over the end face 21 of a box wrench head 22. However, flange 20 is not sufficiently long to interfere with the assembly of accessory 10 into one end of a cylindrical 12 point socket 25. The ringlet 12 at the other end of the accessory has a somewhat wider radial flange 26 seatable against the other end of a box wrench head or against the outer end of a cylindrical socket head. It will be understood that the device is used with a 12 point socket wrench of either the box type or the cylinder type in order that one set of hex points can be used to accommodate legs 13 while the other set of hex points is available to seat a fastener. The inner surface of a ringlet 26 is preferably of hexagonal shape as indicated at 29 in FIGS. 2 and 4.

In use, accessory 10 is inserted into the 12 point opening of either a box wrench 30 or one end of a cylinder type socket head 25. When assembling the accessory to a box wrench the ringlets 11,12 seat flush against the opposite end faces of the wrench head. However, in the case of the cylinder socket, ringlet 11 is deformed slightly as it is pressed into the socket. In either case the faces of the hex fastener part, such as bolt head 32, have an interference press fit with the inwardly bulging portions 15,15 of legs 13. The bulging faces are flattened somewhat as the outwardly facing surfaces 14,14 are pressed into a snug interference fit with the point areas of the wrench head. Because of the much greater surface contact between the points and the surfaces 14,14 than between surfaces 15 and the hex faces of the fastener, it will be readily apparent that the keeper displays no tendency to become disassembled during removal of the wrench from the fastener part. However, once the fastener is removed from the accessory the latter may be readily and expeditiously withdrawn by collapsing the same inwardly. The accessory may then be transferred to a different wrench if so desired.

While the particular keeper for socket wrenches herein shown and disclosed in detail is fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that it is merely illustrative of the presently preferred embodiment of the invention and that no limitations are intended to the detail of construction or design herein shown other than as defined in the appended claims.

I claim:

1. A keeper adapted to be inserted axially of a 12 point wrench socket with the major portion of the axial length thereof located between the opposite ends of the 12-point portion of the wrench socket and effective to

frictionally grip a hex fastener and retain the same captive against unintended dislodgement from the wrench socket, said keeper comprising first and second ringlets of molded resilient elastomeric material interconnected by a plurality of elongated elastomeric keeper ribs extending axially therebetween and positioned for axial assembly into a 12 point wrench socket with said ringlets positioned adjacent a respective end of the 12-point portion of said wrench socket and with a respective one of said keeper ribs lying closely along and between the opposite ends of respective points other than one hexagonally related set thereof, said ribs being effective as said elastomeric ribs are compressed against the adjacent ones of the wrench points to grip the juxtaposed face of a hex fastener and hold the same firmly but releasably captive, and said ringlets lying in parallel planes and spaced sufficient distances apart to lie generally flush against the respective ends of a box type socket wrench and to cooperate therewith to hold said keeper assembled thereon and against unintended accidental displacement.

2. A keeper as defined in claim 1 characterized in that the inner rim edge of said first ringlet is generally hexagonal.

3. A keeper as defined in claim 1 characterized in that the inner periphery of said first ringlet is of hexagonal shape but slightly larger than the periphery of a hexagonal fastener part adapted to be gripped by the ribs of said keeper when said keeper is installed in a 12 point wrench socket.

4. A keeper as defined in claim 1 characterized in that the same is a one-piece unit having a snug interference fit with a wrench socket and shaped to be slightly deformed as a hex shaped fastener component is telescoped thereinto while said keeper is assembled to a wrench socket.

5. A keeper as defined in claim 4 characterized in

having six ribs equally spaced from one another and adapted to lie within six hexagonally related set of points of a 12 point socket wrench.

6. A keeper as defined in claim 1 characterized in that said keeper is selectively installable in a 12 point box wrench and a 12 point cylinder type socket wrench.

7. A keeper selectively installable without fasteners in a 12 point box wrench or a cylinder type socket wrench comprising: a one-piece non-metallic resilient member having a pair of thin end rings interconnected by a plurality of spaced apart parallel ribs sized and shaped to lie along and between the opposite ends of one hexagonal set of the wrench points with their inwardly facing sides positioned to have a snug frictional fit with the adjacent face of a hex fastener part as the same is inserted endwise from one axial end of said keeper, and said keeper rings being spaced to overlie and abut a respective rim edge of a box wrench, and one of said rings being readily deformable to permit the same to be inserted from one end of a cylinder type socket wrench.

8. A keeper as defined in claim 7 characterized in that one of said rings is substantially radially wider than the other, and the other of said rings being relatively narrow radially thereof and adapted to deform easily to permit the same to be inserted through the open fastener-seating end of a cylinder type socket wrench.

9. A keeper as defined in claim 7 characterized in that the outwardly facing surfaces of said ribs are shaped complementally to the juxtaposed surfaces of a point portion of a socket wrench, and the inwardly facing side of said ribs being bowed crosswise thereof and positioned to have a snug frictional fit against a hex surface of a fastener part when the part is installed therein.

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