Sept. 26, 1933. E. M. PFAUSER 1,927,844

SOCKET WRENCH

Filed Jan. 27, 1932

Fig. 1.

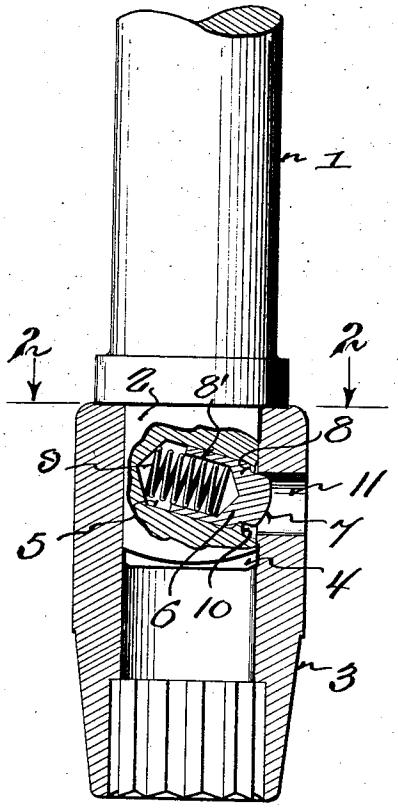
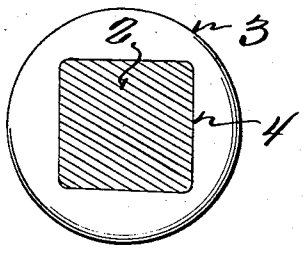


Fig. 2.



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SOCKET WRENCH

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1 Claim. (Cl. 287—119)

This invention relates to socket wrenches, and more particularly to a novel means for attaching a socket to a shank.

The common method employed at the present time, for positively attaching the socket to a shank, comprises a spring-urged plunger carried by the shank and adapted to be projected into a transverse opening in the socket when the two are assembled. A pin, or other suitable tool, is employed for depressing and releasing the plunger from the socket. However, inasmuch as the plunger must be provided with a projecting portion for engagement with the transverse socket opening, it becomes necessary to chamfer the mouth of the shank receiving opening of the socket, in order to cam the plunger inwardly upon insertion of the shank.

A shank constructed in accordance with the foregoing explanation has been found unsuitable for standard sockets in which the mouth of the shank receiving opening is not chamfered, inasmuch as an extremely difficult and awkward operation is required to manually depress the plunger to enable the same to pass the mouth of the shank receiving opening in the socket.

In an endeavor to overcome the foregoing objections, a plunger has been provided with an end face beveled at one side to confine a portion of its outer end within the outer face of the shank. In operation the foregoing structure proved successful to a certain degree, in that either a plain or chamfered socket would cam the plunger inwardly upon insertion of the shank. However, the structure proved to be expensive, as it was necessary to lock the plunger against rotation, in order to properly present the beveled face of the plunger to the shank receiving opening in the socket. Also, wear upon the plunger occurred continuously at the same place.

It is therefore primarily the object of the present invention to provide a positive means for releasably connecting a shank and socket, which is adaptable to either standard, plain sockets or chamfered sockets; which can be cheaply manufactured; and which avoids excessive wear at any one place on the plunger.

Incidental to the foregoing, a more specific object of the invention resides in the provision of a shank having a spring-urged plunger retained therein, and provided with a restricted cylindrical projection for engagement in a transverse socket opening, the plunger being inclined at an angle with relation to the transverse axis of the shank, whereby a portion of its outer edge is always retained within the outer face of the shank, thus permitting the same to be automatically cammed inwardly, regardless of the type of socket attached to the shank.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claim, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claim.

In the accompanying drawing is illustrated one complete example of the physical embodiment of the present invention constructed according to the best mode so far devised for the practical application of the principles thereof.

In the drawing:—

Figure 1 is a fragmentary view of a tool constructed in accordance with the present invention, parts being broken away and in section to more clearly illustrate structural details, and

Figure 2 is a transverse section taken on the line 2—2 of Figure 1.

While the present invention has been illustrated in connection with conventional socket wrenches, wherein the socket is attached to a shank carried by a suitable handle, it is to be understood that the features of the invention are applicable to other structures, wherein it is desired to provide a positive and releasable connection between a shank and socket member.

Referring now more particularly to the drawing, the numeral 1 designates a tool handle provided with a squared shank 2, for reception of a wrench socket 3, the same being provided with a shank receiving opening 4 conforming to the contour of the shank 2. While the shank 4 is illustrated as being polygonal in cross section, it is to be understood that the same can be of various shapes embodying a flat face to prevent rotation between the shank and socket.

In order to positively lock the socket 3 on the shank 2, the latter is provided with a transverse recess 5, the longitudinal axis of which is inclined at a slight angle to the transverse axis of the shank. Slidably mounted within the recess 5 is a plunger 6 having a restricted outer end 7 which forms a shoulder 8. Preferably the restricted outer end is cylindrical in shape, while the body portion of the plunger is provided with a pocket 8' for reception of the spring 9 which engages the bottom of the recess 5 to urge the plunger 6 to projected position. The material

surrounding the outer end of the recess 5 is upset to form an annular retaining flange 10, which engages the shoulder 8 of the plunger to permanently retain the same within the recess.

As illustrated in the drawing, the socket 3 is provided with a transverse opening 11, communicating with the shank receiving opening 4, and normally alined with the plunger 6 when positioned on the shank.

From the foregoing explanation taken in connection with the accompanying drawing, it is believed that the operation of the device will be readily apparent, in that due to the angularity of the plunger 6, with relation to the transverse axis of the shank 2, a portion of the outer edge of the plunger is normally retained within the outer face of the shank. Thus, as the shank is inserted into the opening 4, its outer face will be engaged by the side of the opening, regardless of whether or not the same is chamfered, and cam the plunger inwardly, permitting the shank to be inserted into the socket opening 4.

When the plunger 6 alines with the transverse opening 11, the same will be projected to engage a portion of the opening, and positively lock the socket on the shank. A pin, or suitable tool, may be employed for depressing the plunger to release the same from the opening 11 and permit removal of the socket. Attention is also directed to the fact that in addition to providing a positive lock, the present construction may also be utilized in instances where a frictional lock is desired, by merely rotating the shank, prior to insertion in the socket, so that the outer face of the plunger engages one of the walls of the opening 4, adjacent the transverse opening 7.

Thus it will be seen that an extremely simple, inexpensive and efficient locking means has been provided for a shank and socket, which is adaptable to either plain or chamfered sockets, and which may also be employed for either positive or frictional locking engagement.

Furthermore, inasmuch as the plunger is free to rotate within the recess 5, the same continuously presents a new face, thus materially reducing wear and prolonging the life of the plunger.

I claim:—

In a tool comprising a shank and a socket provided with a shank receiving opening and a transverse opening communicating therewith, a spring-urged plunger slidably carried within said shank for engaging in the transverse opening when the socket is associated with the shank, said plunger being provided with a restricted outer end forming a shoulder thereon, and means for retaining said plunger in said shank to confine a portion of its outer end within the outer face of said shank, said plunger being inclined downwardly at an angle to the transverse axis of said shank whereby the outer face of the plunger is so disposed as to offer no obstruction to the assembly of the socket on the shank.

EDWARD M. PFAUSER.