

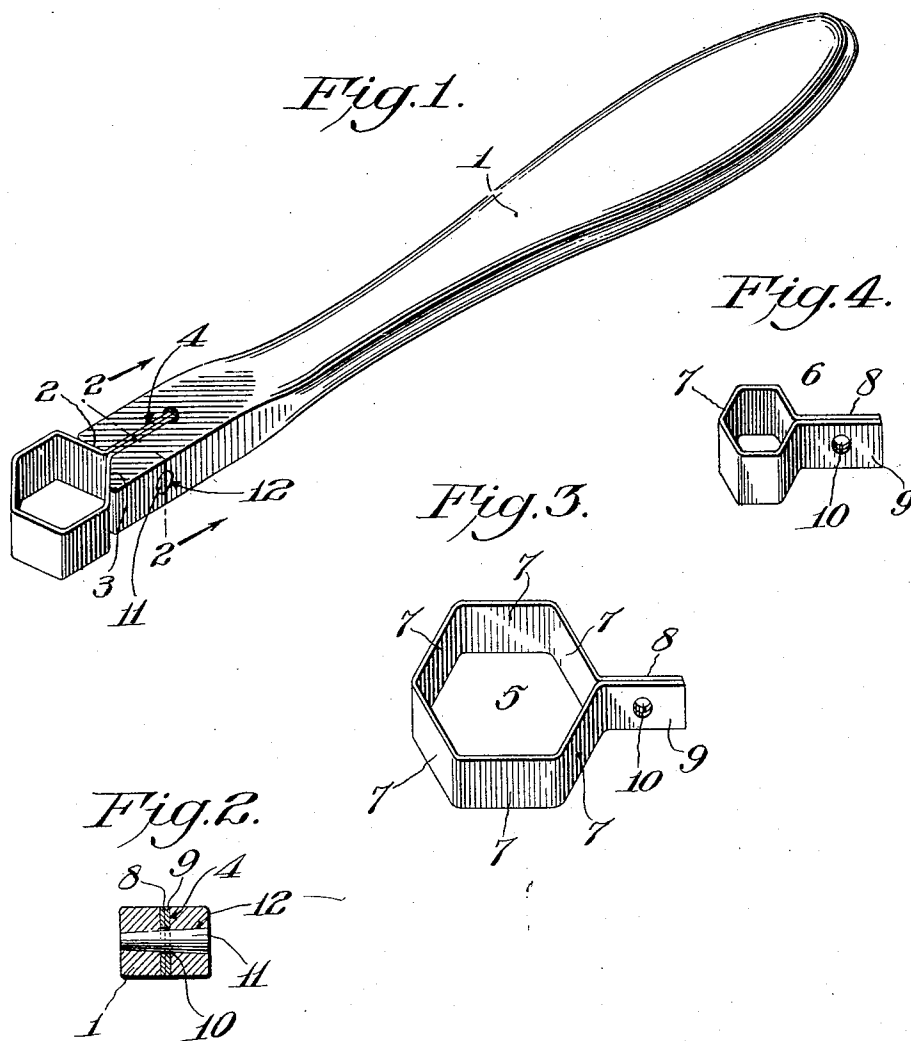
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UNITED STATES PATENT OFFICE

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WRENCH

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My invention relates to a new and useful socket wrench or the like, and it relates more particularly to a socket wrench adapted for the manipulation of nuts or bolts in tight or close places upon machinery, where the ordinary open-ended wrench or socket wrench can not be conveniently inserted, due to lack of space.

The object of my invention is to provide a socket wrench, including an elongated handle of any suitable shape, having affixed to one end thereof and in a detachable manner, a nut or bolt-head engaging socket of any suitable contour or shape, such as square, hexagonal, or the like, which is adapted firmly to engage such bolt-head or nut, while occupying a minimum space around said bolt-head or nut.

A further object of my invention is to provide a common handle of this character, which is adapted to receive any one of a series of detachable bolt or nut engaging sockets of varying sizes, within suitable limits.

With the above ends in view, my invention consists of a suitable elongated handle, preferably of steel or the like, having one end thereof provided with a pair of opposed and inclined surfaces or shoulders disposed at an angle to each other equal to one of the external angles of the bolt head or nut, and having a longitudinal slot extending from the apex of such angle, inwardly of said end of the handle.

My invention further consists of socket members adapted to be inserted into said angularly disposed terminal shoulders and slot in the handle member, each comprising a continuous band of suitable spring steel or the like, of a peripheral contour adapted snugly to surround the particular bolt-head or nut, and having the two terminals or ends of said band projecting outwardly and parallel to each other from an apex of the socket and adapted to be inserted into said longitudinal slot in said handle; wherein the same is detachably secured by any suitable pin or other fastening device passing transversely through the handle and through the projecting terminals of the steel band of the socket. By removing the pin from the han-

dle the steel band socket may readily be removed from the handle and another one of a different size inserted thereinto.

For the purpose of illustrating my invention, I have shown in the accompanying drawings a form thereof which is at present preferred by me, since it will give in practice satisfactory and reliable results; although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized, and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Referring to the drawings, in which like reference characters indicate like parts,

Fig. 1 represents a perspective view of a socket wrench embodying my invention.

Fig. 2 represents a section on line 2—2 of Fig. 1, and

Fig. 3 represents a perspective view of one of the sockets detached.

Figure 4 represents a perspective view of another socket of a smaller size.

In carrying out my invention, I provide a suitable handle 1, having a pair of opposed and converging terminal surfaces or shoulders 2 and 3 respectively, disposed at an angle to each other equal to an external angle of the particular bolt-head or nut for which it is adapted. Thus in the particular illustration shown in the drawings, the wrench is adapted for hexagonal nuts and hence the angle between the two terminal surfaces or shoulders 2 and 3 is 120 degrees. From the apex of the angle between the two terminal surfaces 2 and 3, a longitudinal slot 4 is extended into the handle 1, to a suitable extent.

Socket members 5 and 6, of any suitable size to receive a particular bolt-head or nut of a corresponding size, are each formed of a relatively thin flat band of suitable spring steel or the like, shaped to conform to the external periphery of the particular bolt-head or nut, having corresponding sides 7, with the terminal projections or tongues 8 and 9 of the spring steel band extended outwardly from one of the apices of the hexagonal formation, and provided with a suit-

able aperture 10. The socket 5 or 6, shown in Figs. 3 and 4 respectively, is then affixed to the end of the handle 1 by inserting the terminals or tongue portions 8 and 9 thereof into the longitudinal slot 4 of the handle with the two adjacent sides 7 thereof abutting the two converging terminal shoulders or surfaces 2 and 3 of the handle member.

Any suitable pin or any fastening device such as the tapered pin 11, may be then inserted into a corresponding transverse opening 12 extending through the handle, and through the slot 4 thereof, and through the apertures 10 in the terminal or tongue portions of the socket 5 or 6, thereby rigidly securing the socket to the end of the handle.

Since the angle between the two abutting converging terminal shoulders or surfaces 2 and 3, is the same as the external angles of the particular bolt-head or nut, and the same as the angle between the two adjacent sides 7 of the socket 5 or 6, said two terminal surfaces or shoulders 2 and 3 afford support to the socket when subjected to torsion during use. Due to this support afforded by the terminal shoulders 2 and 3, the socket is held in substantially rigid relation to the handle 1, thereby to enable the manipulation of any bolt-head or nut.

As will be readily seen, the sockets 5 and 6 being formed of relatively thin material, such as spring steel, require a minimum amount of space around the bolt-head or nut. The device is therefore applicable to a bolt-head or nut in a very close place where the side jaws of the ordinary open-ended wrench would not permit the use or easy manipulation of the latter.

I have shown in Figure 4 another socket 6 similar to the socket 5 shown in Figure 3, but of a different and smaller size, and having tongue members 8 and 9 of the same dimensions as the tongue members of the socket 5, and having the aperture 10 thereof positioned in the same relation to the socket 6 as the aperture 10 is with respect to the socket 5 so that the sockets may be interchangeable in the handle 1.

It will now be apparent that I have devised a new and useful wrench which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description; and while I have in the present instance shown and described a preferred embodiment thereof, it is to be understood that such embodiment is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

A socket wrench for polygonal shaped nuts and bolt heads, comprising a generally elongated handle member, bifurcated at one end by a slot cut into the handle member from said end in a longitudinal direction, so as to divide said end of the handle member into two substantially equal prongs, which are rigid with respect to each other; the terminal surfaces of said two prongs forming one end of the handle member, being oppositely inclined with respect to each other at an angle substantially equal to that of the particular sided polygon desired, and a series of polygonal shaped sockets of varying or successive sizes but all having the same angles as that formed between the two inclined end surfaces of the two prongs of the handle member, each of said polygonal sockets being formed of a metal band, the two ends of which project from an apex of the polygon in operative juxtaposition to each other and each of said polygonal shaped sockets being adapted to be inserted into the end of the handle member with the two oppositely inclined end surfaces of the two prongs of the handle exteriorly abutting the two sides of the polygonal socket adjacent the terminal portions of said socket bands, and with the latter projecting into the common slot between the two prongs of the handle member and being detachably secured therein; said various sized socket members being interchangeable in said handle member.

In testimony whereof, I have hereunto set my hand.

JAMES P. SALMON.