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H. F. HAYNES

1,619,255

SOCKET WRENCH

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Fig. 1.

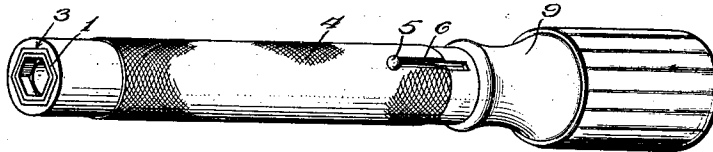


Fig. 2.

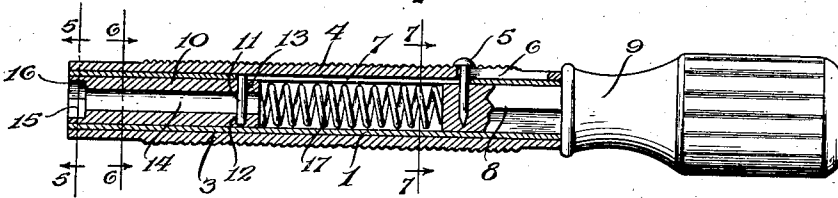


Fig. 3.

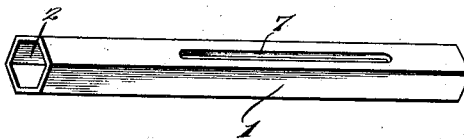


Fig. 4.

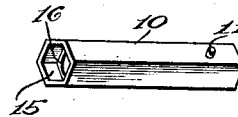


Fig. 5.

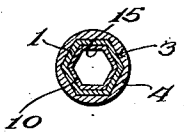


Fig. 6.

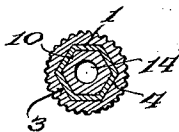


Fig. 7.

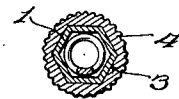
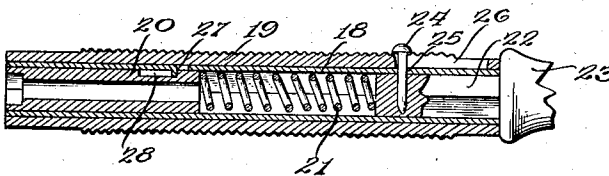


Fig. 8.



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SOCKET WRENCH.

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This invention relates to a socket wrench and more particularly to a socket wrench formed of telescopic sections for engaging nuts of different sizes.

5 One object of the invention is to so construct the wrench that, when it is desired to tighten or loosen a nut of a particular size, it is merely necessary to place the wrench in axial alinement with the bolt carrying the nut and exert forward pressure so that the proper section of the wrench will be moved into engagement with the nut.

10 Another object of the invention is to so form the various sections of the wrench that they will be slidable with respect to each other but prevented from having movement beyond a proper extent.

15 Another object of the invention is to prevent the sections of the wrench from having rotary movement relative to each other.

20 Another object of the invention is to provide a wrench of this character which will be simple in its construction and not liable to readily get out of order or become broken when in use.

25 This invention is illustrated in the accompanying drawing, wherein—

Fig. 1 is a perspective view of the wrench;

30 Fig. 2 is a view showing the wrench in longitudinal section with the handle principally in elevation;

Fig. 3 is a perspective view of the tubular body portion or intermediate nut-engaging section of the wrench;

35 Fig. 4 is a perspective view of the inner nut-engaging section;

Figs. 5, 6, and 7 are transverse sectional views taken respectively on the lines 5—5, 6—6, and 7—7 of Fig. 2; and

40 Fig. 8 is a longitudinal sectional view showing a modified or varied and sometimes preferred construction.

The body or intermediate section 1 of the wrench is formed as a tube hexagonal in cross-section. The bore of the tubular body is also hexagonal in cross-section and its forward end portion constitutes a socket 2 adapted to receive a nut. The bore 3 of the sleeve 4 which slidably fits upon the body is also hexagonal in cross-section so that the body is snugly received therein and the sleeve is limited in its sliding movement by means of a pin or other removable member 5 which is passed through a slot 6 formed in the sleeve and through the rear end portion of a slot 7 formed longitudinally in the tu-

bular body 1 and releasably engaged with the shank 8 of the handle 9. The handle is preferably formed of wood and the shank thereof is of such length that when fitted into the rear end portion of the body it may receive the pin 5, as shown in Fig. 2, so that the body portion will be securely held in engagement with the handle and the sleeve prevented from sliding forwardly beyond a desired extent. When the sleeve is moved forwardly its full extent, its forward end portion projects from the forward end of the body a sufficient distance to permit of a nut being received in the forward end portion of its bore 3 and, therefore, the forward end portion of its bore constitutes a socket adapted to receive a nut of too large a size to be received in the socket 2 of the body.

In order to engage a nut smaller than the nut to be received in the socket 2, there has been provided an inner section or nut-engaging member 10 which is hexagonal in cross-section and of an external diameter to fit snugly in the bore of the body portion. Therefore, the inner nut-engaging member may slide longitudinally but will be prevented from having rotary movement in the tubular body. A pin 11 is seated in the socket 12 and opening 13 formed in the rear end portion of the inner nut-engaging member and has an extended end portion fitted into the slot 7 to prevent the inner nut-engaging member from being forced outwardly through the forward end of the body. It will be obvious that if desired an opening to receive the pin 5 and a slot to receive the pin 11 could be formed in the body 1 instead of the elongated slot 7. The forward end portion of the bore 14 of the inner nut-engaging member is enlarged to provide a hexagonal socket 15 having a shoulder 16 at its inner end to prevent a nut from being forced into this socket to such an extent that it could not be conveniently removed after having been unscrewed from a bolt. The nut-engaging member 10 is to be yieldably held in the position shown in Fig. 2 and, therefore, there has been provided a spring 17 which is mounted in the body 1 with its forward end abutting against the inner end of the inner nut-engaging member and its rear end abutting the inner end of the shank 8. The spring is held under compression by the shank, and it will be readily understood that the inner nut-engaging member will serve not only as a socket to receive a small nut but also as a

plunger to expel a nut received in the socket 2.

When the wrench is employed to remove a nut from a bolt, it is grasped by the handle 5 and the sleeve 4 projected forwardly so that it extends beyond the forward end of the tubular body. The wrench is disposed in axial alinement with the outer end of the bolt carrying the nut to be removed and the extended forward end portion of the sleeve 10 placed over the nut. If the nut is of the proper size for removal by the sleeve, it will be snugly received in the socket 3 at the forward end of the sleeve and a turning action will be exerted to loosen the nut. If, 15 however, the nut is too small to be operatively engaged in the socket 3, the body portion of the wrench will be moved forwardly through the sleeve until the nut fits into either the socket 2 or the socket 15. If the 20 nut is of the proper size to be operatively received in the socket 2, it will engage the forward end of the inner nut-engaging member and this member will be forced inwardly against the action of the spring 17, 25 so that this inner member will not interfere with the nut being received in the socket 2. When the nut is removed, it is prevented from sticking in the socket 2 as the inner 30 nut-engaging member will operate as a plunger to cause it to be expelled from the socket.

In case it is necessary to renew the spring or make other repairs to the wrench, the 35 pin 5 can be readily removed and the shank of the handle withdrawn. The spring and the various nut-engaging members can then be slid longitudinally out of engagement with each other after the pin 11 has been 40 removed, and the necessary repairs made or a new spring substituted for a broken one and the wrench easily and quickly reassembled.

In Fig. 8, there has been shown a wrench 45 of a slightly changed or modified construction. Referring to this figure, it will be seen that the tubular body 18 is hexagonal in cross-section throughout its length and that the bore of the sleeve 19 is also hexagonal 50 in cross-section so that the sleeve may readily slide upon the tubular body but will be prevented from turning thereon. The inner nut-engaging member or plunger 20 is also of a tubular formation hexagonal in cross-section and has its inner end engaged with 55 a spring 21 which corresponds to the spring 17. The rear end of the spring engages the forward end of the shank 22 of the handle 23 which corresponds to the handle 9 and this handle is held in the tubular body by 60 a pin 24 corresponding to the pin 5 and passed through an opening 25 and slot 26 formed, respectively, in the body 18 and sleeve 19. In order to prevent the inner nut- 65 engaging member or plunger from being

forced outwardly beyond the position shown and permit it to be moved inwardly against the action of the spring, there has been provided a tongue 27 which is struck from the tubular body and, after the plunger is in 70 place, forced inwardly so that it extends into the recess 28 formed adjacent the inner end of the nut-engaging member. It will, therefore, be seen that, while this form of wrench is somewhat similar to that shown 75 in Figs. 1 and 2, the details of construction have been modified. The operation of this form of wrench is, however, similar to that of the form shown in Figs. 1 and 2.

Having thus described the invention, I 80 claim:

1. A socket wrench comprising a tubular body having the forward end portion of its bore constituting a nut-receiving socket, 85 a sleeve slidable longitudinally upon said body and having the forward end portion of its bore constituting a socket to receive a nut when the sleeve is projected from the body, the rear end portion of said sleeve 90 being formed with a longitudinally extending slot and said body having an opening registering with the slot, a handle having a shank fitted into the rear end portion of said body, a fastener carried by said shank 95 and extending through the opening and slot to hold the handle in place and limit sliding of the sleeve, a socket member slidable longitudinally in the forward end portion 100 of said body and formed with a longitudinally extending groove closed at its ends, a tongue struck from said body and bent inwardly into said groove to limit sliding of the socket member, and a spring in said 105 body confined between the socket member and forward end of said shank and serving to yieldably resist inward movement of the socket member.

2. A socket wrench comprising a tubular body having the forward end portion of its 110 bore constituting a nut-receiving socket, a handle having its forward end portion fitted snugly into the rear end portion of said body, an elongated socket member slidable 115 in the forward portion of said body, means to limit sliding of the socket member in said body, a sleeve fitting snugly upon said body and having the forward end portion of its bore constituting a nut-receiving 120 socket when the sleeve is projected forwardly from the body, the outer face of said sleeve being circular in cross-section, said sleeve having its rear portion formed with a longitudinally extending slot, a fastener for said handle projecting radially 125 from said body and through said slot and serving to limit sliding of the sleeve and retain the handle in the body, and a spring in said body between said socket member and handle to yieldably resist inward movement of the socket member. 130

3. A socket wrench comprising a tubular body having the forward end portion of its bore constituting a nut-receiving socket, a handle having a shank fitted into the rear
5 end portion of said body, means to releasably secure the shank of said handle in said body, a socket member slidable longitudinally in the forward end portion of the bore of said body and formed with a longitudinal
10 extending seat, a tongue struck from said body and bent inwardly into said seat to limit sliding of the socket member longitudinally in the body, and a spring in said body confined between the socket member and shank of said handle and serving
15 to yieldably resist inward movement of the socket member.

In testimony whereof I affix my signature.

HOBART F. HAYNES. [L. s.]