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W. F. KLEIN

1,790,238

SOCKET CONNECTION

Filed Dec. 21, 1925

Fig. 1.

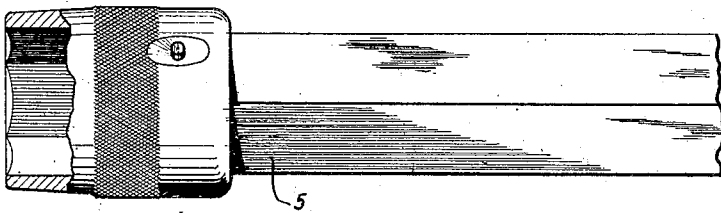


Fig. 2.

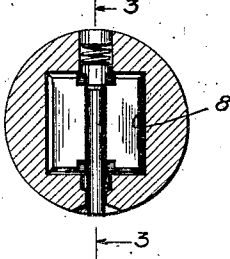


Fig. 3.

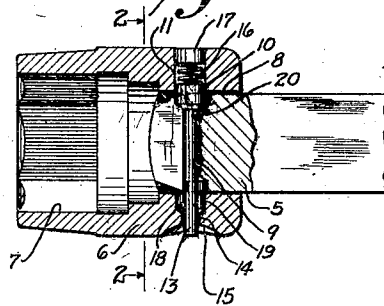
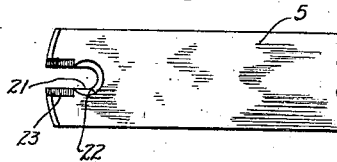


Fig. 4.



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SOCKET CONNECTION

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The invention relates to socket-wrench sets.

The object of the invention is to provide a positive locking means associated with the socket wrench adaptors, extension bars and handles of socket wrench sets whereby the possible release of the connection between the socket or adaptor and its cooperative actuating member is prevented.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings, Fig. 1 is a perspective view of a device embodying the invention;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 3;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2, with parts of the actuating member shown in full;

Fig. 4 is a detail side elevation view of the actuating member.

In the drawings the numeral 5 designates a bar or actuating member which may form the shank of an operating handle, or may be an extension bar associated with said handle, or may be a shank for a so-called "adaptor" connected with an operating handle, and in any of the above instances this bar constitutes an actuating member for connection with a series of interchangeable sockets 6 or other parts of a socket-wrench set.

The sockets 6 may have a nut-engaging opening 7 formed therein, that may be of polygonal cross-section for either hexagonal or square nuts, but is provided with a polygonal opening or socket 8 at its other end, which in the present instance is shown as a square opening to take a square bar 5.

In order to positively lock the actuating member 5 against accidental removal from the socket member 6, a locking-pin 9 is associated with one of these members and positively engages the other member. As shown, the locking-pin 9 is mounted in the socket member 6 and extends transversely of the same across the opening 8. This pin has an enlarged locking head portion 10 slidably mounted in a bore 11 in the socket member, and a reduced portion 13 slidably mounted in an alined bore 14 of said socket member

and projects at this end into a recess 15 formed on the outer side of said socket member.

The pin 9 is normally moved to a locking position by means of a spring 16 mounted in the bore 11 between the end of the head 10 and a plug 17, having a drive fit with the bore 11 and flush with the outer portion of the socket member. The movement of the pin 9 by the spring is limited by a projection 18 struck up from the reduced portion 13 of the pin engageable with the bottom of a bore 19 in the socket member alined with the bore 14 but of slightly larger diameter. The inner face of the head 10 has a bevelled portion 20. The outer end of the pin 9 does not project beyond the outer surface of the member 6.

The actuating member 5 has a transverse slot 21 at the end thereof and locking recesses 22 formed adjacent the end of said slot on opposite sides of said actuating member, and inclined or cam surfaces 23 tapering from the front end of the actuating member toward the sides thereof and terminating adjacent the locking recesses 22.

With this construction the slotted end of the bar 5 may be inserted into the square opening 8 of the socket with the slot 21 alined with the pin 9 and then be pushed into the socket, at which time one of the cam surfaces, which is then disposed adjacent the cam or tapered surface 20 of the pin engages said surface and thereby forces the pin 9 laterally against the pressure of the spring 16 until the recesses 22 aline with the head 10, at which time said head snaps into said recess, as shown in Fig. 3, with the result that the actuating member 5 is positively locked to the socket member until released by the pressure of the finger against the end 13 of the pin that projects into the recess 15. Thus the actuating member is positively locked in place by the snap action with the socket, but is released by a manual actuation of the locking-pin 9.

It will be understood that in wrench sets each one of the sockets forming a set of sockets is provided with the locking means previously described and that the shanks of the interchangeable handles or the extension

bars or so-called "adaptors" are of a cross-section to fit into the polygonal ends 8 of these interchangeable sockets and respectively cooperate with the locking pins 9 of said sockets.

5 By the term "socket member" I mean either a member which has a nut socket portion formed integral therewith, or a member having a socket to receive an operating handle or bar and having a male connection for connection with interchangeable sockets with
10 nut-engaging portions, or for connection with other parts of a socket wrench set.

I desire it to be understood that this invention is not to be limited to any particular
15 form or arrangement of parts except in so far as such limitations are specified in the claims.

What I claim as my invention is:

20 1. In a socket wrench, the combination of a member having a socket, a spring-pressed pin extending across said socket and provided with a head having a cam face, a member having a part to fit said socket and having a slot to receive said pin with a recess
25 at the end of said slot providing a locking abutment and with a cam face adjacent the side of the slot to cooperate with the cam face on the head of said pin to move said pin outwardly as said member is moved inwardly
30 into the said socket to permit automatic locking engagement of said head with said abutment.

2. In a connection between the interchangeable sockets and interchangeable actuating members of socket-wrench sets, a socket member having a polygonal opening therein to receive an actuating member, a spring-pressed pin in said socket member and extending across said opening, said pin having
40 a stop projection thereon cooperating with a part of said socket member to limit the locking-position movement of the pin and having a head slidably mounted in a bore in the socket member, a plug for the outer
45 end of said bore flush with the outer surface of said socket member, a spring interposed between said plug and said head, an actuating member, and means on the actuating member to positively engage said head to prevent
50 release of said actuating member from said socket member.

In testimony whereof, I affix my signature.
WALTER F. KLEIN.

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