

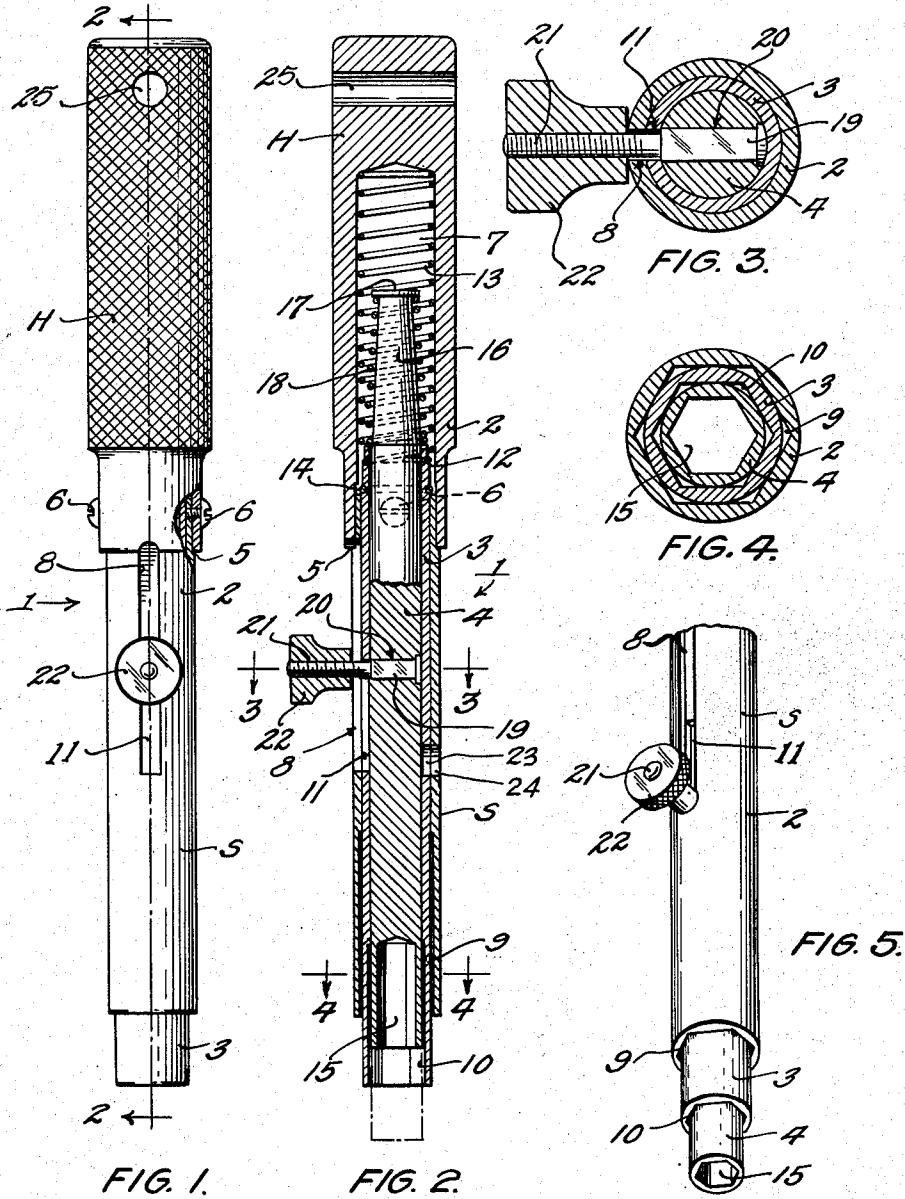
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TELESCOPIC MULTIPLE-SOCKET WRENCH

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TELESCOPIC MULTIPLE-SOCKET WRENCH

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2 Claims. (Cl. 81-185)

1 This invention relates to an improved hand-operated wrench, having particular reference to socket wrenches.

An outstanding object of the invention is to provide a novel composite socket wrench embodying a plurality of permanently united interfitting telescopically arranged socket members, the latter being so constructed as to enable socket-containing ends of said members to be projected or retracted selectively into and out of active positions.

Another object of the invention is to provide a multiple-socket wrench composed of interfitting telescoping members wherein manually operated means are provided, accessible from the exterior of the wrench, by which the socketed ends of said members may be selectively projected or retracted to assume active or inactive operating positions.

A further object of the invention is to provide a wrench of the character set forth wherein an outer tubular member is formed with an internal longitudinally extending chamber which terminates at its outer or lower end in a nut-receiving socket having polygonal walls, there being slidably mounted in said chamber an intermediate tubular member open at both of its ends, the lower or outer end of the intermediate member being formed with a nut-receiving socket adapted to register with that of the outer member, and, further, there being slidably arranged in the intermediate member an inner socket-carrying member having its outer or lower end formed with a socket normally disposed in nesting relation with those of the outer and intermediate members, and wherein said intermediate and outer members are formed midway of their length with elongated slots for the slidable reception of a threaded stud carried by and projecting laterally from the inner member, said stud having its outer end threaded and equipped with a binding nut, which, when loosened, permits of the selective adjustment of said members relative to each other, and when tightened serves to maintain said members in fixed positions of relative adjustment.

Still a further object of the invention is to provide a multiple-socket wrench of the type indicated in which the internal chamber of an outer tubular member is provided with spring means operative to maintain telescopic intermediate and inner socket-carrying members in predetermined positions of operation with respect to said outer member and with respect to each other, but which may be varied through the operation of associ-

2 ated manually operated threaded means, the latter being accessible from the exterior of the outer member.

For a further understanding of the invention, reference is to be had to the following description and the accompanying drawing, wherein:

Fig. 1 is a view in side elevation of a multiple-socket wrench formed in accordance with the present invention;

Fig. 2 is a vertical longitudinal sectional view taken through the wrench on the plane indicated by the line 2-2 of Fig. 1;

Fig. 3 is a transverse cross-sectional view on the line 3-3 of Fig. 2, and illustrating more particularly the manually operated threaded stud and nut construction for maintaining the adjustment of the telescopic members of the wrench;

Fig. 4 is a similar view on the line 4-4 of Fig. 2 and disclosing the nut-receiving sockets of the telescopic members of the wrench;

Fig. 5 is a detail perspective view disclosing the lower portion of the wrench when the inner socket member thereof is projected to its active position.

Referring more particularly to the drawings, my improved multiple-socket wrench is indicated in its entirety by the numeral 1. In the construction disclosed, the wrench comprises outer, intermediate and inner socket members 2, 3 and 4, respectively. For convenience in assembly, the outer socket member comprises an elongated hollow cylindrical body composed of two sections: first, a handle section indicated at H, and, second, a shank portion indicated at S. In uniting these two sections, the upper end of the section S is formed with an annularly reduced shoulder region 5 in which is inserted in close-fitting engagement the open lower end of the handle section H. Headed screws 6 may be utilized in positively securing the two sections of the outer member in assembled relation. The handle section H includes an internal spring chamber 7 which at its lower end communicates with the hollow interior of the shank section S. In this instance, the shank section is formed with an elongated longitudinally extending slot 8, the purpose of which will be hereinafter defined. At its lower or outer end the shank section S includes a polygonal nut-receiving socket 9.

Slidably positioned in the hollow interior of the outer socket member is the intermediate socket member 3. This member comprises a suitable length of metallic tubing, which is open at both its inner and outer ends, that is, its upper and

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lower ends, as the tool is viewed in Fig. 2. The lower or outer end of the intermediate member is formed with a nut-receiving socket, shown at 10. Intermediately of its length the member 3 is provided with a longitudinally extending slot 11, which is disposed in registry with the slot 8 in the member 2.

The upper or inner end of the member 3 includes an annular seat 12 against which is positioned the lower end of a coil spring 13, the upper end of this spring being engaged with the closed upper end of the chamber 7. The expansion of the spring 13 serves to move the inner member 3 in a downward or outward direction. Such movement is limited by a stop ring 14, carried by the member 3, which engages with the upper edge of the shank section S of the member 2. This engagement is such that normally the lower end of the intermediate member 3 will, as shown in Figs. 1 and 2, project outwardly and downwardly below the terminating lower end of the outer member 2.

Telescoped and slidably mounted within the intermediate member 3 is the inner member 4 of the wrench. Preferably, said inner member is in the form of a cylindrical rod having a nut-receiving socket 15 formed in its lower or outer end. The upper end of the inner member is somewhat tapered, as indicated at 16, the same terminating in a collar 17. A coil spring 18 is positioned between the upper end of the intermediate member 3 and the under surface of the collar 17, the spring 18 thus serving to force the inner member upwardly, so that normally the socketed lower end of the inner member is arranged within the confines of the socket 10 but spaced above its lower edge, as shown in Fig. 2.

In order to control the selective use of the members 2, 3 and 4, there is provided a transversely extending stud 19. The shank of this stud is mounted in a transverse opening 20 formed in the member 4 intermediate its length. The threaded end 21 of said stud extends through the vertical slots 8 and 11 formed, respectively, in the members 2 and 3. In this instance the threaded end of said stud is equipped with a clamping nut 22, which tightens against the outer surface of the member 2 in a manner holding the members of the wrench against relative movement.

It will be seen that with the tool positioned as shown in Fig. 2, the tightening of the nut 22 applies binding forces to the socketed members preventing relative movement therebetween and maintaining the socket 10 of the member 3 in an extended active position adapting the socket thereof for the reception of a nut, or other threaded body, not shown. If it should be desired to use a larger size socket of the wrench, that is, the socket 9 of the outer member 2, and with the parts of the wrench in the position disclosed in Fig. 2, it will be first necessary to loosen the nut 22 and then by finger pressure force the intermediate and inner members 3 and 4 upwardly against the pressure exerted by the coil spring 13. This is made possible by the elongated nature of the slot 8 in the member 2. When the stud reaches its uppermost position of travel in the slot 8, the lower socketed ends of the intermediate and inner members 3 and 4, respectively, will be disposed within the confines of the socket 9 of the outer member 2 and spaced well above its lower or outer edge region to render the socket fully effective in receiving a nut or other member of proper size. When this adjust-

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ment has been attained the nut 22 is tightened, thereby holding the intermediate and inner sections 3 and 4 in their elevated positions, permitting of normal use of the socket in the outer member 2, as will be readily understood.

If it should be desired to use the socket in the inner member 4, and with the parts of the tool positioned as shown in Fig. 2, the loosening of the nut 22 will permit the stud 19 to be forced downwardly by finger pressure applied by the tool user. This downward movement will cause the lower or outer end of the member 4 to be projected and assume an active working position, as indicated by broken lines in Fig. 2 of the drawings. During the lowering of the inner member 4, the outer and intermediate members are maintained in their relative positions shown in Fig. 2 by the operation of the spring 13 and the stop ring 14. The intermediate and outer sections may be provided respectively, as shown in Fig. 2, with openings 23 and 24 which permits of the removal of the stud 19 from its operative position in the inner socket member 4 when the parts of the wrench are being assembled or disassembled. The upper end of the handle section H may be equipped with a transverse bore 25 for the insertion of a cross pin, not shown, which may be used in applying turning or torque effort to the tool.

It will thus be seen that the present invention provides a compact well-balanced multiple socket wrench in which the parts of the wrench are maintained at all times in joined or assembled relationship, but wherein the individual socket-equipped members of the wrench may be readily actuated by telescoping movement in relatively projecting or retracting the same between active and inactive positions. The tool is relatively simple in its mechanical construction, possesses a long operating life, and is not likely to become out of order or require repair.

It will be understood that the invention as herein shown and described is subject to certain mechanical variation or modification without departing from the spirit and scope of the following claims.

I claim:

1. A multiple socket wrench, comprising: an outer tubular member, the latter terminating at one end thereof in a wrench socket and being formed intermediate its length with a vertical slot, an intermediate tubular member slidably mounted in said outer member, said intermediate member terminating at one end thereof in a wrench socket and being formed intermediate its length with a vertical slot disposed for registry with the slot in said outer member, an inner member slidably positioned in said intermediate member, said inner member terminating at one end thereof in a wrench socket, a stud projecting from said inner member intermediate its length and extending through the slots in said intermediate and outer members, a clamping means carried by the outer end of said stud, said means having frictional engagement with the outer wall surface of said outer member to maintain said members in fixed positions of relative adjustment wherein the socketed ends thereof are adapted to be selectively projected beyond and retracted with respect to the corresponding ends of the remaining members, a coil spring confined in a chamber formed in said outer member, said spring serving to exert pressure on said intermediate member to move the same in an outward direction relative to said outer member,

means coacting with said intermediate and outer members to limit the extent of movement of the intermediate member in an outward direction, and a second coil spring confined between one end of said intermediate member and a corresponding end of said inner member, said second spring serving normally to maintain said inner member in working position with respect to said intermediate member wherein the socketed end of said inner member is disposed within the confines of the socketed end of said intermediate member.

2. A telescopic multiple-head socket wrench, comprising: an elongated outer member of tubular formation, said member terminating at one end thereof in a first multi-angular faced socket and provided with a longitudinally disposed slot in the side wall thereof intermediate its length; an elongated inner member telescoped within said outer member, said inner member being terminated at one end thereof in a second multi-angular wrench socket of smaller size than said first wrench socket, said inner member being movable longitudinally in a chamber formed internally of said outer member, a tubular intermediate member surrounding said inner member and disposed for sliding movement within said outer member, said intermediate member being formed at one end thereof with a wrench-receiving socket of multi-angular formation differing in size from the wrench-receiving socket of said

inner and outer members, said intermediate member being formed intermediate its length with a longitudinally extending slot of shorter length than the slot in said outer member, said slots being disposed in relative registry, a coil spring confined in the chamber of said outer member, said spring being engaged with one end of said intermediate member to apply forces thereto moving the intermediate member outwardly and longitudinally, means carried by said outer member for limiting the outward longitudinal movement of said intermediate member relative to the outer member, a second spring means confined between one end of said intermediate member and an adjacent end of said inner member, said second spring means serving to move said inner member to a predetermined operating position relative to said intermediate and outer members, and manually operated clamping means carried by said inner member and extended through the slots of the intermediate and outer members for exterior operation.

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