

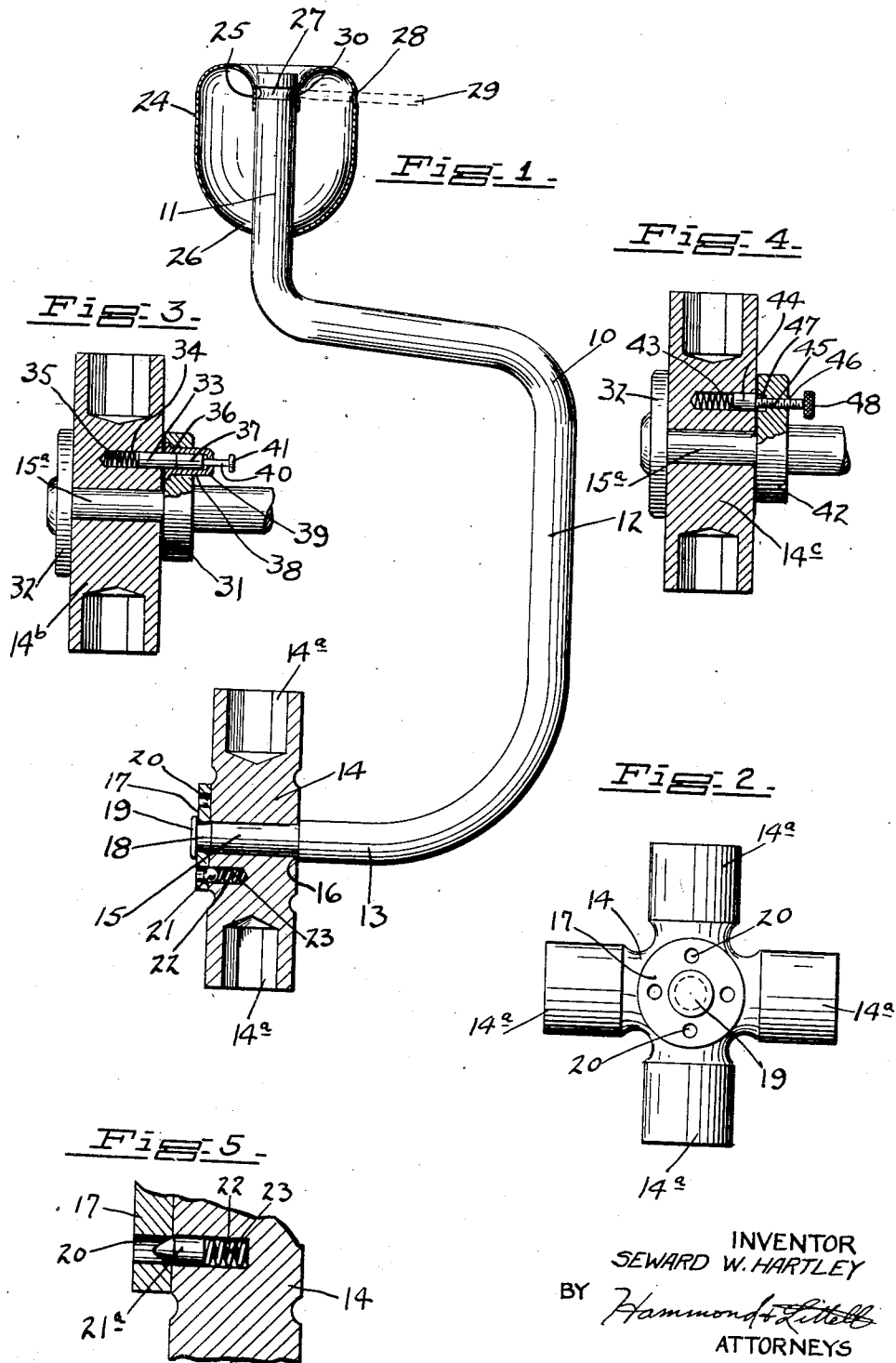
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BRACE WRENCH

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BRACE WRENCH.

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This invention relates to brace wrenches which have a plurality of sockets of different sizes, mounted in turret fashion on the end of the brace and each adapted to be turned into alignment with the axis of the brace for use in turning nuts or bolts.

One of the objects of the invention is to provide a wrench of this type which is easily made of few and simple parts, of rugged construction and low cost.

Another object of the invention is to provide a brace wrench with a socket member containing a plurality of sockets, as described, rotatably mounted on the shank of the wrench, and to provide an improved means for holding any one of the sockets in nut engaging positions, with the nut engaging socket substantially in line with the axis of rotation of the wrench.

Another object of the invention is to provide a rotatable handle for a brace wrench, which may be made of one piece of metal and may be easily and quickly attached to the shank of the wrench.

Another object of the invention is to provide a multiple socket member rotatably mounted on the shank of the wrench and held against lateral motion thereon.

Other objects of the invention will be apparent as the description proceeds.

In the drawings:

Figure 1 is a side elevational view of an embodiment of my invention, with the socket and handle members in section, to show the manner of attaching the same.

Figure 2 is a bottom plan view of the socket member showing the means for holding the desired socket in operative position.

Figures 3 and 4 are sectional side elevations of two modifications of the wrench shown in Figure 1 and in which the socket member may be more positively secured in nut engaging position; and

Figure 5 is an enlarged sectional view of a portion of the socket shown in Figure 1 showing a modified form of retaining means.

The wrench comprises a shank 10, bent in such a form as to provide an end portion 11 substantially in line with the axis of rotation of the wrench, a middle or crank portion 12 which is adapted to be grasped by the hand to turn the wrench and a portion 13 substantially at right angles to the crank

portion 12 upon which the socket member 14 is rotatably mounted in line with the end portion 11.

The diameter of the end of the transverse portion 13 of the shank 10 is reduced at 15 adjacent the end thereof and forms a shoulder 16, against which the socket member 14 abuts.

A disc or washer 17 is non-rotatably secured to the end of the transverse portion 13 of the shank 10, which may be slightly tapered at 18 to receive the same, and the end of the shank is swaged over at 19 to hold the washer 17 rigidly thereon. The socket member 14 is held between the shoulder 16 and the disc 17 against lateral movement on the shank, but is permitted to rotate around the axis 15.

The disc or washer 17 is provided with a plurality of holes 20, one for each socket 14^a preferably, and a spring-pressed ball 21 is mounted in an opening 22 in the side of the socket member 14, and urged outwardly by the spring 23 against the disc 17. The ball is held in the socket member 14 by the usual method of peening the outer edge of the opening 22, so that it is slightly smaller than the diameter of the ball. The holes 20 in the disc 17 are spaced from the center the same distance the ball is set from the center of the socket, so that when the socket is turned with relation to the disc, the ball will engage each of the holes in turn. When the ball is engaged with one of the holes, the socket is held in that position until enough torsional force is directed against the socket to force the ball back into the opening 22, depressing the spring 23, and cause it to travel over the edge of the hole 20 and along the side of the disc as the socket is turned until it engages with another of the holes 20. The holes 20 are so placed in the disc 17 that when the ball 21 engages any one of the holes, one of the nut engaging sockets will be in the line of rotation of the wrench, in proper position to engage a nut for turning.

If desired, a plurality of spring pressed balls may be used to engage with several of the holes at the same time to increase the turning resistance of the socket member, or a plunger 21^a (Figure 5) having a cone-shaped head may be used in place of the ball 21. Any desired resistance to turning the

socket may be obtained with this latter embodiment of the invention by providing a plunger in which the cone head has a greater or less slope. The steeper the sides of the cone head the greater the resistance to turning will be.

The handle 24 on the end of the wrench opposite the socket is comprised of one piece of metal, spun or pressed into a closed or cup shape. The upper end of the handle 24 is turned inwardly and downwardly, forming a sleeve 25, which acts as an upper bearing on the shank 10, and the lower portion 26 of the handle 24 is closed in about the shank 10, to form the lower bearing for the handle. The upper portion 11 of the shank 10 has an annular groove 27, near the end thereof, in position to hold the handle 24 in the desired longitudinal position on the shank. A hole 28 is provided in the handle 24 on a horizontal line with the mid portion of the sleeve 25. To attach the handle, it is slipped over the end portion 11 of the shank 10 and a tool or punch 29 is inserted through the hole 28 and driven against the sleeve 25 to provide a projection 30 on the inside of the sleeve 25 which engages with the groove in the end portion 11 of the shank 10, and rotatably holds the handle in place thereon.

If desired, I may also provide a suitable turning handle on the crank portion 12 of the wrench.

It will thus be evident that I have provided a brace wrench with a plurality of sockets for engaging different sized nuts, in which any one of the sockets may be used by merely turning the socket member, so that the socket is in the proper position and in which the socket member will be retained in proper position against accidental rotation, but may be readily turned to another position to engage a nut of a different size when desired.

In Figure 3 a multi-socket member 14^b is shown retained upon the shank 15^a by two discs 31 and 32. The disc 31 may be made integral with the shank 15, if desired. The socket member 14^b may have a plurality of plungers 33 disposed in openings 34 in the socket member 14^b and urged toward the disc 31 by the springs 35. The disc 31 may have an opening 36 adapted to register with any one of the openings 34 when the socket member is turned to the proper position on the shank. A second plunger 37 may be mounted in the opening 36 of the disc 31 and may be held therein by the sleeve 38 which has a restricted end 39. A shank 40 may be attached to the plunger 37 so that it can project through the end 39 of the sleeve 38 and a finger piece 41 may be attached to the end of the shaft 40 in order to provide means to operate the plunger 37. In this modification when one of the holes 34 is aligned with the hole 36 in the disc 31, the plunger 33 is

forced into the hole 36 and against the plunger 37 by the spring 35. The socket is thus locked in this position on the shank and when it is desired to turn the socket to be used with a nut of a different size, the finger piece 41 is pressed inwardly thereby pressing the plunger 33 inwardly until it clears the inside face of the disc 31, at which time the socket member 14^b may be turned on the shank 15^a. The holes 34 in the socket member 14^b are spaced so that when any one of the holes is registering with the hole 36 in the disc 31, one of the sockets is in nut engaging position.

In Figure 4 a slightly different modification of the construction shown in Figure 3 has been illustrated. A socket 14^c is retained on the shank 15^a by means of discs 32 and 42. A plurality of holes 43 may be provided in the socket 14^c and spring-pressed plungers 44 provided therein similar to those shown in Figure 3. A screw 45 is threaded through a hole 46 in the disc 42 in such a position that it will register with the center of any one of the plungers 44 when the socket 14^c is in the proper position. The hole 46 is enlarged at the inner face of the disc 42 to form a recess 47 adapted to receive one of the plungers 44 when the screw 45 is withdrawn. A head 48 is provided on the screw 45 to facilitate turning the same. In this modification, when it is desired to lock the socket 14^c in one of its nut engaging positions, the screw 45 is withdrawn by turning the head 48. When the other end of the screw 45 reaches the bottom of the recess 47 one of the plungers 44 is free to be pushed into the recess so that the socket is locked in that position. To change the socket, the screw 45 is turned further into the disc 42 by turning the head 48 when it will force the plunger 44 back into the socket 14^c to permit the socket being turned on the shank 15^a.

While I have illustrated and described certain embodiments of my invention, it will be evident that various changes in the design and construction thereof may be resorted to without departing from the spirit of the invention, and I do not desire therefore to limit myself to the embodiments shown and described but to interpret the invention broadly within the scope of the appended claims.

What I claim as my invention is:

1. A brace wrench of the type described comprising a shank having a transverse portion, a multi-socket member rotatably mounted on said transverse portion, means to prevent longitudinal movement of the socket member on said shank, a disc rigidly mounted on said transverse portion adjacent said multi-socket member, and means contained in said multi-socket member and cooperating with said disc to releasably hold

said multi-socket member in any one of its nut engaging positions.

2. A brace wrench of the type described comprising a shank, a multi-socket member 5 rotatably mounted on said shank, a disc rigidly mounted on said shank adjacent said multi-socket member, a spring-pressed ball contained within said multi-socket member and urged against said disc, said disc having 10 depressions in the face thereof to engage said ball and releasably hold said multi-socket member in any one of its nut engaging positions.

3. A brace wrench of the type described 15 comprising a shank having a handle portion and a transverse portion, a shoulder on said transverse portion, a multi-socket member rotatably mounted on said transverse portion and bearing against said shoulder, a 20 disc rigidly attached to said transverse portion and holding said multi-socket member in place thereon, said disc having a series of depressions adjacent said multi-socket member and arranged equi-distant from the 25 center thereof there being one depression for every socket on said multi-socket member and a spring pressed ball contained in said multi-socket member and adapted to cooperate with said depressions in said disc to 30 releasably hold said multi-socket member in any one of its nut engaging positions.

4. In a multi-socket brace wrench of the type described having a shank portion and a multi-socket member, means to releasably

hold the multi-socket member in any one 35 of its nut engaging positions, comprising a disc rigidly attached to the shank of said wrench and adjacent said multi-socket member and having a series of depressions on the inner face thereof, spaced apart to corre- 40 spond with the spacing of the sockets on said multi-socket member, said multi-socket member having a depression in the side thereof adjacent said disc, a ball in said depression and held therein by the opening of 45 said depression being slightly less in diameter than the diameter of said ball, and a spring in said depression and urging said ball toward said disc so that a portion of said ball protrudes from said depression and 50 engages one of the depressions in said disc, when the depression in said multi-socket member is aligned with the depression in said disc to releasably hold said multi-socket member in such position. 55

5. In a brace wrench, a shank, a multi-socket member rotatably mounted on said shank, means to hold said multi-socket member against longitudinal movement on said shank and spring, controlled means con- 60 tained in said socket member to engage with said holding means to retain said socket member in any one of its nut engaging positions.

In testimony whereof I have affixed my 65 signature to this specification.

SEWARD W. HARTLEY.