May 27, 1930. W. S. BILLMYER, JR 1,760,338

ADJUSTABLE SEMISOCKET WRENCH

Filed June 12, 1929 2 Sheets-Sheet 1

Fig. 1.

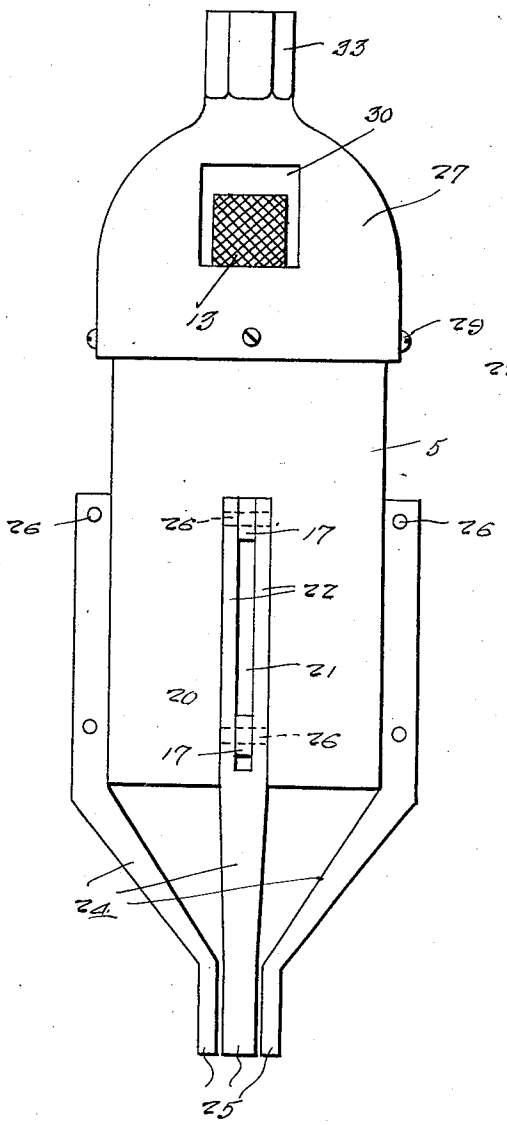


Fig. 5.

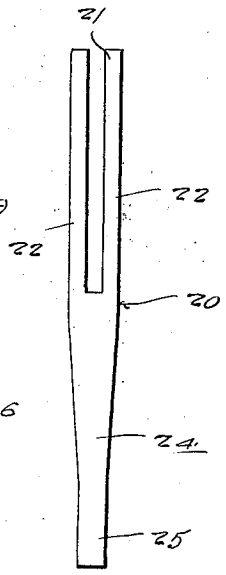


Fig. 6.

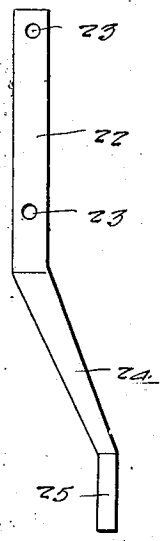
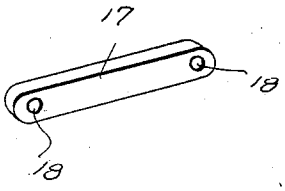


Fig. 7.



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ADJUSTABLE SEMISOCKET WRENCH

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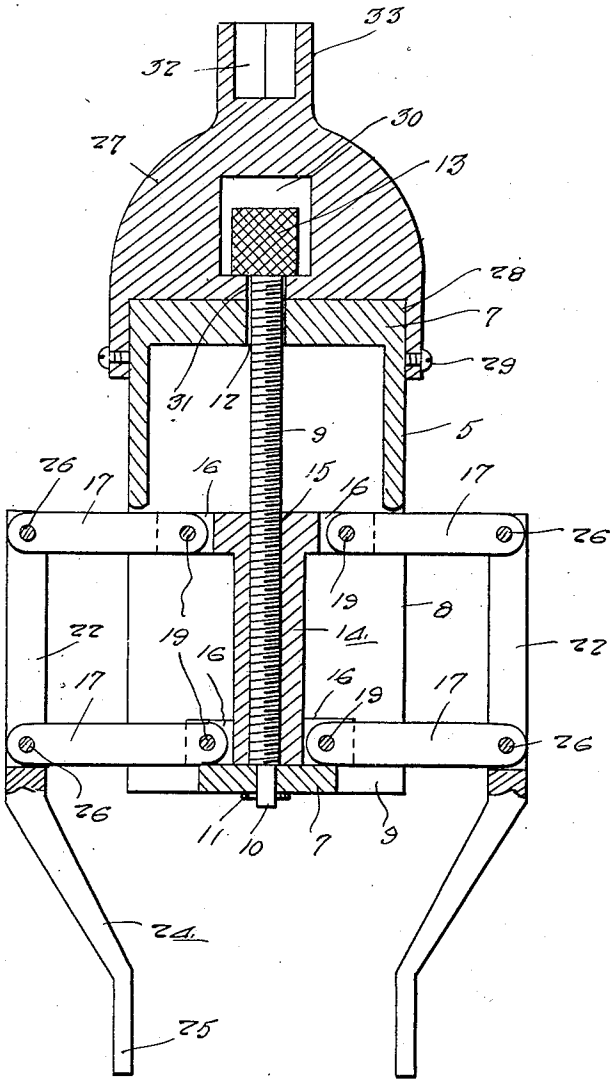


Fig. 2.

Fig. 3.

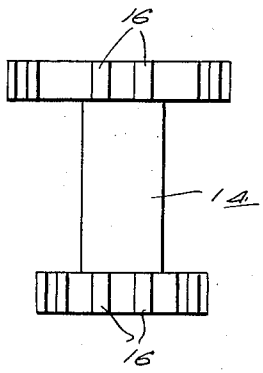
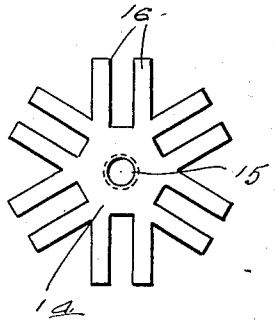


Fig. 4.



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ADJUSTABLE SEMISOCKET WRENCH

Application filed June 12, 1929. Serial No. 370,354.

This invention relates to wrenches and has more particular reference to an adjustable semi-socket wrench, the primary object of the invention being to provide a wrench of the type mentioned which is simple in construction, consists of but relatively few parts, thus permitting ease of assembly and disassembly, strong, durable, thoroughly practical and reliable in use, and otherwise well adapted for the purpose designed.

Another object of this invention is to provide a wrench of the character mentioned comprising a casing having a plurality of gripping fingers pivotally associated therewith together with means in the casing for moving the fingers toward or away from one another, the fingers at their extremities converging inwardly toward one another and cooperating to form somewhat of a socket formation for the reception of a bolt head or the like.

Other objects and advantages of the invention will become apparent during a study of the following description taken in connection with the accompanying drawings, wherein:

Figure 1 is a side elevation of a wrench constructed in accordance with this invention.

Figure 2 is a vertical sectional view taken therethrough.

Figure 3 is a side elevation of a core embodying a part of this invention.

Figure 4 is a top plan view of the core.

Figure 5 is a front elevation of one of the gripping fingers.

Figure 6 is a side elevation of a gripping finger.

Figure 7 is a connecting rod adapted for operatively connecting the fingers with the core.

With reference more in detail to the drawings it will be seen that the reference character 5 designates generally a cylindrical casing of hollow construction and closed at its ends as at 7. On the peripheral wall of the casing there is provided a plurality of spaced elongated vertically extending slots 8. Communicating with the slots there is provided horizontal slots 9 extending outwardly from the center of the bottom wall and communicating with the slots 8 as shown to advantage in Figure 2. A vertically disposed threaded shank 9 extends centrally through the casing 5.

One end of said shrank is provided with the reduced extremity 10 extending through a suitably formed opening in the bottom wall 7 and exteriorly of the casing the cotter pin 11 is passed through the reduced portion 10 for holding the shank 9 suitably mounted in the casing. At its opposite end, the shank 9 extends through a suitable opening 12 formed in the top wall 7 of the casing, the shank at said upper end being provided with a knurled finger grip 13. A core 14 which acts somewhat in the nature of a hub is provided with an internally threaded bore 15, extending therethrough. The threaded shank 9 is threadedly received through the bore so that as is obvious during the operation of the shank 9 through the finger grip 13, a sliding movement of the core 14 thereon and within the casing will result. The manner in which the core 14 is prevented from revolving about the shank 9 will be hereinafter more fully set forth. At its opposite end, the core or hub 14 is provided with a plurality of arms or extensions 16, said arms or extensions 16 being arranged in pairs as shown to advantage in Figure 4.

Bars or rods 17, said bars being in the nature of links and provided at opposite ends with suitable openings 18, have one end thereof disposed between the projections or arms 16 of the respective pairs and are pivotally mounted therein through the medium of a pivot pin 19, passing through said arm and the adjacent opening 18 formed in the bar. The bars 17 as is obvious from a study of Figure 2 are adapted to extend outwardly of the casing 5 and are operable in the respective slots 8 formed in the casing. Gripping fingers 20 are bifurcated adjacent one end as at 21 to provide the spaced parallel extensions 22, each of said extensions being provided at opposite ends with suitable openings 23. The fingers 20 are provided with inwardly extending offset portions 24, said offset portions tapering longitudinally as shown in Figure 5 and merging at their outer

ends into relatively flat gripping extensions 25. As shown to advantage in Figure 2, an upper and lower arm 17 have their outer extremities disposed within the furcation of the respective arms 20 to be pivotally associated with the arm through the medium of pivot pins 26, passing through the openings 23 formed in the said arm 20 and the aligned or registered openings 18 in the outer end of the connecting rod 17.

A substantially hemi-spherical or dome shaped cover 27 is provided with a suitable socket 28, into which the upper portion of the casing 5 is received. Said casing is held within the socket through the medium of set screws 29 passing through the skirt of the socket and engaging with the adjacent portion of the casing 5 as shown to advantage in Figure 2. Extending transversely through the dome shaped cap 27 from one side to the other is a substantially rectangular shaped opening 30. The upper end of the shank 9 extends through a suitable opening 31, formed in the cap and communicating with the opening 30 so that the knurled finger grip 13 is disposed within the said opening 30 and thus accessible for operating the shank. The dome shaped cap 27 is further provided with a suitable socket 32, whose other wall is provided with the flat surfaces 33, and whose inner wall is similarly formed for the reception of a suitably shaped handle member, whereby the wrench may be conveniently held in position, either through the medium of a handle received in the socket or a suitable jaw wrench, grasping the outer wall of the socket in an apparent manner.

In practical use, it will be seen that the turning of the shank 9 through the medium of the finger grip 13, the core 14 will be caused to move axially of the shank and in an upward direction when the shank is turned in an appropriate direction, thus bringing the upper connecting members 17 into engagement with the adjacent portion of the walls of the casing 5, which of course will force the connecting members 17 downwardly upon their pivotal connection and the gripping fingers 20 inwardly toward one another, so that their gripping portions 25 will be in closely allied gripping relation forming somewhat of a socket for the reception of a bolt head or the like, in an obvious manner. To release the gripping fingers, the shank will be turned in an opposite direction, thus causing axial movement of the core or hub 14 in a downward direction, whereupon it will be seen that the lower connecting members 17 will abut the adjacent portion of the bottom wall 7 of the casing 5, thus forcing the members upwardly or into a substantially horizontal position with the result that the gripping portions 25 of the fingers are spread with respect to one another to permit release of the fingers from the head of the bolt or other connecting element upon which operation has just been completed.

From the foregoing then, it will be seen that I have provided a simple, yet economical, strong and practical and reliable wrench, which is capable of adjustment, thus permitting its use with work whose gripping area may vary, such as the head of small and large nuts or bolts as the case may be, said wrench being otherwise thoroughly capable of fulfilling and meeting the requirements of a wrench of this nature.

Even though I have herein shown and described the preferred embodiment of my invention and have set forth in detail certain structure elements thereof, it is to be understood that the same is susceptible to changes fully comprehended by the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. In a wrench of the class described, the combination of a cylindrical casing closed at its ends, a substantially dome-shaped cap for the casing, a threaded shank centrally arranged and extending longitudinally of the casing, said shank being fixed to the casing at one end thereof, the other end of said shank projecting beyond the casing at the adjacent end and extending inwardly of said cap, said last mentioned end of the shank being provided with a knurled finger grip, said casing being provided with an opening extending therethrough whereby access may be had to the finger grip, a core carried by and adapted for axial movement of the shank, a plurality of radially disposed gripping arms arranged exteriorly of the casing, means pivotally connecting said arms with said core, and means for moving said arms inwardly or away from one another during axial movement of the core upon said shank.

2. In a wrench of the class described, a casing, a cap for the casing, a threaded shank rotatably supported in the casing and extending into said cap, said shank being provided with a knurled finger grip located within the cap, said cap being provided with openings whereby to permit access to be had to the finger grip for operating the shank, a member operatively associated with the shank for slidable movement within the casing, said casing being provided with a plurality of circumferentially spaced slots, bars pivotally associated with said first mentioned member and adapted to extend outwardly of the casing through said slots, gripping fingers carried by the bars at the outer ends of the bars, said gripping fingers merging inwardly toward one another at one end of the casing, said fingers being provided at their adjacent extremities with cooperative gripping surfaces.

In testimony whereof I affix my signature.

WILLIAM S. BILLMYER, JR.