Nov. 30, 1926.

1,609,086

A. HURSCHMAN

RATCHET WRENCH

Filed Sept. 8, 1925

Fig. 1.

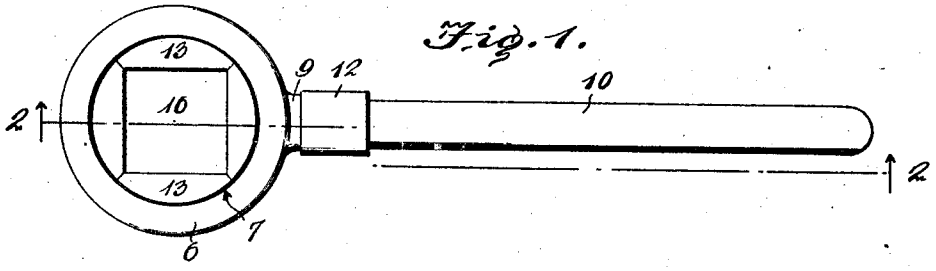


Fig. 2.

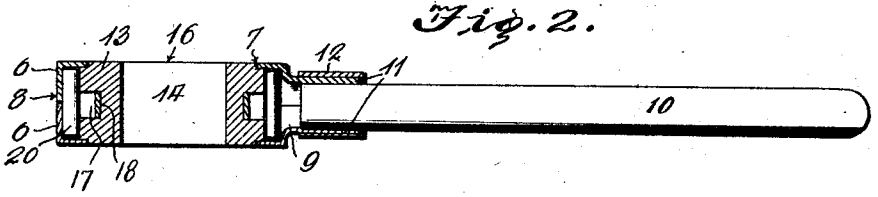


Fig. 3.

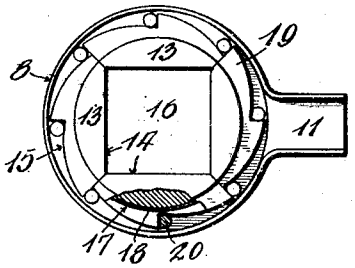
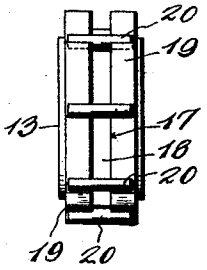


Fig. 4.



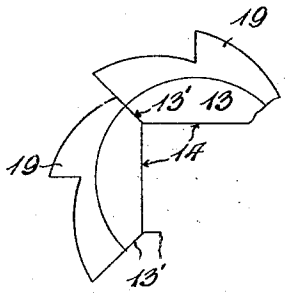


Fig. 5.

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UNITED STATES PATENT OFFICE.

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RATCHET WRENCH.

Application filed September 8, 1925. Serial No. 55,081.

My invention relates to ratchet wrenches, the primary object being to provide a structure which may be inexpensively built up from stamped sheet metal parts to a great extent, and having gripping jaws so relatively arranged as to exert an unusual degree of pressure on the member being turned to prevent slipping.

Other objects will be in part obvious and in part pointed out in the following descriptive matter which is supplemented by the accompanying drawings wherein:—

Fig. 1 is a plan view;

Fig. 2 is a sectional view taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a detail plan view of the head portion with parts broken away;

Fig. 4 is an edge elevation of the ratchet segments; and

Fig. 5 is a detail showing the beveled contacting corners of the segments.

The head comprises a pair of stamped sheet-metal rings or collars 6, each substantially L-shaped in cross-section and adapted to be brazed, welded or otherwise connected together to form a circular housing having a transverse opening 7. Through this structure an annular wall 8 is formed, and extending radially from the wall is a socket 9 designed to receive the inner end of a tubular handle 10. This socket is formed as a result of integrally stamping a radial semicircular portion 11 on each collar 6. Preferably the handle 10 is securely yet removably held in place by a friction locking ring 12. Obviously other means may be employed to retain the handle in place, and if preferred the aforementioned collars may be telescoped one within the other instead of having their edges butt welded.

The head or socket comprises a plurality of segments 13, preferably though not necessarily four in number. Each segment has one flat face 14 and a curved or arcuate face 15 opposite the flat one so that when a set of segments is assembled the inner faces will form a square or the like opening 16 for the reception of a nut or bolt head. The outer face 15 of each segment 13 is provided with a central groove or way 17 which forms a portion of an annular channel for the reception of a spring retaining band 18. This band 18 separably connects the segments 13 and permits relative sliding of the segments to effectively grip a member to be turned. This action is permitted due to the bevelling of the contacting corners 13′ of the segments and the yielding of the spring band 18.

At each side of the annular channel is formed a set of ratchet teeth 19 which, when the assembled segments are placed in the housing, are spaced slightly from the annular wall 8. In the recesses between the teeth, and spanning the annular channel is a set of clutch members 20 which may be in the form of rollers as illustrated or of any other preferred cross-sectional shape.

With a wrench embodying the details described, a bolt head or nut is inserted in the opening 16 and with movement of the handle in one direction it is clear that the clutch members will be moved into contact with the annular wall thereby locking the segments and housing together to effect turning of the bolt head or nut. A reverse movement of the handle releases the clutch members and allows the housing to turn independently of the segments. As soon as a turning action is imparted to the segments they shift slightly to bind tightly against the nut or bolt head, as is quite apparent to those familiar with tools of this character.

Excellent results have been obtained from the details set forth and they are preferably followed, but it is understood that such changes in minor details as fall within the scope of the appended claim I consider within the spirit of my invention.

I claim:—

A ratchet wrench comprising an annular housing, a segmental socket therein having a channel around the same and ratchet teeth on opposite sides of said channel, rollers extending across the channel and confined between said teeth and the housing, and a spring band extending around the segments in said channel.

In testimony whereof, I do affix my signature.

AUGUST HURSCHMAN.