C. H. GUNN.

WRENCH.

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1,320,137. Patented Oct. 28, 1919.

Fig. 1

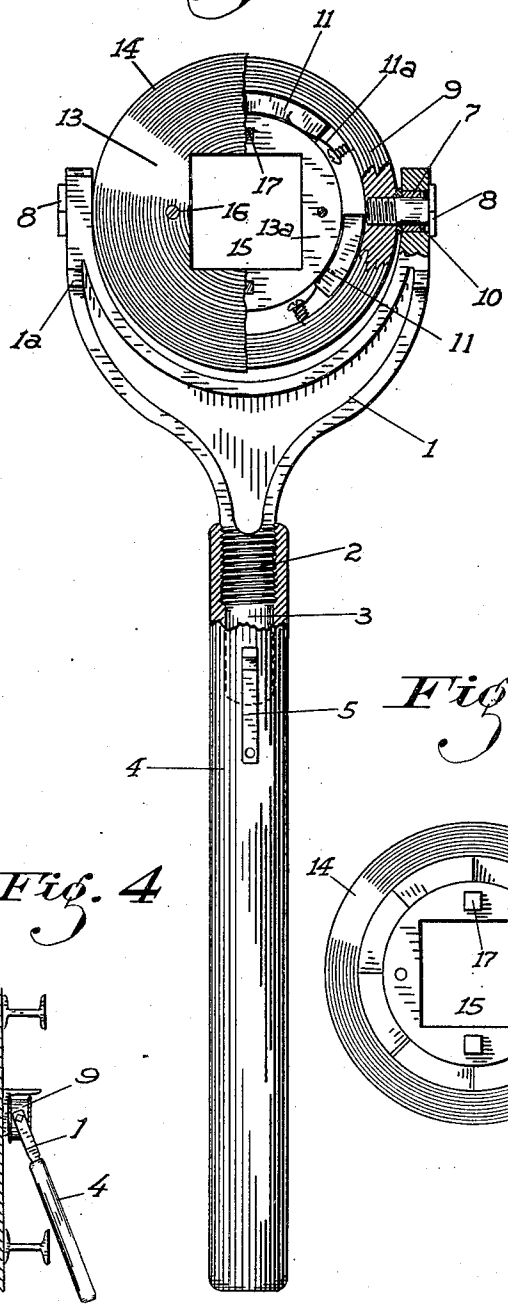


Fig. 2

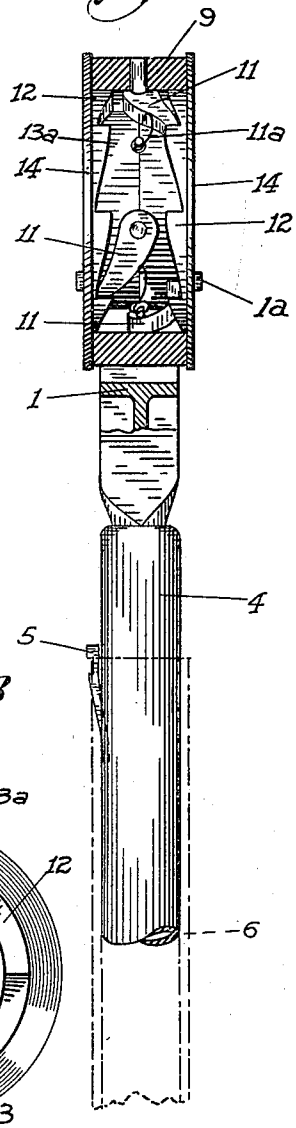


Fig. 3

Fig. 4

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WRENCH.

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To all whom it may concern:

Be it known that I, CHARLES H. GUNN, a citizen of the United States of America, residing at Emeryville, in the county of Alameda, State of California, have invented certain new and useful Improvements in Wrenches; and I do declare the following to be a clear, full, and exact description of the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this application.

This invention relates to improvements in wrenches, and particularly to a type of socket wrench to be used where there are a great many nuts of the same size to be tightened, and many of which are in out-of-the-way places and at an angle to the surrounding surfaces, being particularly adapted to be used on ships under construction, in which the above conditions are strikingly evident.

The principal object of the invention is to provide a wrench with which the nut may be tightened up on its bolt without removing the wrench from contact with the nut while so doing and in which the handle may be held at an angle convenient to the workman regardless of the angle at which the bolt is set relative to the workman or the surfaces surrounding the bolt and nut.

Another object has been to produce a form of ratchet wrench which may be used as a right or left hand wrench merely by turning the wrench over without the necessity of shifting any pawls from the outside or locking any one part against the other.

A still further object of the invention is to make such a wrench with all its working parts concealed so that no dirt can clog the same, and yet construct it so that the various parts may be easily and quickly disassembled if desired.

I have also produced such a wrench as will be simple of construction and easy of operation and yet extremely efficient for the purposes for which it is designed.

These objects, I accomplish by means of such structure and relative arrangement of the parts as will fully appear by a perusal of the following specification and claims.

On the drawings, similar characters of reference indicate corresponding parts in the several views.

Figure 1 is a side elevation of my improved wrench, partly broken away.

Fig. 2 is an end elevation, partly in section.

Fig. 3 is a detached view of a combined ratchet and socket member.

Fig. 4 is a view showing the wrench being used on a nut situated between two projections.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 designates a forked member provided with a threaded lower end 2 and a plain extension 3 therebeyond, which is adapted to receive a tapped and hollow handle member 4.

This handle is provided with a spring clip 5 near its upper end, which is adapted to catch and hold the end of a pipe 6 which may be slipped over the handle 4 to lengthen the same if it is desired to gain greater leverage for the wrench. In the upper end of the fork of the member 1, and diametrically opposed, are bushings 7 slidably mounted therein, in which bushings turn cap screws 8 threaded into a ring 9. The bushings 7 terminate short of the heads of the cap screws, there being spring washers 10 interposed in the space thus formed, which washers force the bushings constantly against the ring 9. By the use of these washers any wear of the bushings 7 against the ring 9 is always taken up, and when the ring is turned at an angle to the handle for the purpose of turning up any out of the way nuts, the handle will maintain its angle relative to the ring on account of the vise like pressure of the bushings against the ring.

Mounted to the inner face of the ring are a plurality of pawls 11 curved to conform to the periphery of the ring 9 and all pointing outwardly, but one-half of the number being positioned in staggered relation to the remaining half. Each set of pawls is adapted to engage with ratchets 12 formed integral with a socket member 13, and projecting inwardly from a knurled flange 14 thereon which extends over the outer edge of the ring 9, the outer edges of the ratchets being circular to form a working fit in the ring 9.

Lugs 1^a project outwardly from both sides of the forks of the member 1, and extend somewhat beyond the faces of the members 13, in order that the wrench may be held against the structure being bolted, and the member 13 be spaced therefrom so that the nut may be tightened by hand by

turning on the knurled flange 14 as far as it is possible to do so.

The central portion 13ª of this member 13 projects beyond the ratchet and is cored out to form a square or hexagonal orifice 15 to fit a nut or bolt head of the size and shape desired.

There are two of the members 13, each being half the width of the ring inside their flanges, both halves being adapted to be secured together by screws 16, and one of them having lugs 17 projecting from its inner face, which lugs seat in orifices suitably positioned in the adjacent face of the other one of the members 13.

The ratchets on both of said members point in the same direction, the pawls being held in contact with the ratchets by means of springs 11ª pressing thereagainst. The staggered position of these pawls distributes the strain equally on both sides of the socket members 13, no matter which side should be in contact with a nut, thus eliminating any tendency of the screws 16 and lugs 17 to twist off.

When using this wrench, it is only necessary to put the socket over the nut and pull on the handle until the limit of operating clearance of the handle has been reached, then push on the handle till the starting point has been reached, then pull again, and so on. This method of course applies to a right-hand threaded bolt. If a left-hand bolt is encountered, or it is desired to loosen any nut already tightened, it is evident that it is only necessary to turn the wrench over and place the socket over the nut with the other member 13 nearest the bolt. In order to make it easier for the user to know which side to use at a glance, without the necessity of trying it out, I would mark each outer face of the members 13 with the words "Right" and "Left," respectively, with an arrow to indicate the direction of motion of the handle.

If the nuts to be placed should be on a lower plane than the surrounding surfaces, as for instance between two ribs on a ship as illustrated in Fig. 4, or angled to such surfaces, the handle 4 may be angled relative to the bolt and the socket members 13, as said handle is swivelly mounted to the ring 9 and the socket members therein by means of the screws 8. This, as will be seen, permits of a quick and easy tightening of any bolt, no matter in what position it may be relative to the structure of which it forms a part, or to the workman, the angle at which the handle is set being normally maintained by the frictional pressure of the bushings 7 against the ring 9. If desired, a set of members 13 having different sized orifices therein may be provided with the wrench, as it is a simple matter to remove any pair of said members and insert another pair.

Thus, from the foregoing description it will readily be seen that I have produced such a device as substantially fulfils the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:—

1. A wrench comprising a forked handle, a ring pivotally mounted between the forks, a socket member turnable in the ring and having flanges extending over both edges of the ring, the socket member having ratchets between the flanges formed integral therewith, and spring pressed pawls in the ring adapted to engage the ratchets, the ratchets and pawls being thus prevented from contact with outside and destructive forces.

2. A wrench comprising a forked handle, a ring pivotally mounted to the handle between the forks thereof, a plurality of pawls mounted in the ring, springs bearing against the pawls, one-half the number of such pawls being in staggered relation to the other half, and a pair of socket members secured together and turnably mounted in the ring, each of the members having ratchets for engagement with its respective set of pawls, and each having a flange extending over the outer faces of the ring, whereby the pawl and ratchet mechanisms are inclosed and dirt and dust prevented from contact therewith.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES H. GUNN.

Witnesses:
VERADINE WARNER,
BERNARD PRUAT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."