No. 897,055. PATENTED AUG. 25, 1908.

R. F. BOWERS.

WRENCH.

APPLICATION FILED NOV. 29, 1907.

2 SHEETS—SHEET 1.

Fig. 2.

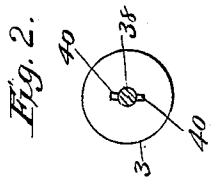


Fig. 1.

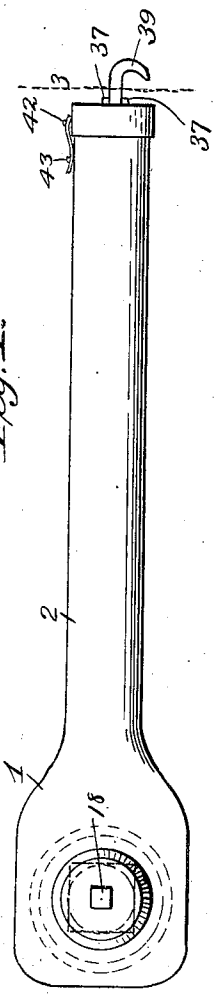


Fig. 3.

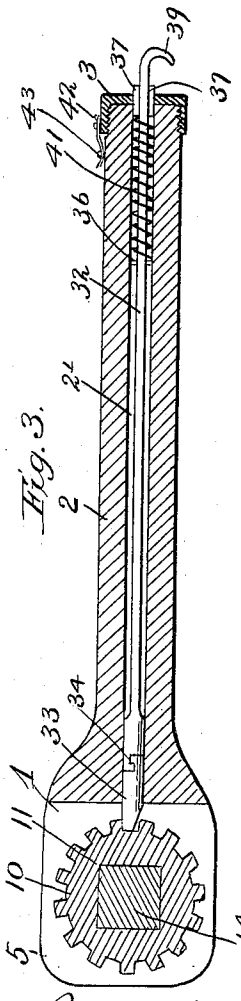
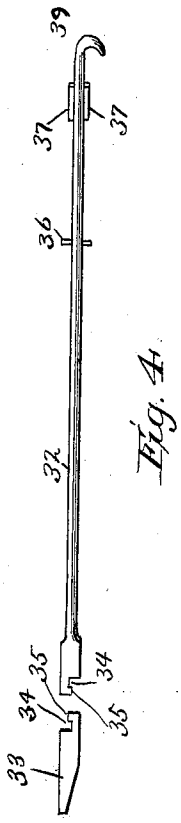


Fig. 4.



Witnesses

F. L. Durand

B. C. Trott

Inventor

Robert F. Bowers

By Edmund Dwight

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

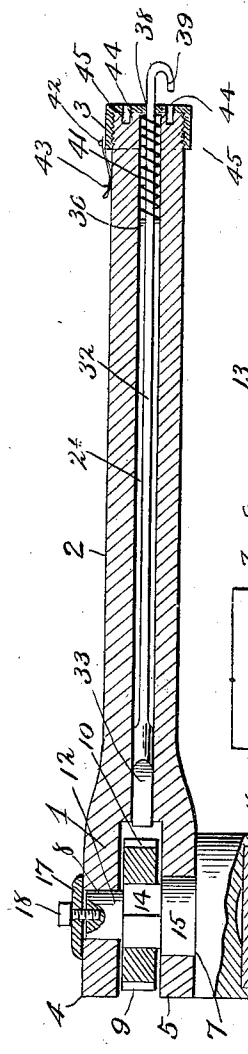


Fig. 5.

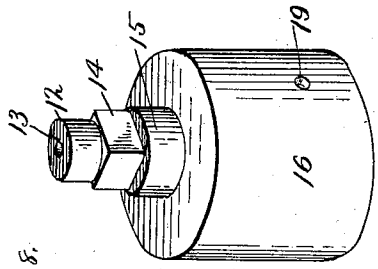


Fig. 6.

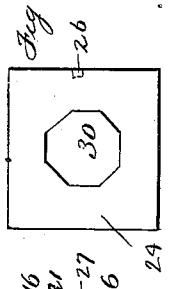


Fig. 8.

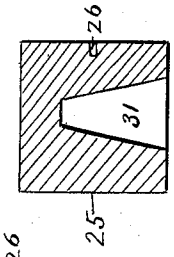


Fig. 9.

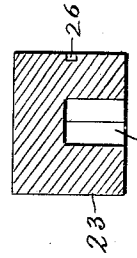


Fig. 7.

Witnesses

H. L. Orrand.

R. C. Trott.

Inventor

Robert F. Bowers

By Edmund S. Duffie

Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT F. BOWERS, OF FORDYCE, ARKANSAS.

WRENCH.

No. 897,055. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed November 29, 1907. Serial No. 404,281.

To all whom it may concern:

Be it known that I, ROBERT F. BOWERS, a citizen of the United States, residing at Fordyce, in the county of Dallas and State of Arkansas, have invented certain new and useful Improvements in Ratchet-Wrenches, of which the following is a specification.

My invention has relation to improvements in wrenches, and is a ratchet wrench, so constructed that it may be adjusted to operate nuts or bit-shanks, or the like, of any size or shape, and turn them either backward or forward. This is accomplished by using a reversible plunger and pawl, and having a housing secured to the ratchet-wheel, adapted to be filled by plugs having various shaped openings.

In the accompanying drawings, Figure 1, is a perspective view of my invention. Fig. 2, is a top plan view of one of the caps. Fig. 3, is a longitudinal sectional view of my invention. Fig. 4, is a perspective view of the plunger and pawl. Fig. 5, is a view of my wrench, partly in perspective and partly in section, the free end of the handle and the cap being a modification of the handle and cap shown in Figs. 1 and 3. Fig. 6, is a perspective view of the housing, the larger part of the neck, the square that fits in the ratchet-wheel, and the small part of the neck. Fig. 7, is a vertical sectional view of one of the additional plugs, adapted to fit a square nut. Fig. 8, is a bottom plan view of another plug, adapted to fit a hexagon shaped nut. Fig. 9, is a vertical sectional view of a plug adapted to fit the shank of a boring bit.

Similar numerals refer to similar parts throughout the several views.

My invention is described as follows:—

Referring more particularly to the drawings, the numeral 1, represents the head of my invention; 2, represents the handle and 3, the cap. The head is bifurcated, leaving two arms 4 and 5. These arms are provided with perforations 7 and 8, respectively, the lower perforation 7, being considerably larger than the upper perforation 8. Adapted to fit in the space 9, between the said upper and lower arms, is a ratchet-wheel 10, having in its center a square opening 11. The small circular part 12, of the neck 13, fits in the upper perforation 8, the square part 14, of the neck fits in the square opening 11, of said ratchet-wheel, and the large circular part 15, of the neck fits in the lower perforation 7. The housing 16, is integral with the lower face of the large part 15, of the neck; said neck 13, is secured in said openings by means of a washer 17, and screw 18. Said housing 16, is provided, through its wall, with a perforation 19. There may be two or more of such perforations if desired. The opening 21, in said housing, is square, and there are plugs 22, 23, 24, and 25, respectively, adapted to fit in the square opening in said housing, and each plug is provided with a threaded hole 26, concentric with the said perforation 19, and these plugs are secured in said housing by means of a screw bolt 27. The openings 28, 29, 30 and 31, respectively, in these plugs, may be any size or shape; that is, when I desire to operate a large square nut, I use a plug with a large square opening; when I use a smaller square nut, a plug with a smaller square opening is used, and when I desire to operate a hexagon shaped nut, I use a plug with a hexagon shaped opening. When I wish to operate a boring bit, I use a plug with a boring bit opening.

I claim the right to make as many plugs with as many different shaped openings as I may desire. Thus it will be seen that by alternating the plugs I may screw or unscrew any size or shaped nut, and may rotate any tool that may be adapted to fit any opening in any plug adapted to fit my housing.

The handle 2, is provided its entire length with a longitudinal perforation 2^1; fitting in said longitudinal perforation, and adapted to turn therein, is a plunger 32. Said plunger has secured to its lower end a pawl 33, by means of corresponding recesses 34, and corresponding projections 35. (See Fig. 4.) Said plunger and pawl fit loosely, but yet so snugly in said handle, that the two parts are held together by said recesses and projections. The purpose of having the pawl detachable, is that when it wears out, or becomes damaged, it may be replaced by a new one. Said plunger has, some little distance from its outer end, a cross-rod, or stop-plate 36. Said plunger, near its outer end, is provided with two wings 37, immediately opposite each other. The outer end of said plunger, which passes through a perforation 38, in the cap 3, is bent into a crook 39, so that its extreme end may be used to turn the pawl to the right or left. The wings 37, work up and down through slots 40, which extend outwardly from the perforation 38, in the cap 3. Working around the crook end of said plunger is a coiled spring 41, its lower

end resting against said cross-rod, or stop plate, and its upper end against the inner face of the cap 3. When I desire to turn the ratchet-wheel to the right, I pull said plunger outwardly until the said wings 37, escape from the slots 40; I then turn the crook to the right, and slip the said wings down through the slots 40. To keep the said threaded cap from turning on the threaded end of the handle, I provide it with a lock-spring 42, the free end of which is locked over a pin 43, secured in the handle.

The drawing, Fig. 5, shows a modification in which the cap 3, instead of being provided with slots 40, is provided with perforations 44, one immediately opposite the other, and the crook 39, is turned down so sharply that it may enter either one of the perforations 44, and also enter corresponding holes 45, in the outer end of the handle 2. The coiled-spring is for the purpose of keeping the pawl down between the teeth of the ratchet-wheel. Now, it will be seen that I may operate the ratchet-wheel and housing and any plugs that said housing may contain, either to the right or to the left, and the change of direction may be made by simply changing the crook either to the right or left.

Although I have specifically described the combination, construction and arrangement of the several parts of my invention I do not confine myself particularly to such specific combination, construction and arrangement, as I claim the right to make such changes and modification therein as may clearly fall within the scope of my invention, and which may be resorted to without departing from the spirit, or sacrificing any of my patentable rights therein.

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

In a ratchet wrench, substantially as shown, a perforated handle, having on its free end a cap 3, and in the center of said cap a perforation 38; a pawl 33, working in the perforation of said handle, and a plunger 32, secured to said pawl, and working in said perforation, its free end extending up through the perforation in said cap, and formed into a crook, said crook, plunger and pawl adapted to be turned to the right or left and secured in such position, substantially as shown and described and for the purposes set forth.

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

ROBERT F. BOWERS.

Witnesses:

HENRY C. TOMLINSON,

GEO. R. JORDAN.