J. E. TRUBEY.

RATCHET WRENCH.

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1,195,294.

Patented Aug. 22, 1916.

Fig. 1.

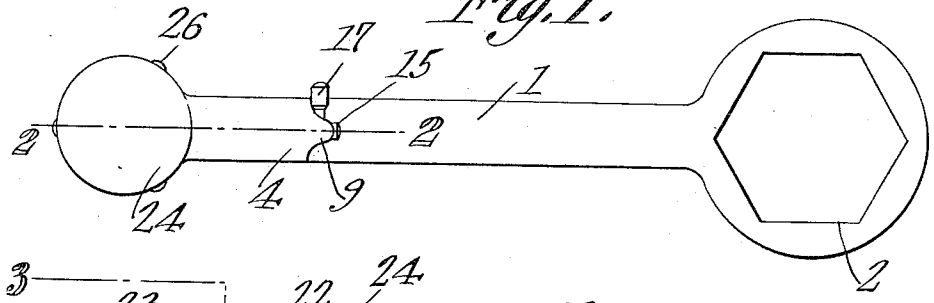



Fig. 2

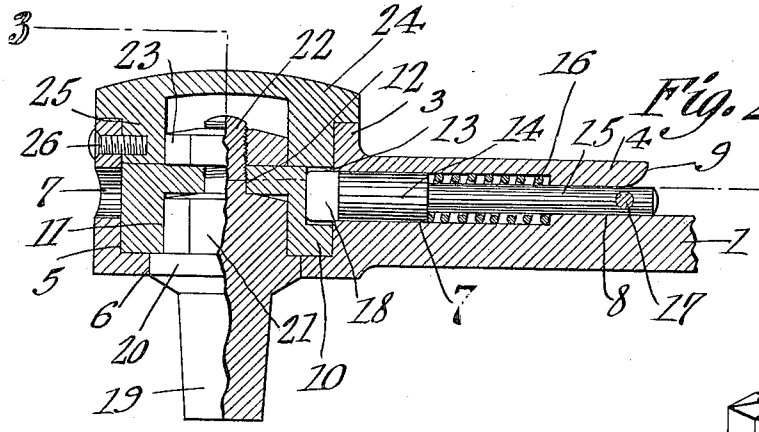



Fig. 4.

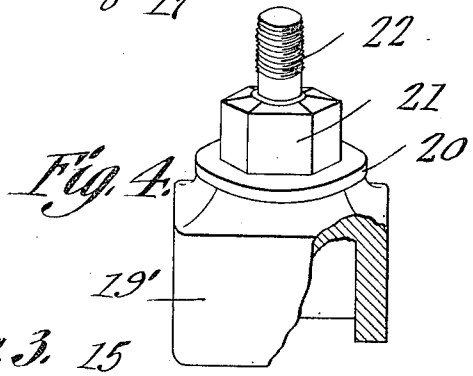
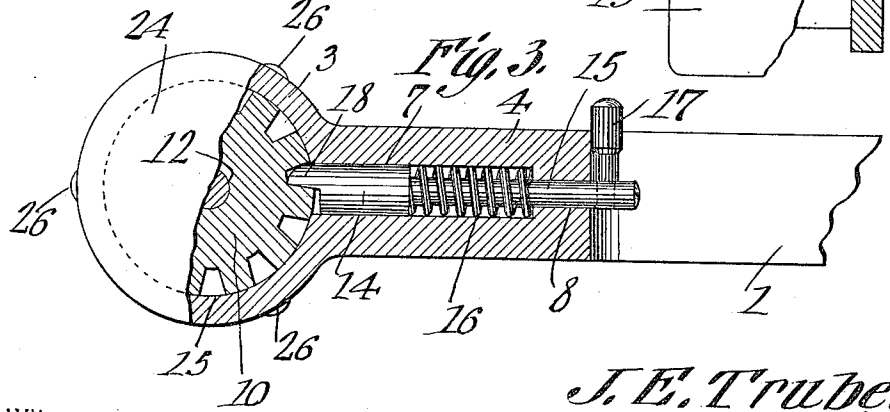



Fig. 3.




Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN E. TRUBEY, OF FORSYTH, MONTANA.

## RATCHET-WRENCH.

1,195,294. Specification of Letters Patent. Patented Aug. 22, 1916.

Application filed March 3, 1916. Serial No. 81,899.

*To all whom it may concern:*

Be it known that I, JOHN E. TRUBEY, a citizen of the United States, residing at Forsyth, in the county of Rosebud and State of Montana, have invented a new and useful Ratchet-Wrench, of which the following is a specification.

The present invention appertains to ratchet wrenches, and aims to provide a novel and improved ratchet wrench adapted especially for use in rotating the grease plugs of locomotive bearings, although the wrench can be used for various other purposes.

The grease plugs of locomotive bearings must be adjusted frequently, to inject the grease or lubricant into the bearings, and with wrenches now used, this involves some time and trouble.

It is the object of the invention to provide a ratchet wrench whereby the grease plugs can be readily rotated, although the wrench can be used for divers other purposes for facilitating the rotation of a member in either direction.

Another object of the invention is the provision of a ratchet wrench wherein various socket and plug members can be used interchangeably to accommodate various grease plugs and other objects which are to be operated upon by the wrench, the wrench being reversible in order that it can be used for rotating an object in either direction through the medium of a ratchet device.

A further object of the invention is the provision of a ratchet wrench comprising a novel assemblage of the component elements, to enhance the utility and efficiency of the device.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:

Figure 1 is a plan view of the improved wrench. Fig. 2 is an enlarged section taken on the line 2—2 of Fig. 1, portions being shown in elevation. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a perspective view of a socket member which can be used upon the wrench, a portion thereof being broken away.

In carrying out the invention, there is provided a handle 1 provided at one end with a socket portion 2 for engaging the jam nuts of a grease plug, whereby said nuts can be loosened and tightened conveniently. At the other end, the handle 1 is formed with an integral head 3, and said handle has a thickened or enlarged portion 4 extending from the head 3 for a short distance. The head 3 is provided with a concentric socket 5, whereby said head is in the form of a socket member or cup, provided at the bottom with an opening or aperture 6 of smaller diameter than the socket 5. The handle 1 and its head 3 are provided with a bore 7 extending longitudinally of the handle and diametrically of the socket 5, so as to intersect said socket, part of the bore 7 being within the enlargement 4, and the bore 7 has a reduced portion 8 opening through the end of the enlargement 4. The end of the enlargement 4 is provided with an intermediate rounded lug 9 projecting from the reduced portion or end 8 of the bore 7.

Mounted for rotation within the socket 5 is a relatively thick ratchet wheel 10, seated upon the bottom of the socket 5, and provided with a non-circular or polygonal socket 11 registering with and of smaller area than the opening 6. The ratchet wheel 10 also has a reduced opening or aperture 12, arranged centrally of the socket 11, and extending from said socket to the opposite side of the wheel 10. The periphery of the wheel 10 is provided with ratchet teeth 13 which are preferably spaced from that side of the wheel 10 having the socket 11.

A cylindrical pawl or dog 14 is mounted for sliding and rotary movement within the bore 7 at the handle side of the socket 5, and has a reduced stem 15 projecting

through the reduced portion or end 8 of the bore 7. A coiled wire expansion spring 16 surrounds the stem 15 within the bore 7 and is confined between the pawl 14 and the shoulder formed by the reduced portion 8 of the bore 7, to normally move the pawl 14 into engagement with the ratchet wheel. The protruding end of the stem 15 has secured thereto an angularly extending finger piece 17. The end of the pawl 14 has a cam-shaped tooth 18 to engage the teeth of the ratchet wheel, as seen in Fig. 3.

In Fig. 2, a tapered plug member 19 is illustrated as being applied to the ratchet wheel 10, said member 19 having at its basal portion a circular enlargement 20 fitting snugly within the opening 6, and said enlargement 20 has a non-circular or polygonal boss 21 fitted snugly within the socket 11 of the ratchet wheel. The boss 21 is provided with a stem 22 projecting through the aperture 12, and upon which is threaded a retaining nut 23 seating against that side of the ratchet wheel remote from the member 19. This holds the member 19 assembled with the ratchet wheel, and when the nut is unscrewed, said member 19 can be removed readily. Members 19 of various sizes can be used, so long as the portions 20, 21 and 22 thereof are of the same dimensions, so that said members can be used interchangeably for use upon various grease plugs or other parts.

The ratchet wheel is held within the socket 5 and the nut 23 is also concealed by means of a cap 24 fitted within the mouth of the socket 5, and having an outstanding annular flange 25 seating against the head or socket member 3. The cap 24 is held removably in place by means of retaining screws 26 engaged through the walls of the head 3 and taking into the apron or rim of the cap 24. These screws 26 can be removed so that the cap 24 can be detached, which will enable the nut 23 to be unscrewed, and the other parts separated, for purpose of repair, cleaning or replacement.

In assembling the parts, the pawl 14 is first moved into the bore 7 through the socket 5, with the finger piece 17 removed, and the spring 16 upon the stem 15. When the pawl 14 is in place, the finger piece 17 is attached to the stem 15, and the pawl is retracted so that the ratchet wheel 10 can be slipped into the socket 5. The member 19 is then applied and secured in place by means of the nut 23, and finally the cap 24 can be applied to the head 3 to conceal the parts. The finger piece 17 is normally at one side of the lug 9, to hold the tooth 18 in such a position that when the handle 1 is oscillated with the plug member 19 applied to the grease plug or other part to be rotated, the ratchet wheel 10 and member 19 will be rotated in one direction step-by-step, it not being necessary to oscillate the handle 1 a great amount. Thus, when the member 19 is applied to the grease plug of a locomotive bearing, the handle 1 can be oscillated in small quarters for tightening or loosening the plug. When the handle 1 is swung in one direction, the tooth 18 catches hold of one of the teeth of the ratchet wheel and moves the ratchet wheel with the handle, and when the handle is reversed, the tooth 18 is forced away from the ratchet wheel, thus moving the pawl 14 against the tension of the spring 16, the pawl being returned into engagement with the teeth of the ratchet wheel under the influence of said spring. To reverse the operation of the ratchet device, the finger piece 17 is pulled away from the ratchet wheel, to retract the pawl, and the finger piece 17 is then swung toward the opposite side past the lug 9, whereby the position of the tooth 18 is reversed, thus causing the ratchet wheel to rotate in the opposite direction, when the handle is oscillated. The lug 9 holds the finger piece 17 at either side, and as soon as the finger piece 17 is moved past the free end of the lug 9, the finger piece will be moved into place by spring tension, since the sides of the lug 9 are of cam-shape.

Fig. 4 illustrates a socket member 19′ which can be used interchangeably with the plug member 19, said socket member 19′ having the circular portion 20, boss 21 and stem 22, the same as the plug member 19. Various sizes of socket members 19′ can be used for various locomotive grease plugs, nuts or the like.

Having thus described the invention, what is claimed as new is:

1. A ratchet wrench embodying a handle having a socket and an opening at the bottom of said socket, a cap attached and closing said socket, a ratchet wheel rotatable in said socket between the bottom thereof and the cap, a pawl carried by the handle and coöperable with said ratchet wheel, a member within said opening having a portion extending through the ratchet wheel, and a retaining member engaged with said portion to hold it assembled with the ratchet wheel and concealed by said cap.

2. A ratchet wrench embodying a handle having a socket and an opening at the bottom of said socket, a ratchet wheel rotatable in said socket and having a non-circular socket adjacent said opening and an aperture extending from the non-circular socket to the opposite side of the ratchet wheel, a pawl carried by the handle coöperable with the ratchet wheel, a member having a non-circular boss fitted in said non-circular

socket, said boss having a stem projecting through said aperture, a retaining member engaging said stem and seating against that side of the ratchet wheel opposite the socket thereof, and a cap closing the first mentioned socket and concealing said retaining member.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOHN E. TRUBEY.

Witnesses:

GEORGE A. HORKAN,

L. B. WADDINGHAM.

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