

UNITED STATES PATENT OFFICE.

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 754,012, dated March 8, 1904.

Application filed February 25, 1903. Serial No. 145,015. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. REAMS, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Wrenches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of devices known as "clutch-head" wrenches and devices in which parts are caused to rotate on their axes, and has for its special object to provide a very simple but substantial construction wherein the movement imparted will be reversible; and it has for its further object to provide means for the pivotal movement of the pawl or handle without the use of the usual pivot-pin. To accomplish these objects, I employ the novel construction fully and clearly illustrated and described in the annexed specification and drawings.

In the drawings, Figure 1 is a plan view of my improved device. Fig. 2 is a similar view with one side of the case removed. Fig. 3 is a side or edge view of my device. Fig. 4 is a transverse sectional view. Fig. 5 is a perspective view of the ratchet portion and a portion of the case. Fig. 6 is a perspective view of the pawl. Fig. 7 is a perspective view of the shifting ring. Fig. 8 is a perspective view of the spring which I employ in connection with the pawl.

In the several views like letters of reference represent similar parts.

A in the drawings represents a circular ratchet portion of suitable size provided with the ratchet-teeth a a and the circular grooves a' a' . This ratchet portion may be attached to a tool to operate the same or may be provided, as shown in this instance, with the usual opening a^2 , adapted to receive the head of a bolt or nut.

B B, which are secured together by any suitable means b b , comprise the case of suitable shape and size, recessed internally to receive the circular ratchet portion A in such a manner that projections b' b' on said case B B engage the grooves a' a' , respectively, so as

to retain said ratchet portion in position and allow it to be rotated back and forth. Each of the sides B of the casing are cut away in the usual manner at b^2 b^2 and are provided with the depressions b^3 b^3 , respectively, the said recessed portions comprising an inwardly-converging portion b^4 and socket portions b^5 b^5 of suitable shape and size.

C is the actuating reversible pawl for turning the ratchet and may form a part of the handle, as shown in the drawings, although this is not essential, as it may be so connected with the handle in other ways that it may be operated thereby. The head of this pawl is of considerable lateral extension and is provided on each side with projections c c , which are adapted to engage the sockets b^5 b^5 . The sides of the outwardly-extending portion of the pawl are parallel, so that when placed in position in the inwardly-converging opening b^4 b^4 the outward end is capable of a limited amount of lateral movement. The upper ends of said projections c c are each provided with a suitable number of teeth c' c' , two in this case being shown, adapted to engage with the teeth on said circular ratchet portion A. The outwardly-extending portion of the pawl C, which is preferably flat, is provided with a cylindrical portion c^2 at a suitable distance from said case B B. The cylindrical portion c^2 is provided with an ordinary friction-spring c^3 , adapted to press against a suitable shifting collar C' , loosely mounted on said cylindrical portion c^2 , and which is retained in position by the pin c^4 . Said collar C' is of suitable width as to not interfere with the motion of the handle C, but is provided with a suitable projection C^2 of suitable size to prevent the movement of the handle in one direction when placed under the proper side or edge of the case B B. C^3 C^3 are two suitable lugs or projections on said collar C' , adapted to come in contact with the pin c^4 to properly limit the movement of said shifting collar. D is a suitable spring, placed between the end of said pawl C and the teeth of said circular ratchet portion A to prevent undesirable engagement of the pawl with said ratchet portion; but this is not essential.

From the foregoing description the opera-

tion of my device is evident and is as follows: With this arrangement of the parts when the wrench has been placed on the nut or bolt to be turned the collar C' is shifted until the projection C² is under the proper side of the case B B. Thus when it is desirable to turn the nut or bolt to the right the projection C² is placed under the left-hand side of the case B B, so that as the handle is moved to the right the left-hand projection c of the pawl acts as a pivot in socket b⁵ of the case, allowing the teeth on the right-hand side of the pawl C to engage with the teeth on said ratchet portion, and the ratchet can thereby be moved to the right. On reversing the movement of the handle the teeth are withdrawn from the ratchet and the casing is moved to the left, while the ratchet remains at rest. It is obvious that by turning the shifting collar so that the projection C² of the shifting collar will engage the opposite side of the casing the operation of the wrench will be reversed.

It is to be noted that the projection C² on the shifting collar shall be of such height as to hold the projection c of the pawl-head on the side of the casing to which said projection C² of the shifting collar is turned so closely to its lowest position in its recess as to form a pivot for the pawl or pawl-head.

As before stated, the handle for operating the pawl may be an extension of the same or may be detachably or permanently connected therewith; but when the handle and pawl are in operative relation the pawl is incapable of any movement independently of the handle. It is also to be observed that the pawl has two pivotal points within the casing and that it is moved from one to the other to reverse the motion of the ratchet by the handle, the handle and pawl moving together to effect this change.

What I claim, and desire to secure by Letters Patent, is—

1. A device of the class described, comprising among its members, a ratchet, a casing in which the ratchet is mounted, a pawl having oppositely-disposed ratchet-engaging portions, mounted in said casing with a shifting pivotal connection between them, whereby differing movements of the pawl shifts the pivot of the pawl to cause the different ratchet-engaging portions to engage the ratchet, substantially as described.

2. A device of the class described, comprising among its members, the ratchet, the casing in which the ratchet is movably mounted,

the pawl and its operating-handle, said pawl having two pivotal points within said casing, and adapted to be shifted from one to the other to reverse the movement of the ratchet, substantially as described.

3. A device of the class described comprising among its members, the ratchet, the casing in which the ratchet is movably mounted, the pawl and its operating-handle, said pawl having two pivotal points within said casing adapted to be moved by the handle from one to the other to reverse the movement of the ratchet, substantially as described.

4. A device of the class described, comprising among its members, a ratchet, a pawl having opposite ratchet-engaging portions, and opposite pivotal portions, a casing in which the said ratchet and pawl are mounted having bearings to receive the pivotal portions of the pawl, substantially as described.

5. A device of the class described comprising among its members a ratchet, a casing in which said ratchet is mounted, a pawl having opposite ratchet-engaging portions, mounted in said casing with a shifting pivotal connection between them, whereby opposite movements of the pawl shifts the pivotal point of the pawl to bring the different ratchet-engaging portions into use and a spring to assist in maintaining the pawl in its chosen pivotal position, substantially as described.

6. A device of the class described, comprising among its members a ratchet, a casing in which the ratchet is mounted, a pawl having opposite ratchet-engaging portions, a handle connected with said pawl, whereby either of the ratchet-engaging portions of the pawl can be brought into contact with the ratchet by a movement of the handle, and means for holding one part of the pawl out of engagement, substantially as described.

7. A wrench of the class described, comprising a ratchet provided with an opening to receive a nut or bolt, a casing in which said ratchet is movably mounted, said casing provided with the socket and pivotal recesses, of a pawl having two pivotal portions loosely mounted in said casing and the shifting collar, substantially as described.

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

JOSEPH M. REAMS.

Witnesses:

HENRY LEATS,
H. B. THOMPSON.