(No Model.)

J. McC. PALMER.

WRENCH.

No. 558,304. Patented Apr. 14, 1896.

Fig. 1.

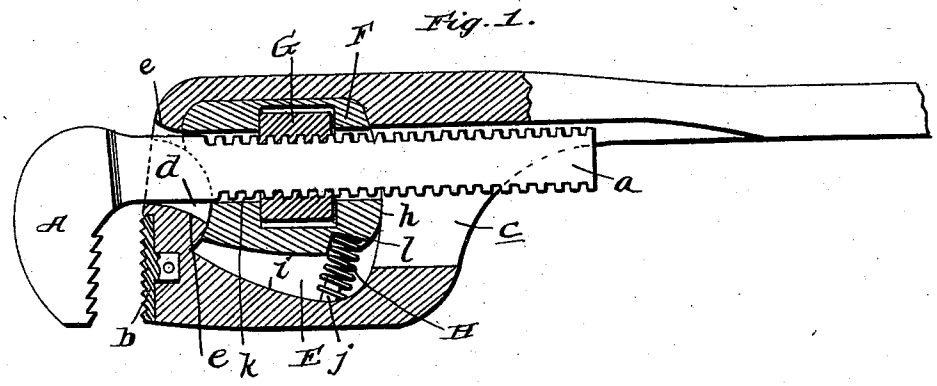


Fig. 2.

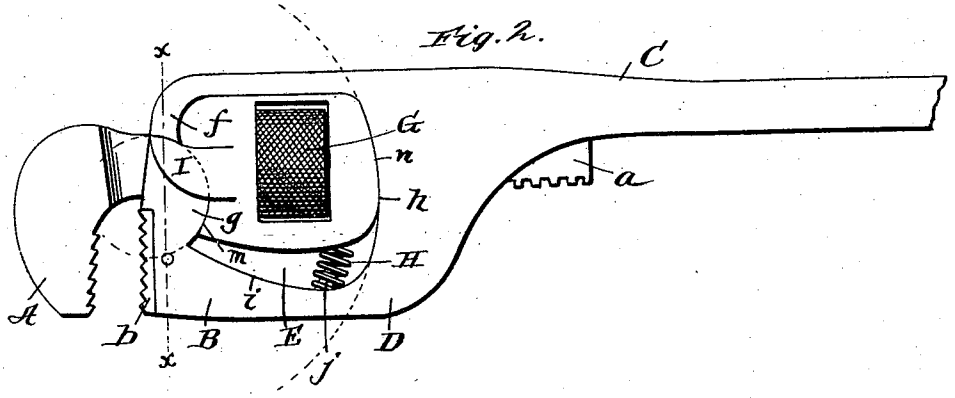


Fig. 4.

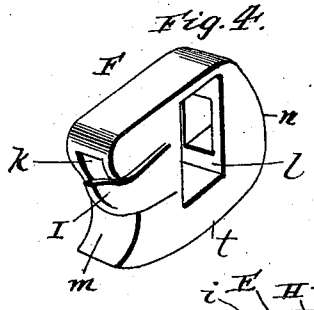


Fig. 3.

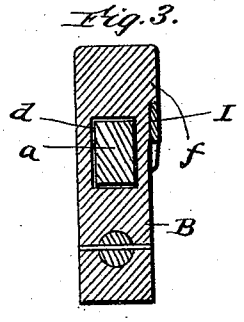
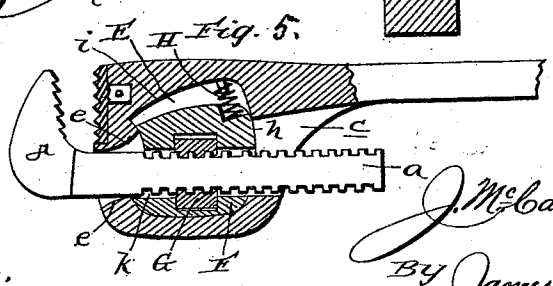


Fig. 5.



Witnesses:
H. Raeder
R. F. Matthews.

Inventor
J. McCarthy Palmer
By James J. Sheehy.
Attorney

ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN McCARTHY PALMER, OF MARYSVILLE, MONTANA.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 558,304, dated April 14, 1896.

Application filed September 26, 1895. Serial No. 563,774. (No model.)

To all whom it may concern:

Be it known that I, JOHN MCCARTHY PALMER, a citizen of the United States, residing at Marysville, in the county of Lewis and Clarke and State of Montana, have invented certain new and useful Improvements in Wrenches; and I do 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 improvements in pipe and nut wrenches, and its novelty and advantages will be fully understood from the following description and claims when taken in connection with the annexed drawings, in which—

Figure 1 is a view, partly in elevation and partly in longitudinal section, of my improved wrench. Fig. 2 is a side elevation of the same. Fig. 3 is a transverse section taken in the plane indicated by the line *x x* of Fig. 2. Fig. 4 is a perspective view of the movable nut-carrying piece removed, and Fig. 5 is a section of a modification.

Referring by letter to said drawings, A indicates the movable jaw of the wrench, which preferably has its inner side toothed or serrated, as shown, and is provided with the threaded shank or stem *a*, and B indicates the fixed jaw, which is also provided with teeth, said teeth being preferably formed on a plate *b*, which is removably secured on the face of the jaw, so that it can be readily removed to give place to a new plate when the teeth are worn or broken. The fixed jaw is formed at the forward end of a handle C, which has its forward portion D enlarged and hollow, as better shown in Fig. 1 of the drawings, for a purpose presently to be described. This forward enlarged portion D is provided in its rear end with a longitudinally-disposed opening *c* to afford play-space for the shank *a* of the movable jaw, and in its forward end it is provided with a longitudinally-disposed opening *d* for the same purpose, which preferably has its bottom and top walls *e* beveled downwardly and inwardly and upwardly and inwardly, respectively, as illustrated. The enlarged portion D is furthermore provided with a transversely-disposed opening E of about the proportional size illustrated, and in front of said opening and in a plane above that of the opening *d* it is provided on one side with a projection *f*, the lower end of which is shaped to form part of a circle, as illustrated, for a purpose presently to be described. The transversely-disposed opening E has a portion *g* of its forward wall curved convexly to form a continuation of the circular curved lower end of the projection *f*, and it also has its rear concave wall *h* curved concentrically with the portion *g*, and, further, has its bottom wall *i* slightly curved and pitched downwardly and rearwardly and provided with an upwardly-extending stud *j*, for a purpose presently to be described.

F indicates the movable piece, which is arranged in the opening E of the handle and is provided with the longitudinally-disposed opening *k* for the reception of the movable jaw-shank *a* and the transversely-disposed opening *l* for the reception of the interiorly-threaded nut G, which receives and engages the threaded shank *a* and is designed to adjust and adjustably fix the movable jaw A with respect to the fixed jaw in the well-known manner. The said movable piece F has its forward wall *m* shaped to conform to the forward wall *g* of the opening E and its rear wall *n* shaped to conform to the rear wall *h* of said opening, and it also has its lower wall *t* shaped to conform to the lower wall *i* of opening and is normally pressed upward and held in the position shown in Figs. 1 and 2 by the coiled spring H, which surrounds and is held in place by the stud *j*, as illustrated. The movable piece F is further provided upon one side, as better shown in Fig. 2, with a forwardly-extending arm I, which has its upper side curved in conformity to the lower end of the projection *f* and is designed to engage said projection, so as to properly hold the movable piece F in its proper position when the same is moved.

It will be observed from the foregoing, when taken in conjunction with the drawings, that the center of the circle described by the piece F in its movements is at the face of the fixed jaw B and that by reason of this a direct backward and forward movement of the jaws is attained and the same are enabled to perfectly grip anything within the capacity of the wrench, and all tendency to a shearing motion so common to wrenches is overcome.

By virtue of the construction described it will also be seen that when the wrench is applied to a pipe or other article to be turned the piece F is enabled to rock or move downwardly, so as to enable the jaw A to rock away from the jaw B and permit of a ready interposition of the pipe between the two, and it will further be seen that when power is applied to the wrench to turn the pipe the piece F is permitted to move upwardly and bear against the forward wall of the opening E, while the beveled or inclined lower wall *e* of the opening *d* will afford play-space for the shank *a* of the movable jaw, so as to enable said jaw to approach the fixed jaw and both jaws to grip the pipe in a perfect manner.

It will be appreciated from the foregoing that with all of its advantages my improved wrench is very cheap and simple, and it will also be appreciated that it embodies no parts which are likely to get out of order after short use and is therefore adapted to last as long as, if not longer than, the ordinary wrenches at present in use.

In Fig. 5 of the drawings I have illustrated a modification, which is similar to the construction shown in Figs. 1 and 2, with the exception that the position of the parts is reversed, so that the plate *b* and the toothed jaw A are in line with the handle proper and above the enlarged portion D of said handle. In this construction, as in that illustrated in Figs. 1 and 2, the forward enlarged portion D of the handle is provided in its forward end with a longitudinally-disposed opening *d*, which has its bottom and top walls *e* beveled, as shown, so as to afford a rest for the shank of the movable jaw and hold it in place and yet permit it to move freely up and down without binding. This insures a free and easy movement of the rocking piece F without the aid of the lug I, and therefore, when desired, said lug may be dispensed with.

It will be observed from the foregoing Figs. 1 and 2 that the center of movement of the rocking piece or nut-holder F, and consequently that of the jaw A, may be placed at any point along the face of the fixed jaw B.

Having described my invention, what I claim is—

1. In a wrench, the hollow handle provided with a fixed jaw at its forward end and having the transversely-disposed opening E, the forward and rear walls of which describe convex and concave circular curves respectively and also having the projection *f*, the lower end of which is curved in conformity to the forward wall of opening E, in combination with a movable jaw having a threaded shank, the movable piece F, arranged in the opening E, of the hollow handle and having a longitudinal opening receiving the shank of the movable jaw and a transverse opening bisecting the longitudinal opening and also having its forward side concave and conforming to the curvature of the forward wall of the opening E, and its rear side convex and conforming to the curvature of the rear wall of the opening, and further having the arm I, adapted to engage the projection *f*, the interiorly-threaded nut arranged in the transverse opening of the movable piece and receiving and engaging the shank of the movable jaw and a spring interposed between the bottom wall of the opening E, and the lower side of the movable piece F, all substantially as specified.

2. In a wrench the hollow handle provided with a fixed jaw at its forward end and having the transversely-disposed opening E, the forward and rear walls of which describe convex and concave circular curves, respectively, and also having the projection *f*, the lower end of which is curved in conformity to the forward wall of opening E, in combination with a movable jaw having a shank and a movable piece connected with the shank of the movable jaw and arranged in the opening E, of the hollow handle and having its forward side concave and its rear side convex and also having the arm I, adapted to engage the projection *f*, substantially as and for the purpose set forth.

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

JOHN McCARTHY PALMER.

Witnesses:
WILLIAM BARCLAY,
JOSEPH CORNELL.