(No Model.) 2 Sheets—Sheet 1.

J. McC. PALMER.

WRENCH.

No. 574,624. Patented Jan. 5, 1897.

Fig. 1.

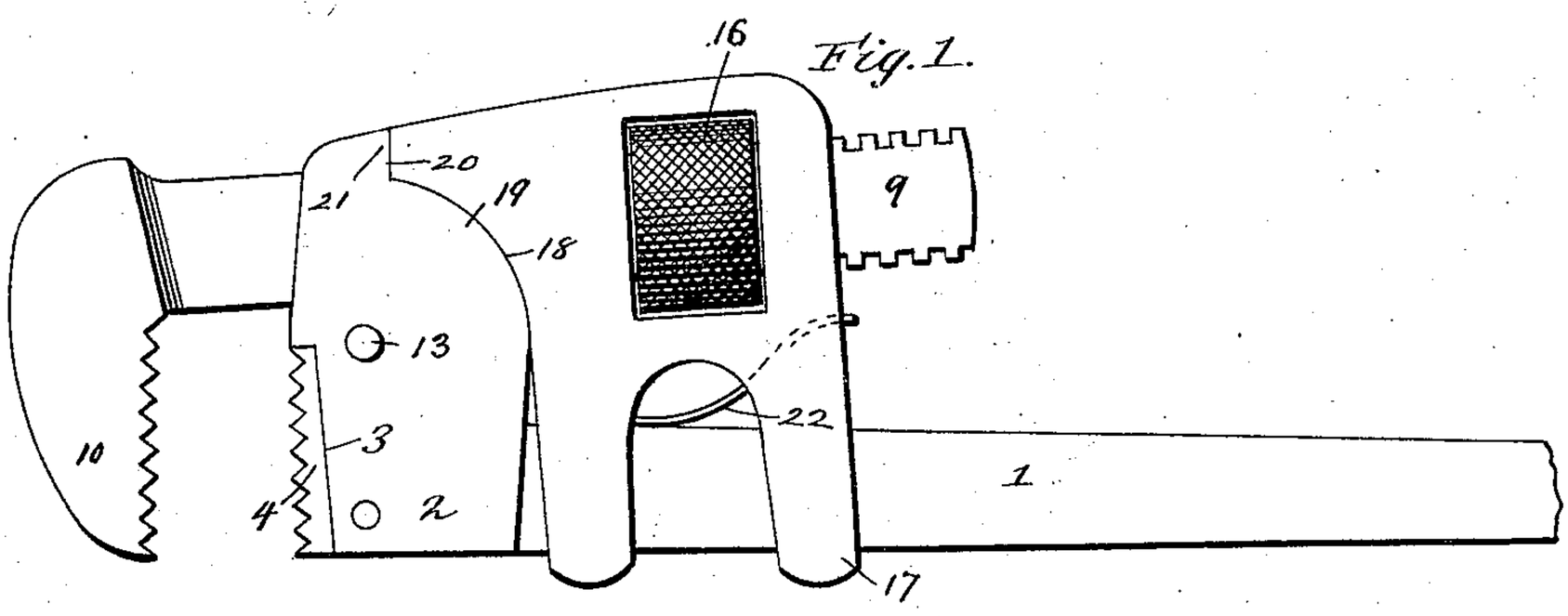


Fig. 2.

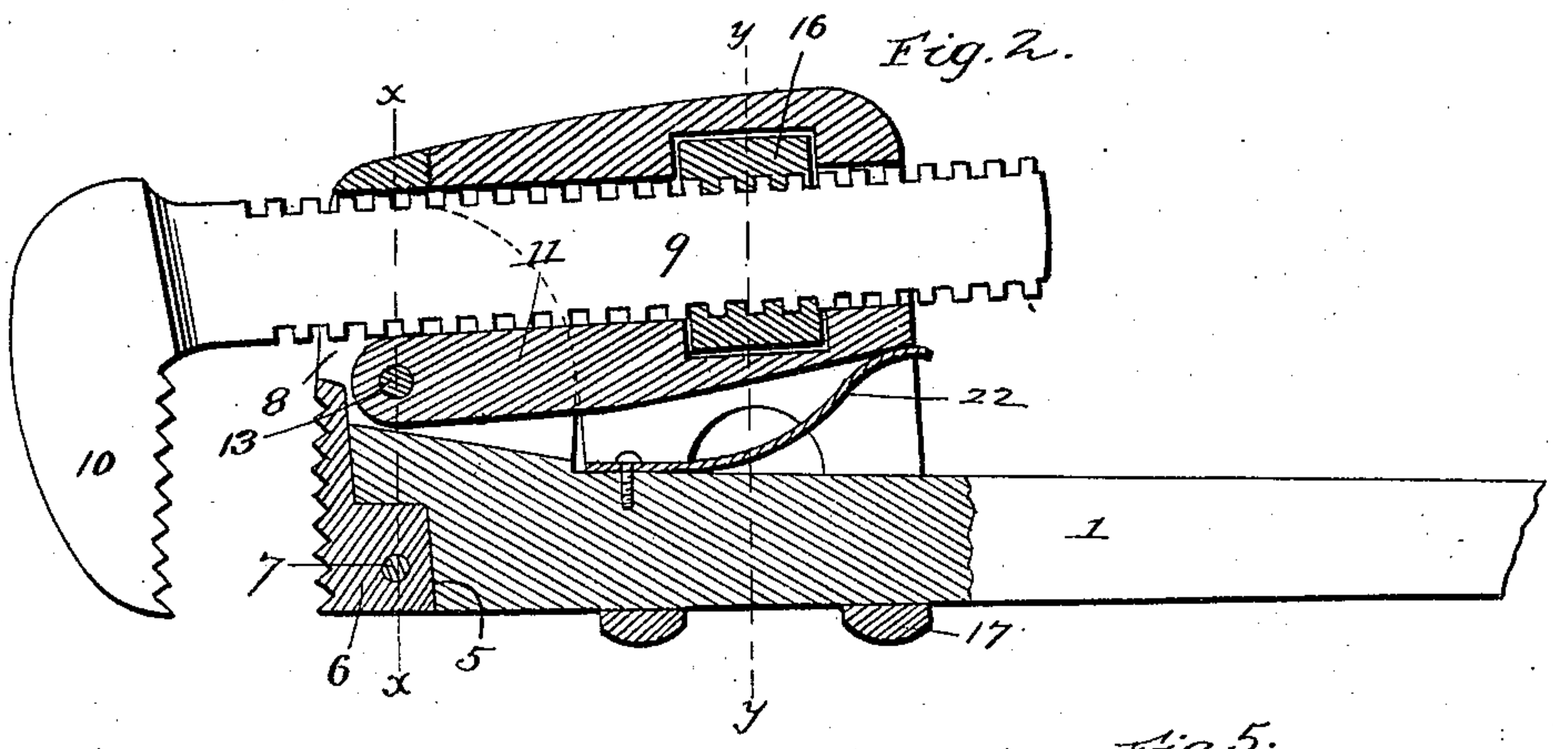


Fig. 4.

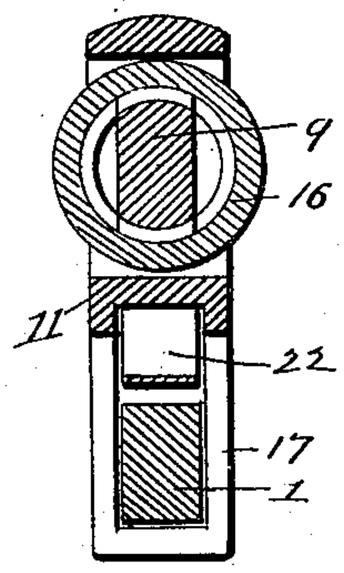


Fig. 3.

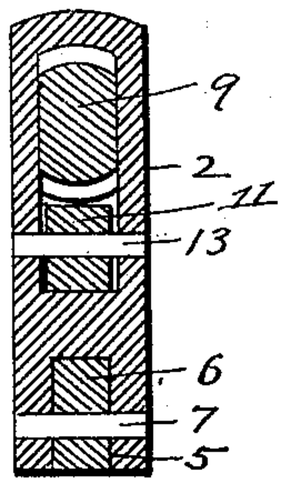
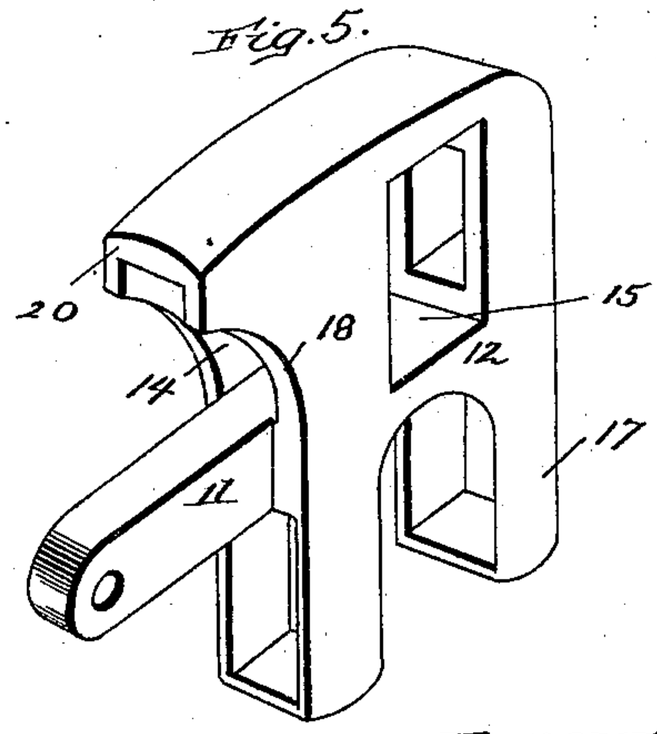


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

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WRENCH.

No. 574,624. Patented Jan. 5, 1897.

Fig. 6.

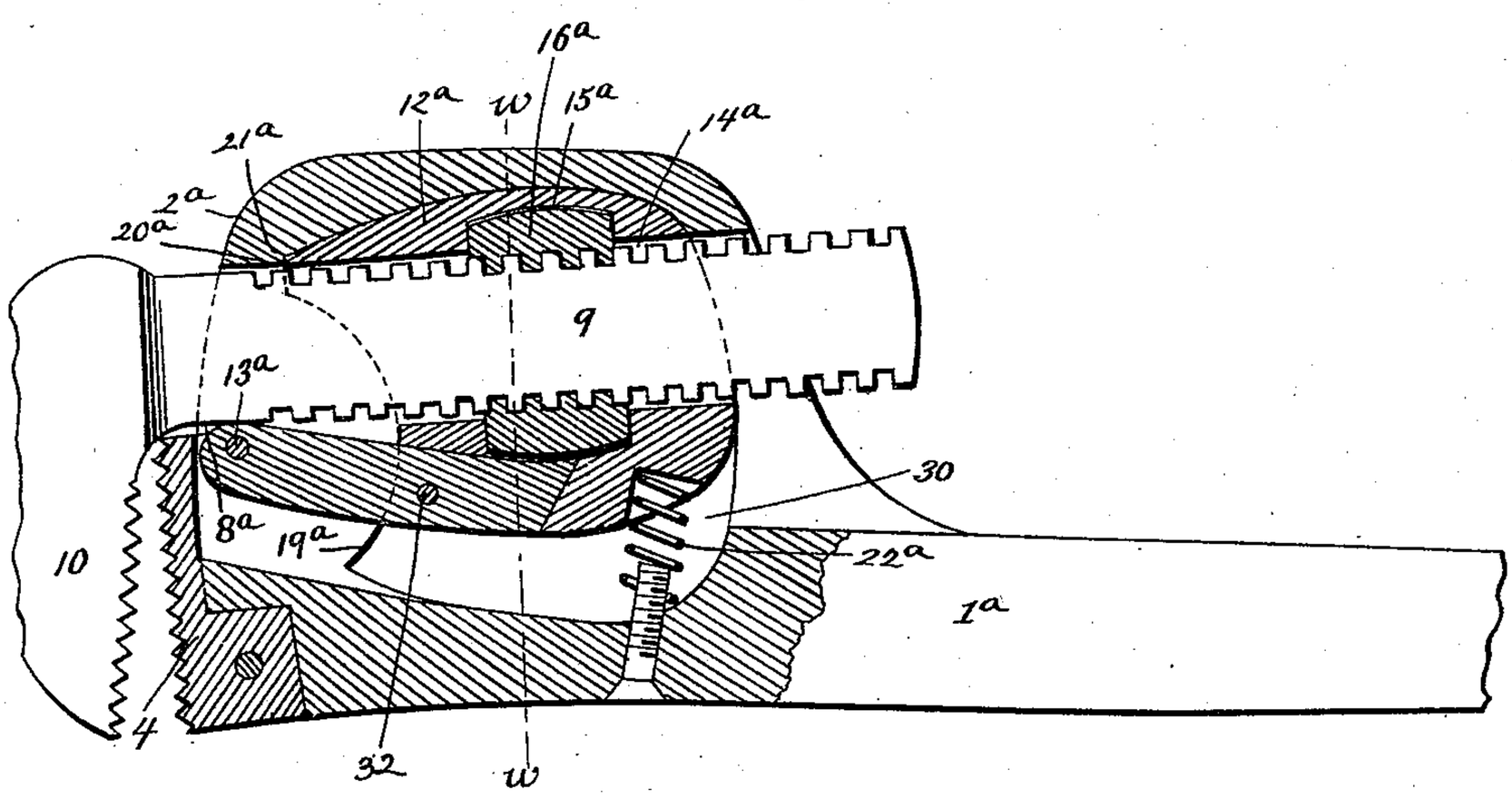


Fig. 7.

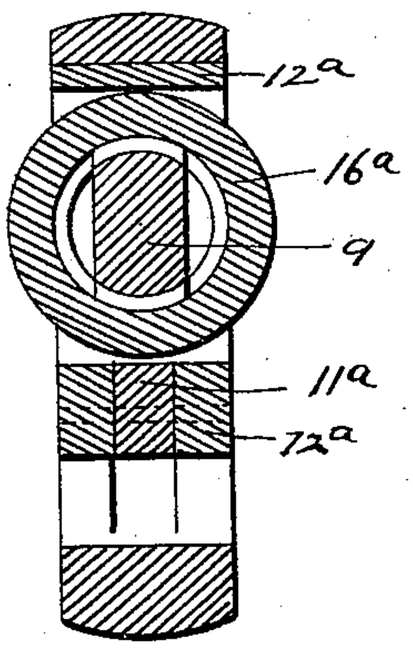


Fig. 8.

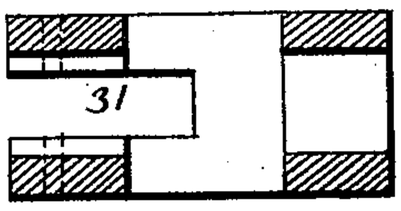
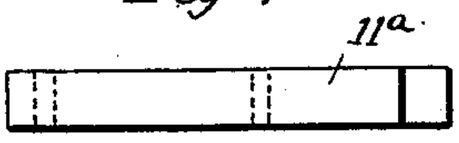


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOHN McCARTHY PALMER, OF MARYSVILLE, MONTANA.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 574,624, dated January 5, 1897.

Application filed May 16, 1896. Serial No. 591,853. (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 wrenches, and more particularly to that class known as "pipe-wrenches;" and it has for its general object to provide such a wrench adapted to be adjusted to fit pipes and other articles of various sizes, and one which is so constructed that it will quickly engage, but will not tend to crush the pipe or other article when pressure is applied to it.

Other objects and advantages of the invention will be fully understood from the following description and claims, when taken in conjunction with the annexed drawings, in which—

Figure 1 is a side elevation of my improved wrench. Fig. 2 is a vertical section of the same with parts in elevation. Figs. 3 and 4 are transverse sections taken in the planes indicated by the lines *x x* and *y y*, respectively, of Fig. 2. Fig. 5 is a perspective view of the rocking piece removed. Fig. 6 is a vertical section, partly in elevation, illustrating a modification. Fig. 7 is a transverse section taken in the plane indicated by the line *w w* of Fig. 6. Fig. 8 is a detail section through the lower portion of the rocking piece shown in Fig. 6, and Fig. 9 is a detail plan view of the arm of the said rocking piece.

Referring by numerals to said drawings, and more particularly to Figs. 1 and 5 thereof, 1 indicates the handle of my improved wrench, and 2 indicates a head or enlargement formed at one end of the handle, preferably integral therewith, as illustrated. This head or enlargement 2 serves as the fixed jaw of the wrench, and it is provided in its forward side with a recess 3 for the reception of the face-plate 4 and in its forward and under sides with a recess 5 to receive the shank 6 of the plate 4, which is detachably connected to the head 2 by the transverse bolt 7, as shown.

The face-plate 4, which may be made of hardened steel or other suitable metal, forms a preferred part of my invention, and by reason of the construction described it will be seen that said plate may be removed for the purpose of sharpening its teeth or for any other purpose and may as readily be replaced and secured in position.

The head 2 is provided above the handle 1 with the longitudinally-disposed opening 8, and the opening receives the threaded shank 9 of the sliding and movable jaw 10 and also the forwardly-extending arm 11 of the rocking piece 12, which arm is arranged below the shank 9 and is pivotally connected to the head 2, adjacent to the forward side or face thereof, by the transverse pintle 13, as shown.

The rocking piece 12, which is better shown in Fig. 5, has the longitudinally-disposed opening 14, designed to receive the shank 9, the transversely-disposed opening 15, which intersects the opening 14 and receives the nut 16, and a depending stirrup or stirrups 17, which receive the handle 1, and are designed to limit the upward movement of the rocking piece. Said rocking piece 12 also has its forward side concaved or curved, as indicated by 18, in conformity to the rear convexly-curved side 19 of the head 2, and has the square portion 20 to engage the square surface or stop 21 at the upper end of the curved portion of the head 2, as illustrated.

The rocking piece 12 is backed by a spring 22, preferably of leaf form, which is connected to the handle 1 and rests between the rocking piece and handle and between the side portions of the stirrups, and by exerting a pressure against the said rocking piece serves to hold the movable jaw 10 in proper relation to the fixed jaw and also assists the said movable jaw in gripping a pipe or other article.

In the practical operation of my improved wrench the jaws are placed in engagement with the pipe or other article to be turned in the ordinary manner, the spring 22 giving and the jaw 10 moving away from the fixed jaw to permit of an easy interposition of such article. Now when pressure is placed on the handle the movable jaw 10 will, in virtue of the curved bearing-surfaces 19 18 of the head 2 and rocking piece 12 describing about

a quarter of a circle, as shown, quickly move toward the fixed jaw and firmly grip the pipe or other article. Such movement of the jaw 10 will, however, be limited by the stirrups 17 engaging the handle 1, and consequently crushing or breaking down of the pipe or other article will be effectually prevented. The stirrups 17 are assisted in thus limiting the movement of the rocking piece and the movable jaw, which is carried by said rocking piece, by the stop or square surface 21 of the head 2, which serves simply as an auxiliary to the stirrups and does not form an absolutely essential part of my invention. The said stop 21 is, however, preferably employed, for when it is used in conjunction with the stirrups the strain is imposed on the head above the pintle 13 and on the handle below the said pintle, and all strain is taken off said pintle, which has nothing to do but serve as a fulcrum and hold the rocking piece and head together. This makes the construction of the wrench very strong and reduces the liability of breakage in use to a minimum, which is a desideratum.

The wrench may be forged or cast of tool-steel, and the rocking piece 12 may be cast or otherwise formed in one piece, as shown, which renders the wrench easy of production and at the same time strong and durable.

In Figs. 6 to 9 I have shown a modified form of wrench, which may be and preferably is formed of cast metal. The handle 1^a of this wrench has an enlargement 2^a at its forward end, and this head 2^a, which forms the fixed jaw, preferably has a removable face-plate 4 similar to that before described, and also has a longitudinally-disposed opening 8^a to receive the threaded shank 9 of the movable jaw 10 and a transversely-disposed opening 30, shaped as shown for the reception of the rocking piece 12^a.

The rocking piece 12^a has a longitudinally-disposed opening 14^a to receive the shank 9 and a transversely-disposed opening 15^a to receive the nut 16^a, and said rocking piece also has its forward side curved in conformity to the convexly-curved bearing-surface 19^a of the enlargement 2^a, as illustrated. Said rocking piece 12^a is further provided with the square surface 20^a to engage the stop 21^a and is normally held against said stop by the spring 22^a, arranged as shown. The spring in this construction is a coiled one and is shown as arranged over a projection on the handle and seated in a recess in the rocking piece.

The rocking piece 12^a is preferably cast, although it may be formed in any other suitable manner, and when so formed it is provided in its under side with the recess 31, the rear end wall of which is undercut. In this recess 31 is arranged an arm 11^a, of steel, which has its rear end beveled to conform to the undercut of the recess and is connected to the rocking piece by a rivet 32, as illustrated. This arm 11^a extends forward of the rocking piece 12^a, as shown, and is connected to the enlargement 2^a, adjacent to the face thereof, by a transverse pintle 13^a, as shown.

The wrench shown in Fig. 6 operates in substantially the same manner as that shown in Figs. 1 and 5, that is to say, the spring 22^a gives when the jaws are placed on an article to be turned, and when pressure is applied to the handle the stop 21^a limits the movement of the rocking piece 12^a and thereby takes a portion of the strain off the arm 11^a, which, by reason of it being formed of steel, is well able to withstand the remainder.

Having described my invention, what I claim is—

1. A wrench comprising a handle, a head or enlargement at the forward end of the handle, forming a fixed jaw and having a longitudinally-disposed opening and also having a bearing-surface describing a portion of a circle, a rocking piece having a curved surface conforming to the bearing-surface of the head and also having the forwardly-extending arm pivotally connected to the head adjacent to the forward side thereof, and a movable jaw having its shank extended through the longitudinally-disposed opening of the head and connected with the rocking piece, substantially as specified.

2. A wrench comprising a handle, a head or enlargement at the forward end of the handle forming a fixed jaw and having a longitudinally-disposed opening and also having a bearing-surface describing a portion of a circle and a stop at one end of such bearing-surface, a rocking piece having a curved surface conforming to the bearing-surface of the head and a portion adapted to engage the stop thereof and also having the forwardly-extending arm pivotally connected to the head adjacent to the forward side thereof, a movable jaw having a threaded shank extending loosely through the longitudinally-disposed opening of the head and also through the rocking piece, a nut carried by the rocking piece and receiving the shank of the movable jaw and a spring interposed between the rocking piece and the handle, substantially as and for the purpose set forth.

3. A wrench comprising a handle, a head or enlargement at the forward end of the handle forming a fixed jaw and having a bearing-surface on its rear side describing a portion of a circle, a rocking piece having a curved surface conforming to the bearing-surface of the head and also having a stirrup loosely receiving the handle, and a forwardly-extending arm pivotally connected to the head adjacent to the forward side thereof, and further having the longitudinally-disposed opening and a transverse opening intersecting the longitudinal opening, a movable jaw having a threaded shank extended through the longitudinal opening of the rocking piece, a nut in the transverse opening of said rocking piece

receiving the shank, and a spring interposed between the handle and rocking piece, substantially as specified.

4. A wrench comprising a handle, a head or enlargement at the forward end of the handle forming a fixed jaw and having a bearing-surface on its rear side describing a portion of a circle, and a stop at one end of said curved bearing-surface, and also having a longitudinally-disposed opening, a rocking piece having a curved surface conforming to the bearing-surface of the head and a portion to engage the stop of the head, and also having a stirrup loosely receiving the handle, and a forwardly-extending arm pivotally connected to the head adjacent to the forward side thereof, and further having the longitudinally-disposed opening and a transverse opening intersecting the longitudinal opening, a movable jaw having a threaded shank extended through the longitudinal openings of the head and rocking piece, a nut in the transverse opening of said rocking piece receiving the shank, and a spring interposed between the handle and rocking piece, substantially as and for the purpose set forth.

5. A wrench comprising a handle, a head or enlargement at the forward end of the handle forming a fixed jaw and having a convex bearing-surface on its rear side describing a portion of a circle and a stop at one end of said bearing-surface, a rocking piece having a concave curved bearing-surface conforming to the bearing-surface of the head and a portion adapted to engage the stop of said head and also having depending side portions arranged at opposite sides of the handle and a forwardly-extending arm pivotally connected to the head adjacent to the forward side thereof, and a jaw connected with the rocking piece, substantially as specified.

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

JOHN McCARTHY PALMER.

Witnesses:
RALPH DATE,
H. H. PATTING, Jr.