(No Model.)

J. A. MILLER.

WRENCH.

No. 454,222. Patented June 16, 1891.

Fig. 1.

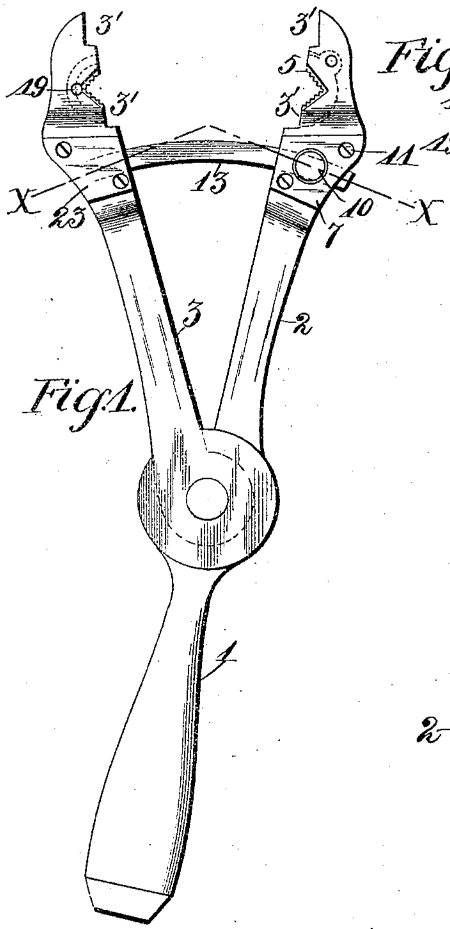


Fig. 2.

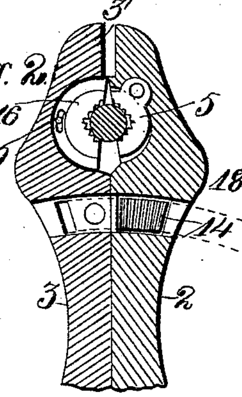


Fig. 3.

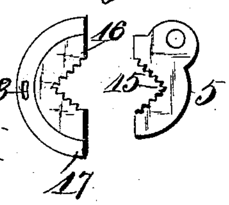


Fig. 4.

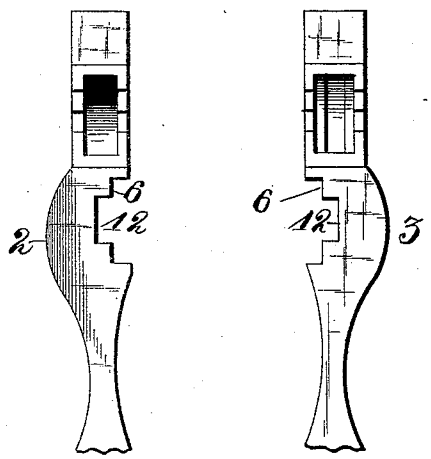


Fig. 5.

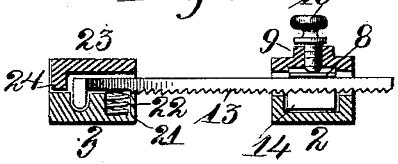


Fig. 6.

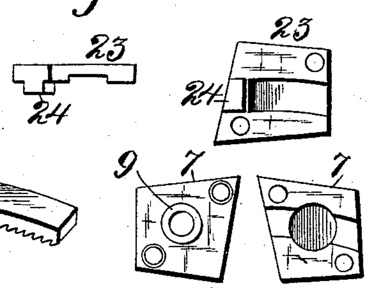


Fig. 7.

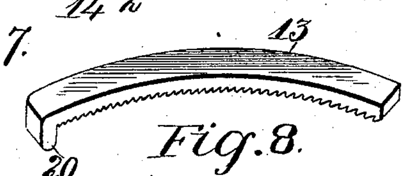
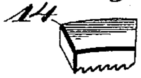


Fig. 8.



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WRENCH.

SPECIFICATION forming part of Letters Patent No. 454,222, dated June 16, 1891.

Application filed October 3, 1890. Serial No. 366,980. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. MILLER, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Wrenches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in wrenches; and it consists in the novel arrangement and combination of parts, as will be more fully hereinafter described, and designated in the claims.

In the drawings, Figure 1 is a side elevation of my complete invention. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a side elevation of the movable dies, showing tooth structure. Fig. 4 is a plan view of the inner surfaces of the jaws with the various parts thereof removed. Fig. 5 is a cross-section taken on the line *x x* of Fig. 1. Fig. 6 is a detail view of the plates detached. Fig. 7 is a perspective view of a curvilinear tooth-plate used in my invention. Fig. 8 is a perspective view used likewise in carrying out my invention.

Referring to the drawings, 1 represents the handle of a wrench provided with jaws 2 and 3. Jaw 2 is rigidly secured to said handle and usually in the process of manufacturing is cast integral therewith; or the handle may be made of wood and said jaws secured thereto in any desired or substantial manner. Jaw 2 is provided at its inner terminal portion with recesses 3′. The uppermost of said recesses is deeper than the lower. In the lower or deeper recess another recess is formed so devised and constructed as to receive a cam-eccentric die 5, which die is freely pivoted in said recess by means of a pin or small bolt passing through said jaw and through the cam portion of said die. Said die is also provided on its inner surface with a triangular recess 15, which is provided with a tooth structure; also, the terminal lateral portion of said jaw is provided with a transversely-formed recess 6, adapted to receive a rhomboidal plate 7, which plate is provided on its inner inclosed surface with a circular depression adapted to receive a circular plate 8, and on its outer and exposed face with a circular protuberance 9. Through said protuberance and circular depression a perforation is formed, which perforation is provided with screw-threads adapted to receive a thumb-screw 10. Said plate is secured to said jaw by means of screws 11. Below recess 6 a curvilinear recess 12 is formed, so constructed as to permit a curvilinear ratchet-tooth steel plate 13 to move freely therein. Below curvilinear recess 12 an elongated depression is formed adapted to receive a ratchet-tooth steel plug 14. The teeth of said plug and said curvilinear plate are adapted and so arranged as to engage each other when desired. Said plug is loosely secured in its corresponding depression, so as to be easily removed should it become fractured in any manner, and another placed in lieu thereof. Jaw 3 is hinged in any suitable or desirable manner to jaw 2 or handle 1, or may be hinged to both, if desired. Said jaw is provided at its terminal extremity with similar recesses, as arm 2, and in the lower of said recesses a semicircular depression is formed and provided with a rabbet, and adapted to receive a semicircular die 16, provided with a semicircular projection 17, which projection fits freely in said rabbet. Said projection is provided with an elongated slot 18, through which and also through said arm a pin or small bolt 19 passes, whereby said die is freely secured in said recess. Said die being loosely pivoted in its appropriate recess, automatically adjusts itself to fit the surface of the clamped article, whatever position said jaw may assume. Said jaw is also provided with a lateral transverse rhomboidal recess similar to recess 7, formed in arm 2, and also below said recess with a curvilinear one 12 in jaw 2. Said recess is provided with a depression adapted to receive the depression 20, formed on the curvilinear plate 13, and also a similar depression 21, adapted to receive a spring 22, made of any elastic material. Said elastic spring is placed in its appropriate depression. The curvilinear plate is then placed likewise in its corresponding recess, the projection thereof fitting in its appropriate depression, which depression is a little receding from the exterior surface of said jaw. By means of a rhomboidal plate 23, which is provided with a projecting lip 24, which fits in the recess immediately below, said curvilinear plate and springs are secured in their relative

positions by means of screws passing through said rhomboidal plates and into jaw 3. The construction should be so devised that there is a little space between the inner surface of said rhomboidal plate and the upper surface of said curvilinear plate, so as to permit a downward and upward motion of said curvilinear plate in the process of engaging and disengaging the teeth thereof with those of the plug 14.

The wrench is equally as useful in its application to round as square devices. In its application to round devices, the cam-eccentric being pivoted out of the common circumference when the wrench is moved in the desired direction, the teeth of said die directly impinge on said device, and the greater the power the more intense the impinging contact.

Having fully described my invention, what I claim is—

1. A wrench having pivoted jaws, each of which is provided with movable dies, one of which dies is eccentrically pivoted, substantially as set forth.

2. A wrench having pivoted jaws, the inner surfaces of said jaws provided with parallel and obliquely-formed recesses, as and for the purposes described.

3. A wrench having movable jaws, one of which is provided with a curvilinear plate provided with a tooth structure, the opposite end of which plate is adapted to move freely in a recess formed in the opposite jaw and adapted to engage with a tooth-structure plug, substantially as set forth.

4. In a wrench, the combination of pivoted jaws, dies loosely secured in the inner terminal portion of said jaws, curvilinear tooth-plate secured in one of said jaws and adapted to engage a tooth-plug located in the opposite jaw, rhomboidal plates adapted to hold said curvilinear plate in position, and a thumb-screw whereby said engagement is effected, substantially as set forth.

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

JOHN A. MILLER.

Witnesses:
E. E. LONGAN,
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