

Aug. 20, 1929.

A. N. PLANTE

1,725,301

WRENCH

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*Fig. 1.*

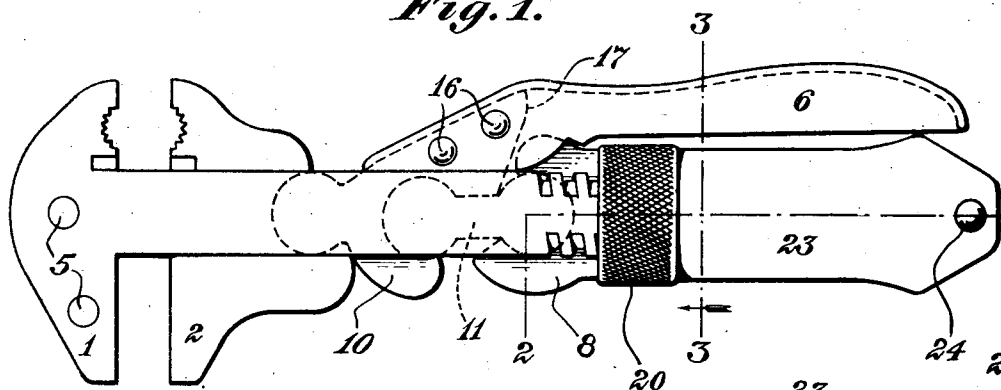


*Fig. 2.*

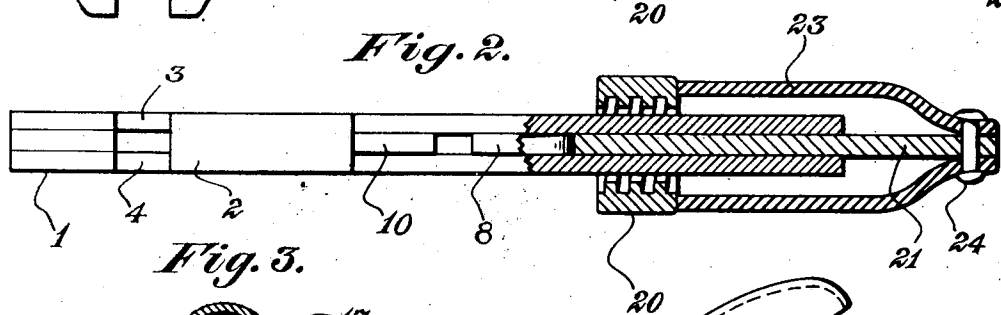


*Fig. 3.*

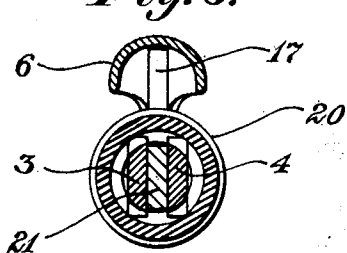
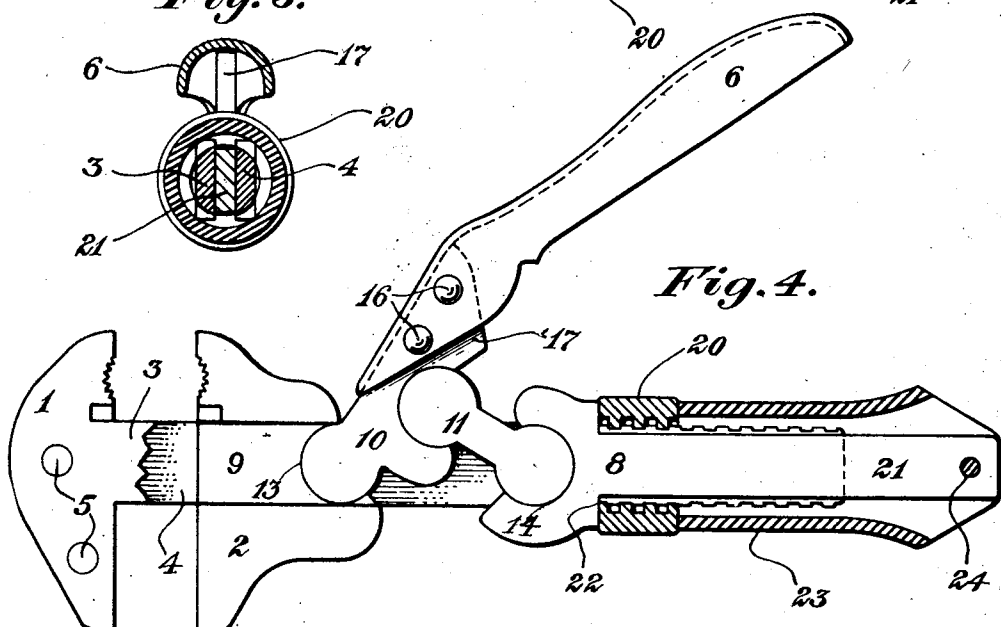


*Fig. 4.*



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## UNITED STATES PATENT OFFICE.

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## WRENCH.

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This invention relates to wrenches and has for its object the improvement of a wrench of the type wherein lever operated linkage associated with the jaws of such a tool operates to impart to the jaws through slight manual pressure upon a lever a powerful gripping action. In one form of tool of this type the lever operated linkage is laterally confined between furcations of a bifurcated shank extended from the jaw in which one end of the wrench terminates. One member of the linkage is adjustably anchored to the shank by a nut and the present invention consists in associating with this nut and linkage member a tubular handle element adapted to be conveniently grasped together with the lever for transmitting the gripping action to the wrench jaws.

In the accompanying drawings I have illustrated one convenient form of embodiment of the invention which to enable those skilled in the art to practice the same is set forth fully in the following detailed description while the novelty of the invention is defined in the appended claims.

In the drawings,—

Figure 1, is a side view of a wrench constructed in accordance with my invention.

Figure 2 is a front edge view of the wrench shown in Fig. 1, with the handle end shown in section on line 2—2 of Fig. 1.

Figure 3, is a transverse sectional view on line 3—3 of Fig. 1, and,

Figure 4, is a view similar to Fig. 1, but shows the lever in position to open the jaws of the wrench, also certain of the parts are shown either broken away or in section.

Referring to the drawings wrench jaws in the tool shown are designated by 1 and 2. The head or jaw 1, is provided with a shank longitudinally divided or bifurcated so that the furcations form guides as 3 and 4, to serve a purpose that will presently appear. The head and shank, that is to say, the head and guides extended therefrom, may be formed from a single piece of metal or built up of sections and held together with rivets 5, as shown.

Means for actuating the jaw 2, include a lever 6, and a link, hereinafter more fully described, which act against a normally stationary fulcrum member 8. Compact assemblage and alignment of the jaw 2, in association with the furcations comprising the shank of jaw 1, are provided for by channels on oppo-

site sides of the jaw 2, formed to slidably fit respective furcations or guides 3 and 4. The web portion 9, thus formed in jaw 2, is substantially equal in thickness to the space between the furcations as are also the linkage members 10 and 11, and the fulcrum member 8. One end of linkage member 10 is formed to engage a recess 13, in the web of jaw 2, similarly one end of linkage member 11, is formed to engage a recess 14, in fulcrum member 8, and in a like manner the linkage members 10 and 11, are pivotally joined to each other, that is to say, each pivotal joint comprises a pintle on one member matching an opening in another. From the foregoing explanation it will be clear that the several members of the linkage which is of the toggle lever class may be readily assembled and placed between the furcations or guides 3 and 4, which serve to align the linkage and maintain it in operable assemblage. As already intimated a lever is provided, (lever 6), for operating the linkage. It may, as shown, be secured as by rivets 16, to an extension 17, of the link 10, to receive which the lever or handle may be suitably formed as in a press.

Means for adjustably anchoring fulcrum member 8, to the furcations comprising the shank rigid with jaw 1, will now be described. A nut 20, surrounding an extension or tang 21, of fulcrum member 8, is confined between a shoulder 22, on the latter and a tubular handle element 23, which is secured to the tang at its free end by a rivet 24, the tube forming the handle element being flattened at this point to closely engage the extreme end of the tang. To assemble these parts with the furcations 3 and 4, the latter are placed on opposite sides of the member 8, and the nut is engaged with threads formed on the four corners presented by the furcations. This construction serves to desirably enclose the threaded part of the wrench and to afford a satisfactory hold for the fingers when the palm of the hand is pressed against the lever 6, or vice versa. In practice the movable jaw of the wrench is roughly adjusted by means of the nut 20, to freely engage the object desired to be grasped with the lever 6, in open position, pressure then applied to the lever causes through the toggle action of the linkage described a powerful movement of one jaw toward the other.

Having thus described my invention, what I claim is—

1. A tool of the class described including in combination a head having a bifurcated shank threaded at one end, a jaw channeled on opposite sides to receive respective furcations of the shank, a fulcrum member between the furcations of the shank and having a tang extended therebeyond, said fulcrum member having a shoulder, a tubular handle element surrounding and secured to the tang, a nut confined between the tubular handle element and said shoulder and adapted to engage the threads on the furcations, toggle linkage interposed between the fulcrum member and jaw member, and means associated with the toggle linkage for extending the latter into substantially dead center alignment longitudinally of the shank to move the jaw toward the head.

2. A tool of the class described including in combination a head having a bifurcated shank threaded at one end, a jaw movable longitudinally of the shank, a fulcrum member between the furcations of the shank, said fulcrum member having a shoulder, a tubular handle member secured to the fulcrum member and surrounding the shank, a nut engaged with the threads on the shank and longitudinally confined between said shoulder and the tubular element, toggle linkage interposed between the fulcrum member and jaw member, and means associated with the toggle linkage for extending the latter into substantially dead center alignment longitudinally of the shank to move the jaw toward the head.

3. A tool of the class described including in combination a head having a bifurcated shank threaded at one end, a jaw movable longitudinally of the shank, a fulcrum member between furcations of the shank, said fulcrum member having a shoulder, a handle forming element secured to the fulcrum member, a nut engaged with the threads on the shank and confined between said shoulder and the handle member, and lever actuated means interposed between the fulcrum mem-

ber and jaw member and held in operative relation by and between the furcations.

4. A tool of the class described including in combination a head having a threaded shank, a jaw movable longitudinally of the shank, a fulcrum member movable longitudinally of the shank and extending therebeyond, a handle element secured to the fulcrum member and enclosing the shank, a nut on the shank confined between the fulcrum member and the handle member, and lever actuated means interposed between the fulcrum member and jaw member.

5. A tool of the class described including in combination a head having a bifurcated shank, a jaw movable longitudinally of the shank, a fulcrum member between furcations of the shank and longitudinally movable thereof, lever actuated means interposed between the fulcrum member and jaw member for moving the latter toward the head, and means surrounding the shank and fulcrum members for moving the latter longitudinally of the shank.

6. A tool of the class described including in combination a head having a bifurcated threaded shank, a jaw channeled on opposite sides to receive respective furcations of the shank, a fulcrum member between the furcations, a link pivotally connected to the fulcrum member, a lever pivotally connected to the jaw member, said link and lever being also pivotally connected to each other, each pivotal connection comprising a pintle on one member matching an opening in the other whereby the linkage formed when the parts are engaged may be disposed between the furcations and maintained in operable assemblage thereby, means secured to the fulcrum and surrounding the shank to form a handle, and a nut on the shank associated with the handle and fulcrum for moving the latter longitudinally of the shank.

In testimony whereof I affix my signature.

ARTHUR N. PLANTE.