E. D. ROCKWELL.

WRENCH.

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1,170,107. Patented Feb. 1, 1916.

Fig. 1.

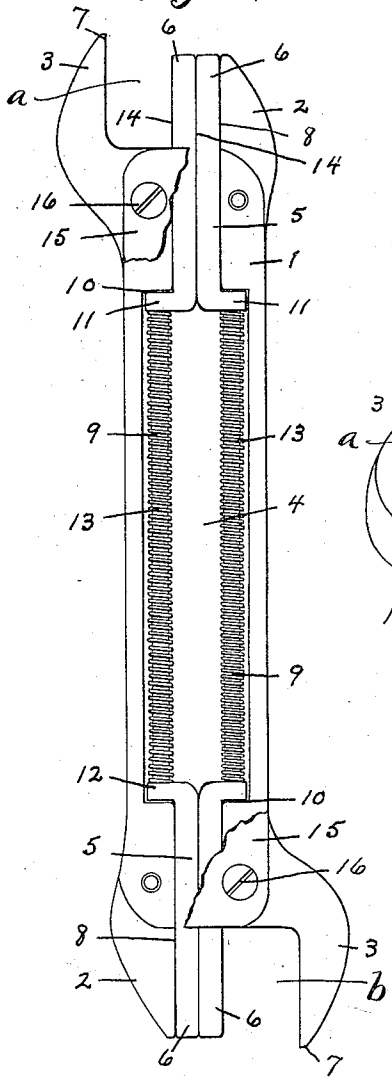


Fig. 2.

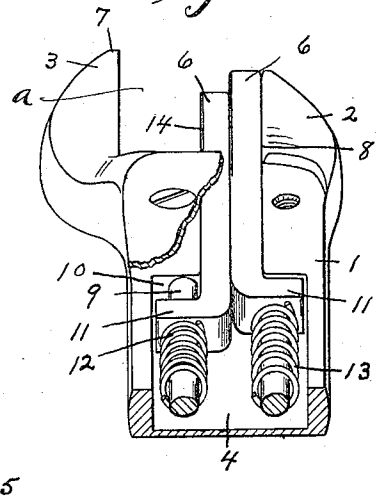
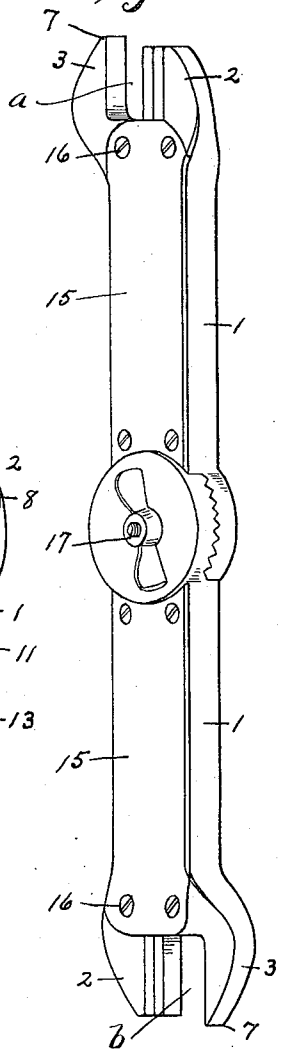


Fig. 3.



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WRENCH.

1,170,107. Specification of Letters Patent. Patented Feb. 1, 1916.

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To all whom it may concern:

Be it known that I, EDWARD D. ROCKWELL, citizen of the United States, residing at Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

This invention relates to improvements in wrenches.

The primary object of the invention is to provide a wrench instantaneously and positively adjustable to fit nuts of varying predetermined sizes, which adjustment will be attained without any further manipulation than the fitting of the improved wrench on a nut.

Other objects of the invention are to generally improve the construction and promote the efficiency of a wrench, all of which will appear from the following detail description of a structural embodiment of the invention in a preferred form.

In the drawings, Figure 1 is a plan view partially cut away. Fig. 2 is an enlarged perspective view of one end of the wrench, also partially cut away. Fig. 3 is a perspective view of a modified form of wrench.

Like reference characters in the several figures indicate the same parts.

The main body portion 1 of the wrench is provided with spaced primary, preferably stationary jaws 2, 3, located at each end thereof. The said primary jaws inclose between their inner opposed sides upper and lower sockets *a*, *b*, as shown in Fig. 1 of the drawings. Inclosed by the walls of the main body portion 1 of the wrench is a central chamber or seat 4 extending longitudinally of said main body portion and having channels 5 located at the opposite ends of said chamber and communicating with the sockets *a*, *b*, respectively. The channels 5 are preferably so arranged at the respective ends of the wrench that they are in alinement with each other. Such an arrangement greatly facilitates the milling operation, and consequently reduces to a considerable degree the cost of manufacture. Arranged in each of said channels 5 are preferably a plurality of movable jaws 6 adapted to disappear by sliding in said channels. The movable jaws 6 are complementary to a fixed jaw 3, for instance, and the space between them and said fixed jaw forms the potential area of the socket. This arrangement can be very readily understood by reference to Fig. 1 of the drawings. As shown therein two complementary movable jaw members 6 are positioned in each socket. When both of said complementary jaws are projected into a socket *a* the potential area thereof is bounded by the inner face of fixed jaw 3, and the opposed outer face of inner movable jaw 6, that is, the movable jaw located nearest fixed jaw 3. By moving a jaw 6 out of the socket *a*, the potential area thereof will be increased to a degree equal to the width of a movable jaw, and this increase in potential area will be multiplied by the number of jaws moved out of the socket opening. It will be noted that the stationary jaws 3 are substantially longer than jaws 2 and the projecting extensions thereof are formed into points 7 on the longer jaws, which points act as feelers and rest on the side of a nut when the wrench is applied for operation.

The inner faces of the shorter jaws 2 are preferably flush, as shown at 8, with the edge of the channels 5. As a consequence, the outside movable jaws 6 riding in the channels 5 also ride against the face 8 of the shorter jaws 2. From the foregoing, it will appear that if a nut to which the wrench is being applied is too large for the opening between a jaw 3 and an inner movable jaw 6, as many movable jaw members 6 as is necessary to provide the proper size of opening will slidably disappear or escape within the channel 5. The movable jaws 6, however, will be so arranged that they will be automatically returned to their complementing positions in the socket *a* when the wrench is removed from a nut.

The end channels 5, in the arrangement shown, extend longitudinally midway between the sides of the main body portion 1 of the wrench and chamber 4 is constructed so as to be greater in width than said channels. This provides lateral shoulders 10 located at each end of chamber 4 and on opposite sides of the channels 5. Seated within chamber 4 between oppositely disposed shoulders 10 on one side of channel 5, is a longitudinal jaw retaining rod 9. The said jaw retaining rod 9 is preferably approximately equal in length to the distance between oppositely disposed shoulders and when properly positioned in the chamber 4 will be retained against longitudinal displacement by said shoulders. Located between oppositely disposed shoulders 10 on

the other side of channel 5 is a similar jaw retaining rod. Each movable jaw 6 is provided with a lip or finger 11 extending in the line of one of said shoulders 10 and having an aperture 12 receiving a rod 9. In the present instance two movable jaws 6 are provided at each end of the wrench and their respective fingers 11 extend away in opposite directions so that a finger of the inner movable jaw 6 receives a rod 9 located on its respective side of channel 5 and a finger of the outer movable jaw 6 receives a rod arranged on the other side of said channel. The channels 5 being in alinement, inner movable jaw 6, located at the upper end of the wrench, will also be in alinement with outer movable jaw 6, located at the lower end of the wrench, and their respective retaining fingers will embrace the jaw-retaining rod 9 at opposite ends of the rod. For the purpose of actuating the movable jaws spiral springs 13 are provided, said spiral springs each encircling a rod 9 and having their opposite ends bearing against the rod retaining fingers of alined movable jaws. Said springs are of proper length and tension to force the oppositely disposed alined movable jaws outwardly, until their respective lips 11 meet shoulders 10 to force them into complementing positions within their respective sockets. In this way a spring 13 forms a common actuating means for oppositely disposed alined jaws, and it is also to be particularly noted that the rod 9 acts to prevent accidental displacement of a jaw and said jaw has the reciprocal action of preventing lateral displacement of the rod.

The movable jaws 6 are all preferably of uniform size and have rounded edges, as shown at 14, so that no bur therein can interfere with the action of the jaws. The springs and guides are also preferably of uniform size, and all of said separable parts are held in place by a plate 15 which may be secured to the main body portion 1 of the wrench by any suitable means such as the screws 16. It will be noted that in case of damage to any one of the parts, a damaged part may be readily dismounted and a new part substituted so that breakage of one of the parts does not render the wrench useless as a whole.

In the preferred arrangement, the width of a socket *a*, for instance, differs from the width of socket *b*, a distance other than the width of a movable complementary jaw. This difference in width of the respective socket openings renders it possible to make all of the movable jaws duplicates, and at the same time one end of the wrench will be adapted to handle nuts of width different from those adapted to be handled by the other end of the wrench. Furthermore, by making the two primary sockets *a*, *b*, differ in width from each other by a distance which is half the width of the movable jaw, such movable jaws can be made sufficiently wide to give the necessary strength and at the same time the wrench can handle various sizes of nuts which differ only slightly from each other; for example, the standard difference in nuts from a diameter of one half inch to a diameter of something over an inch is three thirty-seconds of an inch. By making one of the primary sockets three thirty-seconds of an inch wider than the other and using movable jaws three-sixteenths of an inch wide the obvious advantage of movable jaws of substantial and uniform width is obtained, giving strength and avoiding liability of bending and also providing the desirable feature of interchange, yet at the same time the two ends of the wrench present potential sockets varying with the standard variation of width in nuts. It will be appreciated that the ability to use duplicate movable jaws is a great advantage and saving in manufacture and assembly.

Referring to the modification, Fig. 3, the body 1 is divided and the parts are pivotally secured together in any suitable manner as by the bolt and thumb nut as at 17, so that the respective body parts may act as suitable handles in the operation of the wrench.

What is claimed is:

1. A wrench embodying a shank having at the end a socket with rigid jaws, said shank having a chamber therein and a channel intermediate the chamber and socket, a jaw face mounted in the channel with its inner end in the chamber and movable into and out of the socket parallel with and in proximity to the inner face of one of the rigid jaws, a spring in the chamber for advancing the jaw face, and means for limiting such movement.

2. A wrench embodying a shank having at the end a socket with rigid jaws, said shank having a chamber therein and a channel intermediate the chamber and socket, a plurality of parallel flat jaw faces mounted one in front of the other in the channel with their inner ends in the chamber and movable into and out of the socket parallel with and in proximity to the inner face of one of the rigid jaws, springs in the chamber for independently resisting the inward movement of the jaw faces, and means for limiting the outward movement of said faces.

3. A wrench embodying a shank having at the end a socket with rigid jaws, one of which projects a greater distance than the other to form a positioning guide, said shank having a chamber therein and a channel intermediate the chamber and socket, a jaw face mounted in the channel and movable into and out of the socket parallel with and in proximity to the shorter rigid jaw,

a spring in the chamber for holding the jaw face advanced, and means for limiting the advance of the jaw face.

4. A wrench embodying a shank having at the end a socket with rigid jaws, one of which projects a greater distance than the other to form a positioning guide, said shank having a chamber therein and a channel intermediate the chamber and socket, a plurality of parallel jaw faces mounted one in front of the other in the channel and movable into and out of the socket parallel with and in proximity to the shorter rigid jaw, means for arresting the outward movement of the jaw faces to project a less distance than the longer rigid jaw, and means for yieldingly and independently holding the jaw faces projected into the socket.

5. A wrench embodying a shank having oppositely facing sockets at opposite ends of different width and each having rigid jaws with parallel proximate faces, said shank having a longitudinally extending chamber therein and channels intermediate the ends of the chamber and respective sockets, a jaw face mounted in each channel with its inner end in the chamber and movable into and out of the socket parallel with and in proximity to one of the rigid jaws, a spring in the chamber interposed between the proximate ends of the jaw faces for yieldingly holding both jaw faces projected, and means for limiting the outward movement of the jaw faces.

6. A wrench embodying a shank having oppositely facing sockets at opposite ends of different width and each having rigid jaws with parallel proximate faces, said shank having a longitudinally extending chamber therein and alined channels intermediate the ends of the chamber and respective sockets, a plurality of jaw faces mounted in each channel with their inner ends in the chamber and movable into and out of the socket parallel with and in proximity to one of the rigid jaws, springs in the chamber interposed between the proximate ends of the alined jaw faces for yieldingly holding both jaw faces at opposite ends of the shank projected, and means for limiting the outward movement of the jaw faces.

7. A wrench embodying a shank having oppositely facing sockets at opposite ends of different width and each having rigid jaws with parallel proximate faces, said shank having a longitudinally extending chamber therein and channels intermediate the ends of the chamber and respective sockets, a jaw face mounted in each channel with its inner end in the chamber and movable into and out of the socket parallel with and in proximity to one of the rigid jaws, a spring in the chamber interposed between the proximate ends of the jaw faces for yieldingly holding both jaw faces projected, rods extending through the spring and loosely supported by the jaw faces, and means for limiting the outward movement of the jaw faces.

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

EDWARD D. ROCKWELL.

Witnesses:
ROGER S. NEWELL,
OLIVER E. BROWN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."