(No Model.)

M. F. KILLINGER.

RATCHET WRENCH.

No. 493,273. Patented Mar. 14, 1893.

Fig. 1.

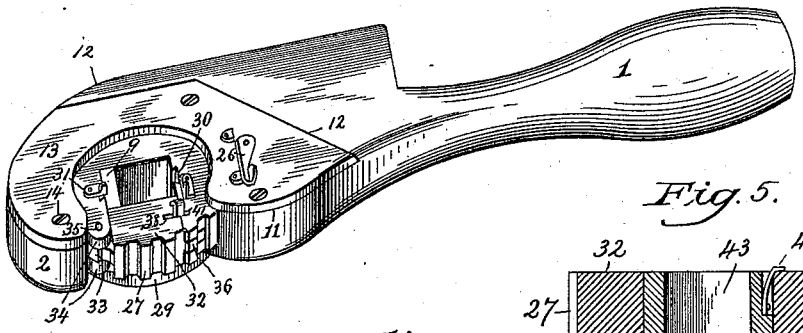


Fig. 5.

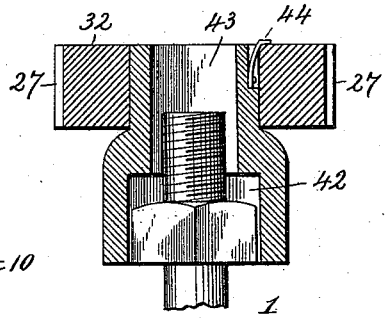


Fig. 2.

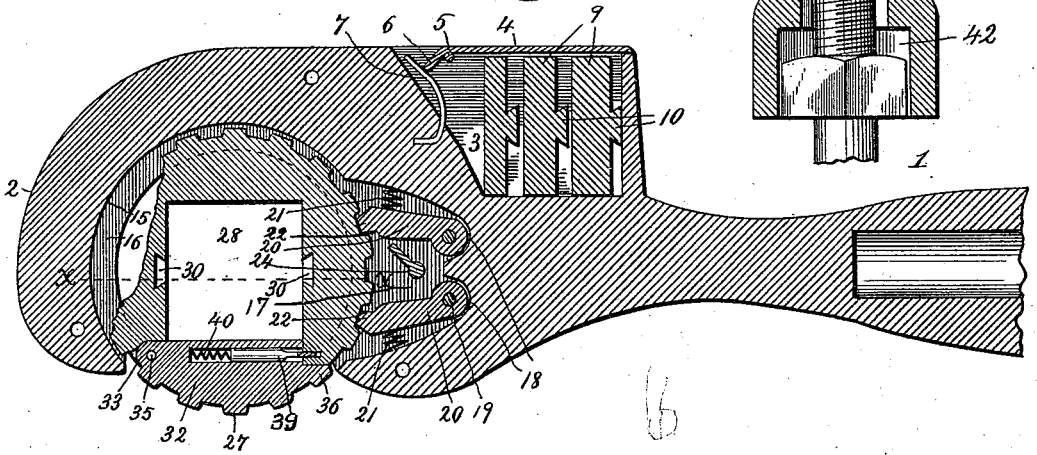
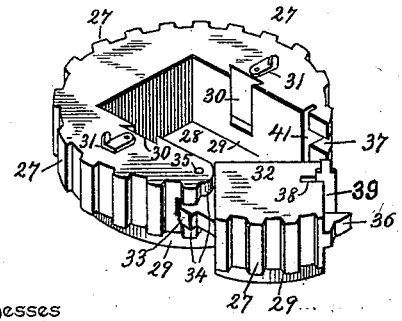
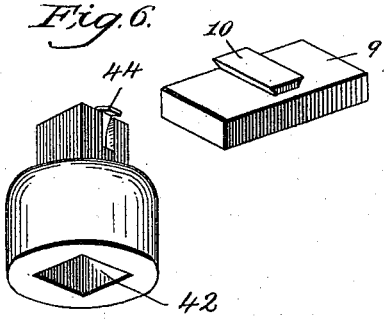


Fig. 3.

Fig. 4.

Fig. 6.





Witnesses

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UNITED STATES PATENT OFFICE.

MONTGOMERY FRANKLIN KILLINGER, OF WYTHEVILLE, VIRGINIA.

RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 493,273, dated March 14, 1893.

Application filed June 15, 1892. Serial No. 436,845. (No model.)

To all whom it may concern:

Be it known that I, MONTGOMERY FRANKLIN KILLINGER, a citizen of the United States, residing at Wytheville, in the county of Wythe and State of Virginia, have invented a new and useful Ratchet-Wrench, of which the following is a specification.

My invention relates to improvements in ratchet-wrenches, the objects in view being to provide a simple and handy wrench of the above pattern adapted to be readily operated in inaccessible places, and to be adjusted so as to operate upon rods, pipes, or nuts of various sizes.

Other objects and advantages of the invention will appear in the following description and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings: Figure 1 is a perspective view of a wrench constructed in accordance with my invention. Fig. 2 is a longitudinal section thereof. Fig. 3 is a detail in perspective of the socket or cylinder. Fig. 4 is a detail in perspective of one of the angular filling blocks. Fig. 5 is a sectional view, line *x*—*x* of Fig. 2, showing attachment for engaging countersunk nuts. Fig. 6 is a detail view of said attachment.

Like numerals of reference indicate like parts in all the figures of the drawings.

In practicing my invention I prefer to form the head and stock of the wrench integral, though, if desired, the stock or handle may be secured upon the head in any suitable manner. In the present instance, 1 designates the handle, which is of the ordinary shape, and which, for the purpose of lightness, may be made hollow. The handle merges into the stock or head of the wrench, indicated as 2, and the same is provided at its rear side, near its junction with the handle, with a square shoulder in which a cavity 3 is formed, and which is normally covered by a swinging cover 4, hinged at 5 to one end of the cavity. The rear end of the hinged cover has a tongue 6, which extends inwardly and bears against a curved spring 7, with which the cavity is provided and which will maintain the cover either open or closed, as may be desired and as will be evident. Within the cavity is packed a series of L-shaped or angular filling blocks 9, and each is provided at its rear side with a dovetailed rib 10, which terminates just short of the lower edge of the block. The purpose of these blocks will be hereinafter described, and it only remains necessary to state at this point that they are of different degrees of thickness.

A shallow recess 11 is formed in the face of the wrench-head or stock 2, and the same is bounded at its back and inner edges by angular shoulders 12. Into this shallow recess removably fits a correspondingly shaped and proportioned plate 13, and the same is maintained in temporary position by screws 14, countersunk in the face of the plate and taking into the said stock or head. The stock or head is provided at its front edge with a nearly circular opening 15, the completion of the circle being only prevented by the termination of the stock or head. The plate 13, like the stock or head, is provided at its edge with a similar opening, though, as will be observed, the opening is not quite so large, and hence the plate forms a retaining flange at one side of the opening in the stock or head. At its opposite side the stock or head has formed integral therewith an internal annular flange 16, which is transversely opposite the retaining flange formed by the plate. At one side of the circular opening 15 a cavity 17 is formed in the inner wall thereof, and said cavity is provided at its bottom with a pair of curved bearing-seats 18. In each of these bearing-seats there are pivoted, by a pin 19, pawls or dogs 20, and interposed between the outer face of each pawl and the side of the cavity are small coiled springs 21. The pawls are provided upon their inner faces in front of their pivots with notches or wards 22. A key 24 passes through the plate 13, between the pawls or dogs, and the blade of the key is adapted to be thrown into engagement with either of the notches 22, and ride over the curved faces of said notches. For the purpose of manipulating the key, the same is provided at its outer end with a small crank-handle 26, that may be readily engaged at its extreme end, which is upturned for the purpose, by the thumb of the operator.

The socket of the wrench is externally cylindrical and provided with ratchet-teeth 27, which teeth, when the socket is in position for rotation between the flange 16 and the retaining flange formed by the plate 13, is de-

signed to have its teeth engaged by either of the pawls 20. The socket is provided with a square opening 28, and upon its under side the said opening is surrounded by a superficial flange or rib 29, which extends beyond the under face of the wrench. Two of the sides of the socket openings 28 are provided with dovetailed recesses 30, which extend from the upper face of the socket to the ribs just mentioned, whereby the latter form stops for the lower ends of the said dovetailed recesses. By mounting in these recesses the dovetailed ribs 10 of the blocks 9, it will be seen that the rectangular opening in the socket will be decreased in size in accordance with the thickness of block employed. When not in use, these blocks are carried in the cavity 3, where they are always ready for such use. In order that the blocks may be maintained in position and prevented from upward withdrawal, pivoted buttons 31 are located at the outer sides of each of the dovetailed recesses 30, and are adapted to be swung over upon the upper side of the blocks. This cylindrical socket may be made solid, as will be obvious, or, as I have herein shown, it may be provided with a removable section 32, which is one wall of the rectangular opening of the socket. Such is preferred and to accomplish the same one end of the removable section is provided with a lug 33, and the same takes in between bifurcations 34, with which the adjacent end of the remainder of the socket is provided and is pivoted thereto by a pin 35 passing through the bifurcations and lug. The outer or free end of the removable section has a tenon 36, which fits into a mortise 37, formed in the socket. Numerous means may be provided for locking the removable section in position, and I have shown one simple and expeditious manner, which consists in providing the front end of the removable section 32 with a transverse kerf and bore, the two combined to form a T-shaped recess 38, located in rear of the tenon 36, and in locating in said recess a T-shaped bolt 39, normally forced outward by a spring 40, and adapted to engage removably with the transverse notch 41, formed in the face of the socket. By the employment of such a cylindrical socket, it will be observed that I am enabled to introduce the wrench transversely over rods and bolts to engage with nuts or bosses that may be upon the same, and also can insert the wrench transversely into narrow recesses in machinery that would not permit of insertion and sufficient raising of the wrench to clear the nut and be settled upon it. The operation of the wrench upon the socket will be obvious, in that it does not differ materially from the ordinary ratchet wrench. By throwing the right pawl in position, the nut may be run off, and by throwing the left pawl into operative position the nut may be run on.

In Figs. 5 and 6 is shown an attachment for engaging and operating nuts which fit into countersunk openings, or are located in similar inaccessible places, as when a number of bolts are arranged in juxtaposition. This attachment consists of the hollow jaw 42, having one side open or cut away to facilitate its application to a nut, and a hollow boss 43 which is of a size to fit the opening in the socket. A spring 44 attached to the upper end of the boss engages the upper surface of the socket to hold the attachment in place. The walls of the jaw are thin to enable them to pass down into countersunk openings around the nuts. This attachment may form a permanent part of the wrench or, preferably, may be constructed so as to be detachable, as shown in the drawings, it being in the latter case applied to the wrench when needed.

Having thus described the invention, what I claim is—

1. In a wrench of the class described, the combination with a stock having a circular opening, a socket mounted therein and having a rectangular opening, one or more of the faces of which are provided with dovetailed grooves, ribs surrounding the lower edge of the opening and forming stops, of filling blocks having dovetailed ribs for removably fitting the grooves, said ribs terminating short of the lower edges of the blocks, and turn-buttons mounted on the socket and adapted to lock the blocks against upward withdrawal, substantially as specified.

2. In a wrench of the class described, the combination with a stock, of a cylindrical socket mounted in the stock and having a nut receiving opening, one wall of which is removable, whereby the opening is accessible from the side, substantially as specified.

3. In a wrench of the class described, the combination with a stock having a circular opening, of a cylindrical socket mounted in the opening, having a rectangular nut-receiving opening, one wall of the rectangular opening being removable, the removable section being hinged at one end to the socket and at its opposite end provided with a tenon adapted to fit a cavity or mortise formed in the opposite end of the socket, and a spring-pressed locking-pin mounted in the free end of the removable section and adapted to engage with an opening in the adjacent end of the socket, substantially as specified.

4. In a wrench of the class described, the combination with a stock, of a cylindrical socket mounted therein, and having a nut receiving opening, one of whose walls is removable, the outer surfaces of the socket and removable portion being toothed continuously, and pawls to engage the toothed periphery, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MONTGOMERY FRANKLIN KILLINGER.

Witnesses:
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R. G. BAUMGARDNER.