(No Model.) 2 Sheets—Sheet 1.

M. M. FUNK.

RATCHET WRENCH.

No. 601,134. Patented Mar. 22, 1898.

Fig. 1.

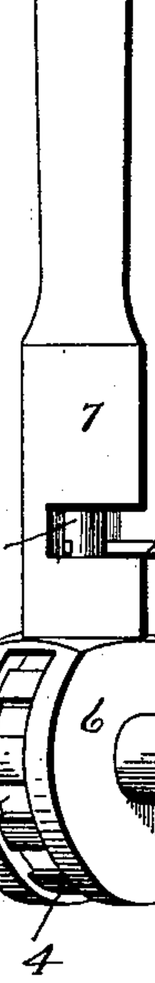


Fig. 2.

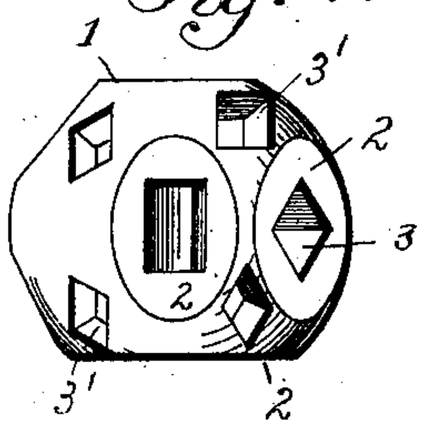
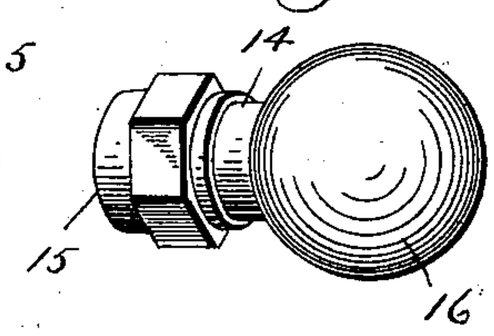


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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RATCHET WRENCH.

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Fig. 5.

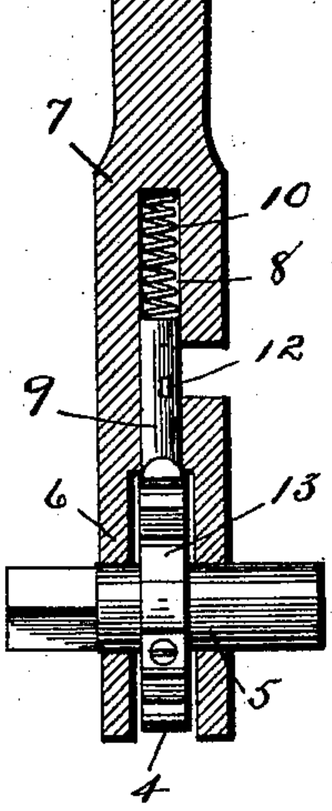


Fig. 4.

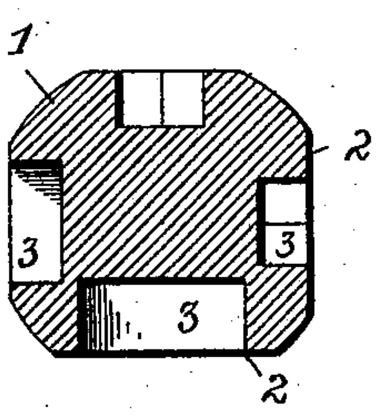
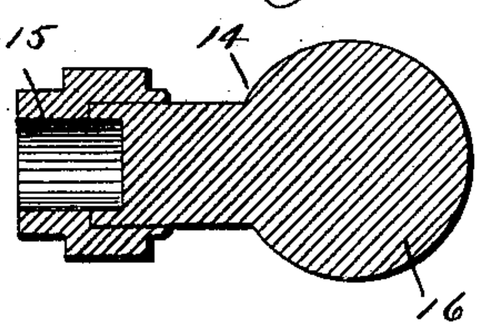


Fig. 6.



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UNITED STATES PATENT OFFICE.

MARK M. FUNK, OF MERCERSBURG, PENNSYLVANIA, ASSIGNOR TO JAMES W. CARSON, OF SAME PLACE.

RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 601,134, dated March 22, 1898.

Application filed July 8, 1897. Serial No. 643,836. (No model.)

To all whom it may concern:

Be it known that I, MARK M. FUNK, of Mercersburg, in the county of Franklin and State of Pennsylvania, have invented certain new and useful Improvements in Ratchet-Wrenches; and I do hereby 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.

This invention relates to improvements in ratchet-wrenches, and has for its object to provide a single wrench-head and means for operating the same, whereby a plurality of nuts of variable sizes may be rotated upon spindles, and providing in connection with said head a ratchet-handle containing a reversible pawl, so that the wrench-head may be rotated in either direction by means of the pawl arrangement within said handle, and also providing an additional handle for securely holding in proper position the wrench-head while the same is being applied and operated.

My improved wrench consists of three separable portions and is simple in construction and as durable as any species of adjustable wrench and as little liable to get out of order.

In the drawings herewith, forming part of this specification, Figures 1, 2, and 3 are perspective views of the several detachable portions of my improved wrench. Fig. 4 is a cross-sectional view of the wrench-head. Fig. 5 is a longitudinal section of the ratchet-handle. Fig. 6 is a longitudinal section of the auxiliary handle used in connection with the ratchet-handle.

In the construction of my improved wrench I provide, first, a steel ball or head 1, having formed thereon a plurality of sides 2, that shown in the drawings herewith containing fourteen sides. Each of said sides 2 constitute a jaw-face, half of said faces being provided with wrench-sockets 3 and the other half with recesses 3′ for the reception of a square ratchet-shaft. The said sockets are located upon such faces of the ball 1 so as to be directly opposite, through the center of the ball to the faces, in which are formed the recesses which are adapted to be engaged by the ratchet-shaft.

I next provide a ratchet-wheel 4, mounted rigidly upon a shaft 5, the said shaft having its ends upon each side of the ratchet-wheel 4 projected through the twin walls of a ratchet-head 6, the said walls of the ratchet-head being integrally formed with a handle portion 7, which handle portion is provided with a central longitudinal aperture 8 therein, opening outwardly into the recess in which said ratchet-wheel is mounted. In the said aperture 8 in the handle portion 7 I provide a plunger-pawl 9, impelled outwardly by means of a spiral spring or springs 10. The said plunger-pawl is at its outer end provided with one square and one inclined edge, so that it may be by rotation adjusted to permit the escape of the ratchet-wheel 4 in either direction, as may be desired.

Projected outwardly through a slot 11 in the handle portion 7 I provide a pin 12, by means of which said plunger-pawl may be reversed in its operative position in respect to the said ratchet-wheel. The said ratchet-wheel 4 is formed with a plurality of notches 13 transversely of its periphery, and is secured upon the shaft 5 by means of a screw passing through said ratchet-wheel into said shaft. One of the projected ends of said shaft is formed square in cross-section and constitutes the operating portion in connection with the recesses formed in the wrench-head, the opposite projecting portion being cylindrical.

I next provide a handle 14, having one end provided with a circular recess 15, so as to inclose the cylindrical projected end of the shaft 5, and the other end formed into a ball 16 or in any other desired form, this handle being for the purpose of sustaining the weight of the ratchet-head and wrench-head while the wrench is being operated.

The operation of my improved device is exceedingly simple, it being only necessary to fit one of the wrench-sockets 3 upon the nut which it is desired to rotate, upon which one of the recesses 3′ will be found upon the opposite side of the ball 1. The square end of the ratchet-shaft is then introduced and the handle 7 oscillated after the pawl 9 has been suitably adjusted by means of the pin 12. During said operation and adjustment the ratchet-head is held in proper position by

means of the handle 14. I thus provide a simple device by means of which a great variety of different-sized nuts may be rotated in either applying or removing same, the same ratchet-handle being used for all. By means of employing additional balls similar to the one herein shown and having a succession of variable-sized wrench-sockets further adaptability of the device for operating upon different-sized nuts may be secured. However, for all practical purposes one ball will be found sufficient with which to operate nearly all nuts or bolts of ordinary size.

Having thus described my invention, what I claim as new, and desire to secure by means of Letters Patent, is—

1. In an adjustable wrench, the combination with a ratchet-head, of a handle therefor, a reversible plunger-pawl mounted within said handle, a ratchet-wheel mounted within said ratchet-head, a shaft projected through said ratchet-head and secured rigidly to said ratchet-wheel, one end of said shaft being square in cross-section, and the other end cylindrical, a ball having a plurality of faces, a wrench-socket upon each half of said faces, uniform recesses formed in each of the opposite remaining faces, and an auxiliary handle adapted to be socketed upon the cylindrical portion of said shaft for supporting the wrench-head and ball in proper position.

2. In a ratchet-wrench, the combination of a handle having a bifurcated head at one end thereof, a shaft journaled in the opposite walls of said bifurcation and projecting beyond the same, a ratchet-wheel mounted on the shaft between said walls, a pawl to engage the ratchet-wheel, a ball or head having a plurality of jaw-faces formed with wrench sockets and recesses and adapted to be applied upon one of the projecting ends of the shaft, and a handle adapted to be applied to the other projecting end of said shaft to sustain the weight of the ratchet-head and wrench-head while the wrench is being operated, substantially as described.

3. An adjustable wrench having combined therein a ratchet-head, a handle therefor, a reversible plunger-pawl mounted in said handle, a ratchet-wheel mounted also in said handle adjacent to and operating in connection with said plunger-pawl, a pin for reversing said pawl, a shaft projected through said handle and carrying said ratchet-wheel, the said shaft having one of its projected ends formed square in cross-section, and the other end cylindrical, a ball provided with a plurality of faces, a wrench-socket on each half of said faces, said sockets being of different sizes, recesses formed upon the remaining faces of said ball and adapted to be engaged by the square end of said shaft, and a supplemental handle provided for the cylindrical end of said shaft for holding the said ratchet-head and ball in proper position while the wrench is being applied and operated.

4. In a ratchet-wrench, the combination of a handle having a bifurcated head and a slot opening thereinto, a shaft journaled in the walls of said bifurcation and projecting beyond the same, a ratchet-wheel mounted on the shaft between said walls, a plunger-pawl in said slot having its outer edge beveled on one side only and adapted to be oscillated to vary the position of the beveled side and direction of rotation of the ratchet-wheel, a ball or head having a plurality of jaw-faces formed with wrench sockets and recesses and adapted to be applied upon one of the projecting ends of the shaft, and a handle 14 adapted to be applied to the other projecting end of said shaft to sustain the weight of the ratchet-head and wrench-head while the wrench is being operated, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MARK M. FUNK.

Witnesses:
W. D. McKINSTRY,
W. E. McKINSTRY.