E. D. SMITH.

WRENCH.

APPLICATION FILED AUG. 4, 1908.

919,260. Patented Apr. 20, 1909.

Fig. 1.

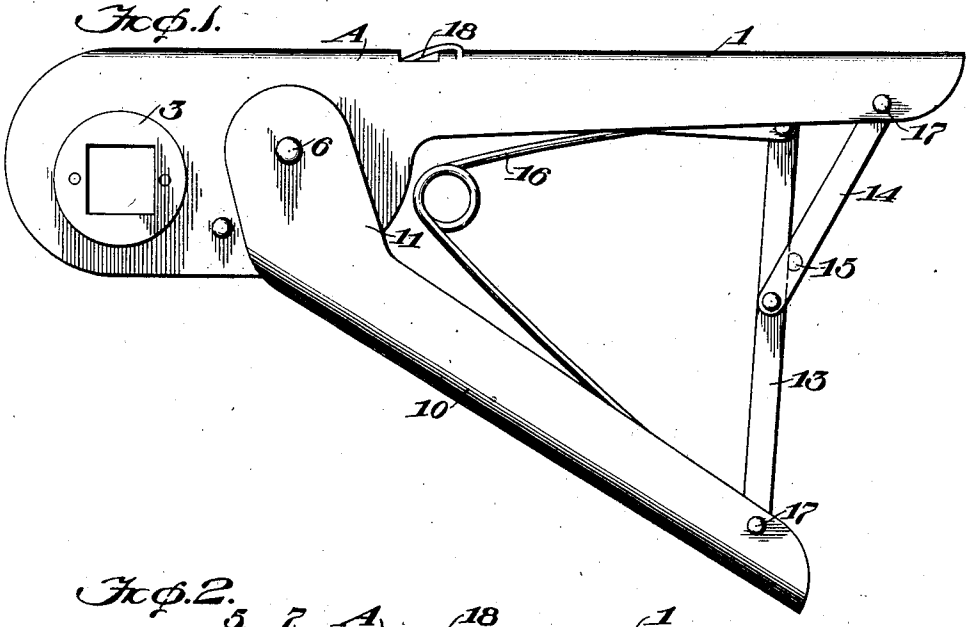


Fig. 2.

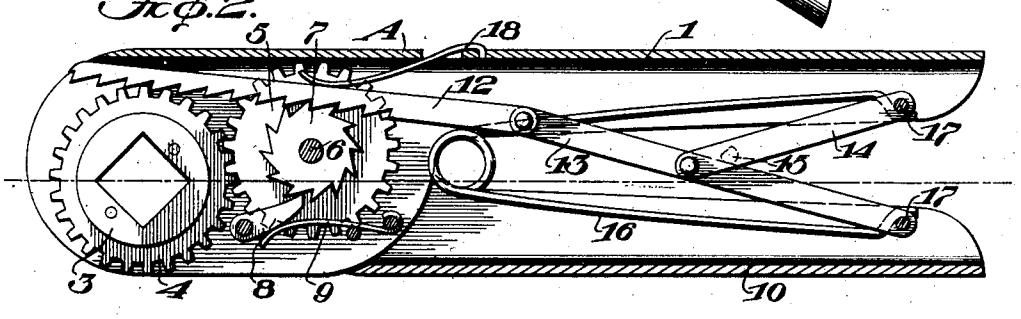
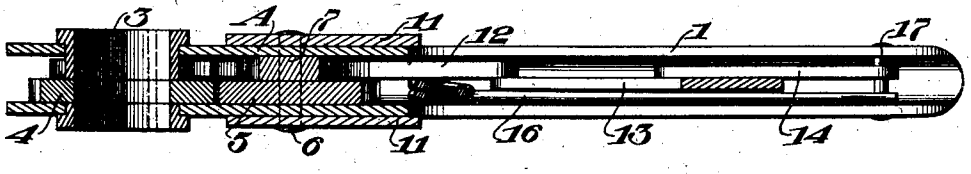


Fig. 3.



Witnesses

Lloyd W. Patch

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UNITED STATES PATENT OFFICE.

EDWIN D. SMITH, OF PITTSBURG, PENNSYLVANIA.

WRENCH.

No. 919,260. Specification of Letters Patent. Patented April 20, 1909.

Application filed August 4, 1908. Serial No. 446,883.

To all whom it may concern:

Be it known that I, EDWIN D. SMITH, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

My invention relates to an improvement in wrenches, and the object is to provide means for automatically rotating the nut without the necessity of rotating the handle for turning the nut upon the bolt. The nut is caused to rotate by merely pressing the handles of the wrench together, which gives the nut complete rotation.

The invention consists of certain novel features of construction and combinations of parts, which will be hereinafter described and pointed out in the claims.

In the accompanying drawings:—Figure 1 is a side elevation; Fig. 2 is a view in side elevation partly in section with one of the sides removed; and Fig. 3 is a cross-sectional view.

A represents the casting or casing of the wrench which is made U-shape, and at one end of the casting an integral handle 1 is formed. Extending through the sides of the casting and at the forward end is a head 3, which is preferably made in two pieces, the two pieces connected together by any suitable means. Mounted upon one of the sections of the head is a large gear wheel 4, which gear wheel is received within the casting. A similar gear wheel 5 is mounted in the casting on a pin 6, which is adapted to engage the gear 4. Mounted on the pin 6 is a ratchet wheel 7 the same being secured to or integral with wheel 5, and a pawl 8 connected to one side of the casting is adapted to engage the teeth of the wheel 7. A spring 9 is connected to one side of the casting and bears against the pawl, causing it to engage the teeth of the ratchet wheel 7. A handle 10 is pivotally connected to the casting on the pin 6, the end of the handle being forked as at 11, which permits it to extend over the sides of the casting and thereby connect it to the pin 6.

Received in the handle 1 and engaging the ratchet wheel 7 is a ratchet lever 12, which is adapted to operate the ratchet wheel for causing the large gears to rotate. A lever 13 is pivotally connected to one end of the ratchet lever and the other end of the lever 13 is pivotally connected to the pivoted handle 10. A small lever 14 is pivotally connected to the handle 1 and to the lever 13, which forms a toggle connection. A stop 15 is formed on the small lever 14 for limiting the rearward movement of the lever 13, thereby preventing the ratchet from traveling too far to the rear and becoming disengaged from the ratchet wheel 7. A spring 16, which is coiled at the center, is received at the upper ends of the handles and the ends of the spring extend down and engage the pins 17, 17, which connect the levers 13 and 14 to the handles, which causes the pivoted handle to be in extended position. A flat spring 18 is connected to the casting and bears against the rack lever 12 causing the rack teeth of the lever to engage the teeth of the ratchet wheel in its movement.

As the handle 10 is brought toward the stationary handle 1, the levers 13 and 14 are forced forward, which causes the rack lever 12 to be forced toward the front end of the wrench and the teeth of the rack lever, engaging the rack teeth of the ratchet wheel 7, will cause the gear 5 to rotate, which gear is in engagement with the gear wheel 4 and will cause this gear to rotate, and through the connection of the gear wheel 4 with the head 3 the head will be caused to rotate, thereby turning the nut. This operation gives a complete rotation to the head, causing the nut to be turned upon the bolt and giving it a complete turn. This operation is repeated by simply drawing the handles together in the hand of the operator until the nut has been screwed upon the bolt the required distance. To unscrew the bolt the position of the wrench is simply reversed.

The dies or heads for the wrench can be made of different diameters or sizes for different size nuts, and while I have made the casting or casing of a single piece of material it may be found advisable to make this invention in a different manner in some instances, and I do not care to be limited to the exact construction and arrangement of the parts as herein set forth; but:

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A wrench comprising a head, a gear mounted on the head, a gear wheel in engagement with the first named gear, a toothed wheel, a toothed lever in engagement with

the toothed wheel and a toggle joint for operating the toothed lever for rotating the head.

2. In a wrench, the combination with a casing, a head journaled therein, a gear wheel mounted on the head, a gear wheel mounted in the casing and in engagement with the first named gear wheel, a ratchet wheel, a ratchet lever in engagement with the ratchet wheel, a toggle joint and means connecting the toggle joint and wheel whereby the ratchet wheel is rotated for operating the head.

3. In a wrench, the combination with a casing, of a head journaled therein, a gear wheel mounted thereon, a gear wheel journaled in the casing in engagement with the first named gear wheel, a toothed wheel, a toothed bar in engagement with the toothed wheel, a pivoted handle, a lever connecting the handle and toothed lever whereby the toothed wheel is operated as the handle is compressed and the head rotated, and a spring for holding the handle in extended position.

4. In a wrench, the combination with a casing, of a head journaled therein, a gear wheel mounted thereon, a pin journaled in the casing, a gear wheel mounted thereon and in engagement with the first named gear wheel, a ratchet wheel mounted on the pin, a ratchet bar in engagement with the ratchet wheel, stationary and pivoted handles, levers connecting the handles and one of the levers connected to the ratchet lever whereby the ratchet wheel is rotated as the handle is compressed and the head rotated.

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

EDWIN D. SMITH.

Witnesses:
LUCY P. WHITNEY,
J. M. COPELAND.