(No Model.)

R. N. CHERRY.

WRENCH.

No. 249,003. Patented Nov. 1, 1881.

Fig. 1.

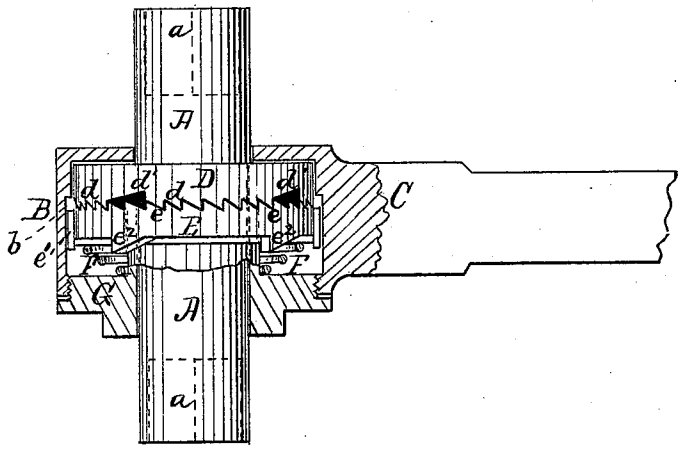


Fig. 2.

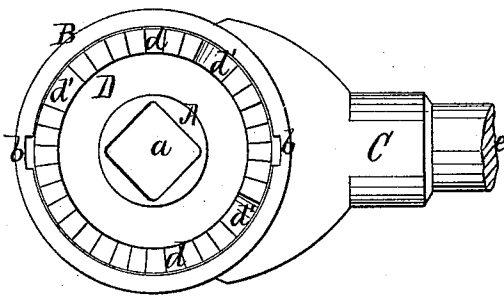


Fig. 3.

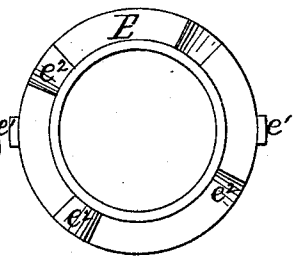
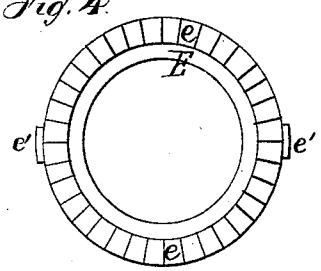


Fig. 4.



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Application filed September 9, 1881. (No model.)

To all whom it may concern:

Be it known that I, ROBERT N. CHERRY, of Jersey City, Hudson county, New Jersey, am the inventor of certain new and useful Improvements in Wrenches, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates particularly to ratchet-wrenches; and it consists in a ratchet-wrench in which the ratchet mechanism is composed of crown-ratchet wheels constructed and arranged to operate substantially as hereinafter particularly shown and described.

Figure 1 is a side view, partly in central vertical section, of a ratchet-wrench embodying my invention. Fig. 2 is an interior-plan view of the same, the nut and lower ratchet-wheel being removed from the bushing to disclose the under face of the upper ratchet-wheel. Fig. 3 is a plan view of the under face of the lower ratchet-wheel, and Fig. 4 is a similar view of the upper face of the same.

In my improved wrench, A is the stock, on the ends of which are the wrench-sockets *a*, as shown. B is the bushing, and C is the handle, arranged as shown.

D is a crown-ratchet wheel, the perimeter of one face of which has cut or otherwise formed on it the circular row of teeth *d*. This crown-ratchet wheel is formed on the stock A, or is made as a separate piece and keyed or otherwise secured upon the stock A in the position shown—namely, so that it will be seated in the upper end of the bushing B and its teeth *d* will depend into the cavity of the bushing. The teeth *d* are preferably cut so that when the mechanism is complete the wrench will operate right-handed.

E is a crown-ratchet wheel having upon the perimeter of one of its faces a circular row of teeth, *e*, formed and adapted to engage and mesh into the teeth *d* of the wheel D. The wheel E has a circular opening about its axis, by which it is slipped upon the stock A, as shown, with its teeth *e* pointing upward to meet and engage the teeth of the wheel D. Upon the periphery of E are formed ribs *e'*, preferably two in number, and arranged diametrically opposite to each other, and these ribs enter grooves *b*, cut in the inner face of the bushing B, as shown.

A coil-spring, F, is placed under or upon the exposed face of the wheel E within the bushing, as shown, and the nut G is then screwed into the lower end of the bushing, as seen in Fig. 1. The spring F thus operates to hold the wheel E in engagement with wheel D, and at the same time to permit the teeth to play past each other during the operation of the wrench. Any other device which will make the wheel E a spring crown-ratchet to operate as specified may be employed; but it is evident that the pawl or pawls in such a construction will each engage but one tooth on the ratchet at a time, and it has been found as a consequence that such mechanism is not strong and durable, any great or sudden strain upon the ratchet and pawls being liable to fracture or otherwise injure or disable one or both.

The construction of the crown-ratchet wheels which I have described is that for a right-handed wrench only; but it being desirable to have a wrench which is both right and left handed, I preferably cut upon the under toothed face of the wheel D the left-handed deep teeth *d'*, which may be formed on the same row as the teeth *d*, as shown, and are then cut wider and deeper and farther apart than the teeth *d*, as shown. A row of teeth may be cut on said face within the row *d*, the circle on which they are cut having a less radius than the row *d*, and upon the face of the wheel E, opposite to the face carrying the teeth *e*, I cut a row of crown-teeth, e^2, adapted to mesh into and engage the teeth *d'* of the wheel D. Then, to make the wrench a left-handed tool, it is simply necessary to unscrew the nut G, remove the spring F, reverse the wheel E on the stock A, and then replace the spring and nut.

It is evident that my improved crown-ratchet wheels D and E are applicable to ratchet-drills as well as to ratchet-wrenches.

I am aware that ratchet wrenches and drills have been heretofore constructed with crown-ratchet wheels held to engagement by a helical spring as essential parts of the operating mechanism thereof. I do not, therefore, claim, broadly, a wrench having such crown-ratchets and spring; but I intend to limit my claims

hereunder to the devices in a ratchet-wrench herein particularly described, constructed, and arranged to operate as specified.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a ratchet-wrench, the combination, with the stock A, the bushing B, and the handle C, of the crown-ratchet wheel D, formed on the stock, and crown-ratchet wheel E, having lugs e', adapted to work in ways b in said bushing, together with spring F and nut G, all constructed and arranged to operate substantially as and for the purpose specified.

2. In a ratchet-wrench, the combination, with the stock A, the bushing B, and handle C, of the crown-ratchet wheel D, having the rows of teeth d and d' on the same face of said wheel, and the spring-crown-ratchet wheel E, having the rows of teeth e and e^2 on opposite faces of said wheel, and the nut G, substantially as and for the purpose specified.

ROBT. N. CHERRY.

Witnesses:
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