(No Model.)

J. B. LOWELL.

WRENCH.

No. 417,829. Patented Dec. 24, 1889.

Fig: 1.

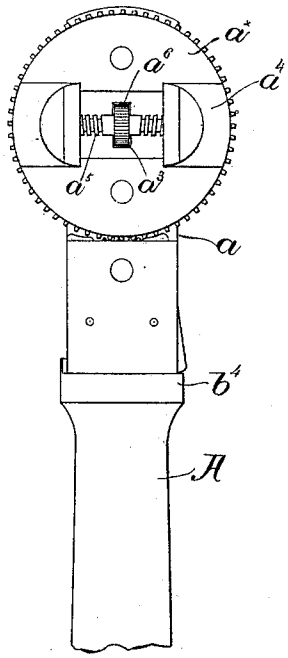


Fig: 2.

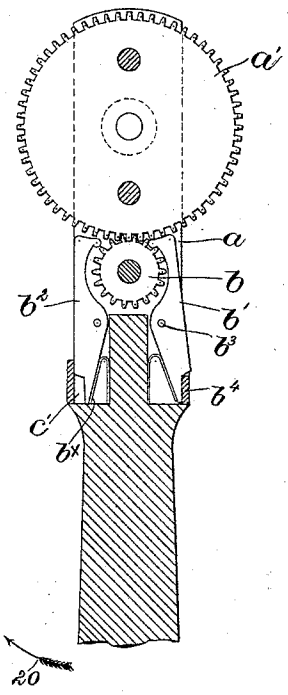


Fig: 3

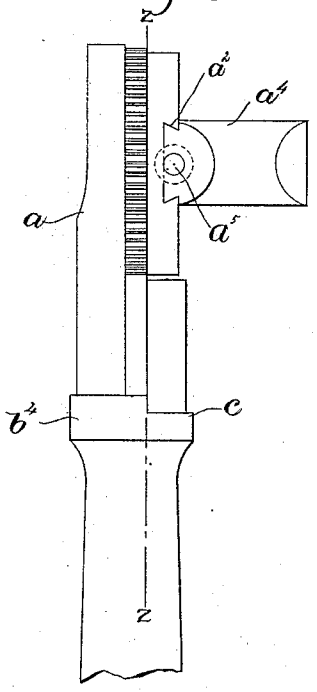
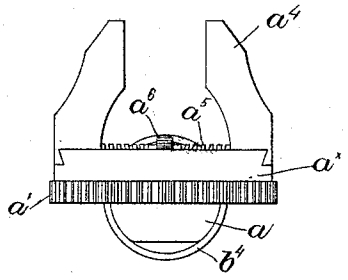


Fig: 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 417,829, dated December 24, 1889.

Application filed December 18, 1888. Serial No. 293,977. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH B. LOWELL, of Chelsea, county of Suffolk, State of Massachusetts, have invented an Improvement in Wrenches, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide a novel wrench which may be readily changed to be used for pipe-work and as a ratchet nut-wrench, thus constituting an interchangeable wrench.

In accordance with my invention the jaws of the wrench are adjustably mounted, as will be described, on a ratchet-wheel in mesh with and rotated by a pinion carried by the beam or shank of the wrench. The pinion referred to has co-operating with it two spring-actuated pawls, the upper ends of which are thrown forward by the said springs to engage the pinion and ratchet where they touch, whereby the said ratchet is securely locked or held stationary, so that the wrench may then be used for pipe-work or as an ordinary wrench. The lower ends of the pawls are engaged, preferably, by a circular band on the beam, the said band being shaped, as will be described, to act on the lower ends of the pawls and throw the upper ends of the same out of engagement when the said band is moved into one position, thus permitting the pinion to be rotated on the ratchet and the wrench to be employed for nut-work, the said band when moved into the said position permitting either of the pawls to be disengaged from and permitting the other pawl to engage with the pinion according to the direction it is desired to turn the nut.

The particular features of my invention will be pointed out in the claim at the end of this specification.

Figure 1 is a front elevation of a wrench embodying my invention, the handle or beam being broken off; Fig. 2, a vertical longitudinal section through the beam on line $z\,z$, Fig. 3, to more clearly show the locking-pawls; Fig. 3, a side elevation of the wrench shown in Fig. 1, and Fig. 4 a top or plan view of the wrench shown in Fig. 1.

The beam A, provided with the extension or arm a, may be made of iron or other usual material. The arm a has pivoted to it the ratchet-wheel a', having secured to it, as shown, a circular disk $a^\times$, provided with a diametrical dovetailed groove or channel a^2, provided with a recess a^3. (See Fig. 1.) The channel a^2 receives within it the jaws a^4, mounted upon a right-and-left-handed screw a^5, provided with a thumb-nut a^6, which enters the recess a^3, and is prevented from moving longitudinally by the shoulders or sides of the recess, thus preventing bodily movement of the jaws and screw. The ratchet-wheel a' meshes with a pinion b, pivoted to the arm a, and the said pinion has co-operating with it, as shown, two pawls $b'\,b^2$, pivoted as at b^3, and having their lower ends encircled by a band or collar b^4 on the beam. The band or collar b^4 has a portion of its circumference cut away, as at c, (see Fig. 3,) for a purpose to be described.

As herein shown, the lower ends of the pawls are cut away and the band or collar provided on its inner face with a cam or projection c'. (See Fig. 2.)

In practice the wrench may be employed for nut-work or as an ordinary ratchet-wrench, and when so employed one of the pawls will be disengaged from the pinion, the pawl b^2 being shown disengaged in Fig. 2. In this case the handle would be turned to the left or in the direction indicated by arrow 20, the pinion b being free to turn on the ratchet-wheel a'. When the handle is moved toward the right, the pawl locks the pinion and the jaws operate to turn the nut. If it is desired to ratchet in the opposite direction, the collar b^4 will be turned on the beam to force inward the lower end of the pawl b' and thus disengage its upper end from the pinion, while at the same time the collar will cease to act on the lower end of the pawl b^2, and the spring $b^\times$ acts on the said pawl and engages its upper end with the pinion, thus securely locking it against movement toward the left or in the direction of arrow 20.

If it is desired to use the wrench as a pipe-wrench, the collar b^4 will be turned so that the lower ends of both pawls will not be acted upon by it, but will be free to permit the springs $b^\times$ to turn the said pawls so as to

bring their upper ends in engagement with the pinion in the bight of the said pinion and ratchet, thus securely locking the said pinion and ratchet against rotary movement in either direction.

I claim—

In a wrench, the combination, with a beam and a ratchet-wheel supported thereby, jaws a^4, and a right-and-left-handed screw-rod a^5 to move said jaws, of a pinion to drive said ratchet, and pawls having teeth to engage the said pinion and ratchet-wheel to lock said pinion and ratchet-wheel, and springs to act on said pawls, substantially as and for the purpose specified.

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

JOSEPH B. LOWELL.

Witnesses:

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