(No Model.)

J. A. BOLEN.

RATCHET BIT BRACE.

No. 342,727. Patented May 25, 1886.

Fig 1

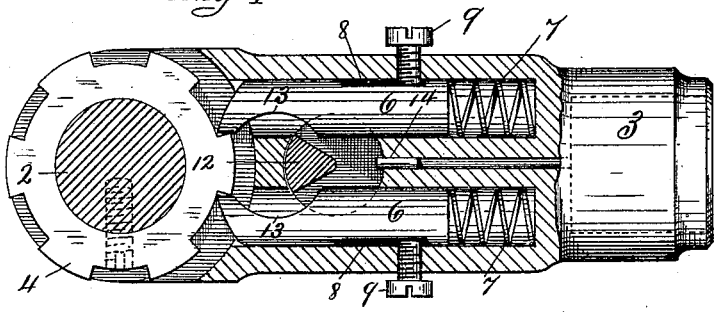


Fig 2

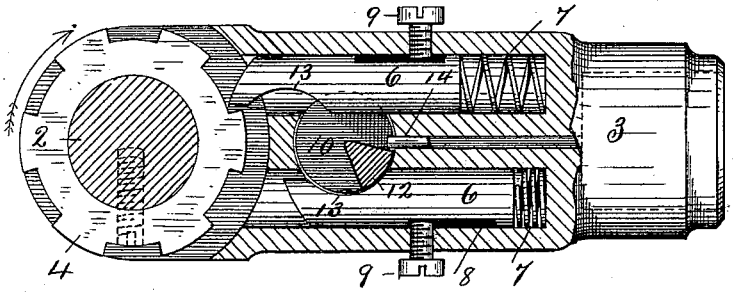
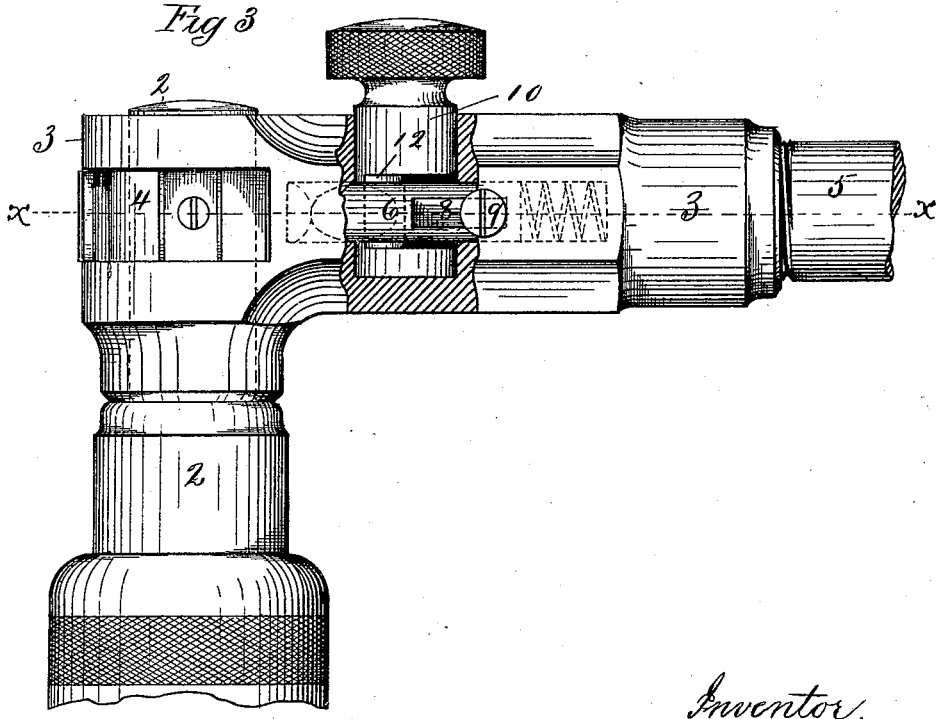


Fig 3



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UNITED STATES PATENT OFFICE.

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RATCHET BIT-BRACE.

SPECIFICATION forming part of Letters Patent No. 342,727, dated May 25, 1886.

Application filed March 18, 1886. Serial No. 195,635. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. BOLEN, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Ratchet Bit-Braces, of which the following is a specification.

This invention relates to improvements in ratchet bit-braces; and the invention consists in the peculiar construction and arrangement of the parts, as hereinafter fully described, and pointed out in the claims.

In the drawings, forming part of this specification, Figures 1 and 2 are top plan views, partly in section, of the parts of a bit-brace at the junction of the handle and the bit-holding stock embodying my invention, said figures showing the pawls and their controlling mechanism in two different positions. Fig. 3 is a side elevation showing one side of the handle near the ratchet broken away to show the internal mechanism.

In the drawings, 2 is the upper portion of the stock in which the bit is secured, the lower portion being shown broken off in the drawings, for the within-described invention relates, essentially, to improved pawl devices for operating in conjunction with a ratchet secured to the upper end of said stock 2, said pawl devices being located in that part of the bit-brace immediately connected to the stock and adapted to be engaged with and disengaged from the said ratchet on the latter. The upper end of the stock 2 is made of suitable size to pass through a perforation made through the bifurcated end of the brace or handle 3, and a ratchet-wheel, 4, is secured on the stock by a screw or other suitable means, as shown, between the opposite parts of the bifurcated end of the brace, whereby the latter is secured on the stock and is capable of being rotated thereon in the usual way. The brace 3 has a socket in its end, as shown in Figs. 1 and 2, to receive the end of the usual bent portion thereof.

Figs. 1 and 2 illustrate the interior of the part of the brace 3 adjoining the stock 2 about on line *x x*, Fig. 3. Two longitudinal sockets are formed in said brace parallel to each other, in which are located two pawls, 6 6, which are adapted to have a to-and-fro endwise motion therein. A spiral spring, 7, is located between the rear end of each pawl and the extreme end of its socket, whereby the pawl is moved outward when free to do so, and its outer end is brought into engagement with the teeth of the ratchet 4. Two of said pawls are employed in order to control the movement of the ratchet-wheel and the stock in both directions by the swing of the brace 3, the outer end of each pawl being beveled off on one side, as shown, to let the teeth of said wheel ride over it without resistance when turned in one direction. The outer side of each pawl has a flat-faced recess, 8, formed therein, in which the end of a screw, 9, which passes through the opposite sides of the brace, engages, whereby the pawls are secured in the latter, and are allowed a limited longitudinal movement determined by the length of said recess. A pawl-actuating stud, 10, is placed in the brace 3 between said two pawls, the lower end of its shank entering a socket beneath the latter, as shown in Fig. 3, and said lower end of the stud-shank is connected with the upper part thereof by a quadrant-formed extension (in cross-section) or neck, 12, which by the location of said stud is brought immediately between the inner opposite sides of the two pawls, and in each of the latter is formed a curved recess, 13, the circumferential line of which corresponds with that of the shank of the stud 10 and consequently of the curved side of said quadrant-formed extension 12. Said stud has a rotary motion (by means of the finger-piece shown on its outer end) within the brace, which is limited in each direction by the pin 14, which is driven into the latter and has one end projecting through the side of the socket in which said stud turns, and when the latter is turned, as in Fig. 2, to carry one pawl backward into its socket the side of the extension 12 of the stud strikes the end of said pin and prevents the stud from being rotated farther in that direction, and said extension from being turned so far as to be clear from said pawl, thereby permitting the latter to be thrown outward by its spring.

It will be seen by reference to Fig. 2 that only one at a time of the pawls 6 can be thrown backward by the stud 10, and consequently one thereof always extends between the parts

of the stud which are connected by the extension 12, and over that part beneath the pawls, and thereby one of the latter always serves to lock the stud in the brace.

When the pawls and stud are assembled in the brace, the stud 10 is first placed in the latter and turned to the position shown in Fig. 1, allowing the pawls to be placed in their sockets from the ratchet end of the brace, and then the screw 9 is turned in to engage with the recess in the side of each pawl.

The operation of the said improvements is as follows: Fig. 1 shows the stud 10 turned to a position which leaves both pawls free to be driven forward against the ratchet-wheel 4, and to engage the opposite sides of one of the teeth of the latter, thereby so locking the brace 3 and the stock 2 together that the latter may be turned in either direction by the brace. To turn the stock in the direction indicated by the arrow in Fig. 2, the stud 10 is turned to swing its extension 12 into engagement with the curved recess 13 in one of the pawls, as there shown, forcing the latter back away from the ratchet-wheel, and when so turned (as in Fig. 2) the stud remains immovable and holds the retired pawl, leaving the other one free to engage with the ratchet-wheel, as shown; and to operate the stock 2 in the opposite direction the stud 10 is turned around to throw back the pawl shown in engagement with the ratchet-wheel in Fig. 2, and let the other pawl engage with said wheel.

What I claim as my invention is—

1. In combination, the stock 2, having the ratchet-wheel 4 secured thereon, the brace 3, rotatably attached to said stock, two spring-actuated pawls, 6, located in said brace and capable of engaging with said ratchet-wheel, and a rotating stud, 10, located between said pawls and having a quadrant-shaped extension, 12, between its upper and lower portions, engaging with either of said pawls to withdraw them from the ratchet-wheel, substantially as set forth.

2. The brace 3, the ratchet-wheel 4, the pawl 6, having a curved recess in its side, a rotating stud, 10, having the quadrant-shaped extension therein to engage with said curved recess, and a spring to move the pawl outward, combined and operating substantially as set forth.

2. The combination, with the stock 2, having a ratchet-wheel thereon, and brace 3, attached to said stock, of two longitudinally-moving pawls located in the brace to engage with said ratchet-wheel, a rotating stud, substantially as described, located in the brace between said pawls and engaging with the latter alternately to move them endwise, and suitable springs to drive said pawls against said ratchet-wheel, substantially as set forth.

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