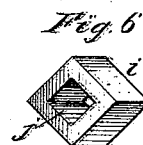
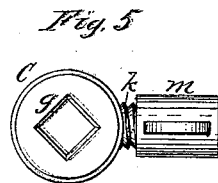
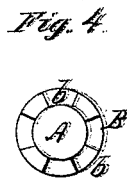
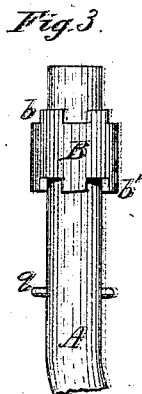
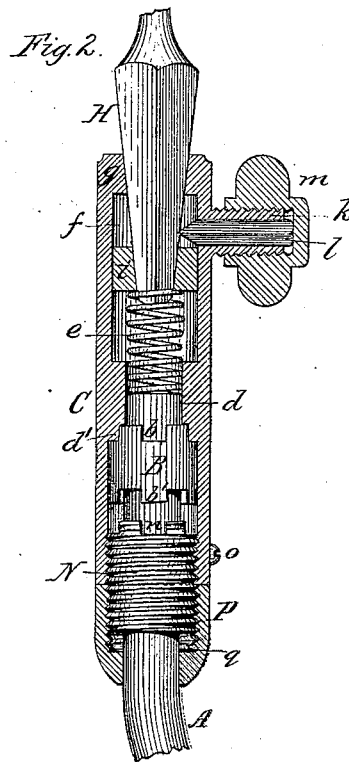
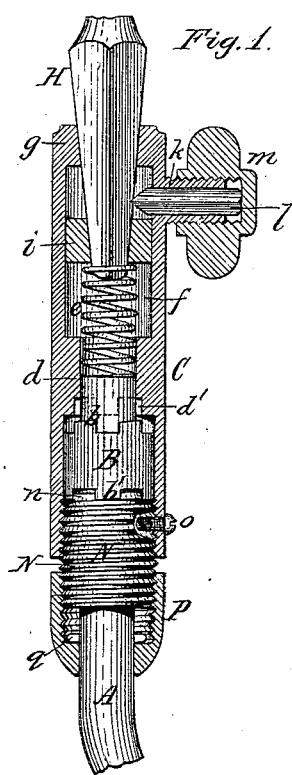


C. H. AMIDON.  
Bit-Brace.

No. 217,672.

Patented July 22, 1879.



*Chas. J. Bachhut.*  
*Edw. J. Brady.*  
Witnesses.

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# UNITED STATES PATENT OFFICE.

CHARLES H. AMIDON, OF BUFFALO, NEW YORK.

## IMPROVEMENT IN BIT-BRACES.

Specification forming part of Letters Patent No. **217,672**, dated July 22, 1879; application filed December 9, 1878.

*To all whom it may concern:*

Be it known that I, CHARLES H. AMIDON, of the city of Buffalo, in the county of Erie, in the State of New York, have invented new and useful Improvements in Bit-Braces, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to that class of bit-braces which are provided with a ratchet-movement, whereby the bit is enabled to be operated by repeated partial rotations of the stock and brace in places where a complete rotation of the brace cannot be had.

The invention consists, first, in providing the bit-stock with a sliding spring-socket for readily centering the bit and supporting the inner end of the tang; also, in combining with the ratchet mechanism of the bit-stock a sliding spring-socket, in which the end of the bit-tang is received, and whereby the bit is enabled to be more easily operated; also, in combining with the ratchet mechanism of the bit-stock a device for locking the parts together, so as to prevent the ratchet from operating, and enabling the brace to be used like an ordinary rigid brace, as will be hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a sectional elevation of a bit-stock provided with my improvements, with the locking device released, so as to permit the ratchets to operate. Fig. 2 is a similar view with the locking device applied. Fig. 3 is a detached view of the end of the brace with the surrounding parts removed. Fig. 4 is an end view thereof. Fig. 5 is an end view of the bit-stock. Fig. 6 is a detached view of the sliding bearing.

Like letters of reference designate like parts in each of the figures.

A represents the end of the brace to which the bit-stock is secured, and B is a collar or enlargement secured to the portion A of the brace at a short distance from its end, as clearly shown, and provided with teeth or ratchets *b b'*, formed in both the upper and lower faces of the collar B.

C is a sleeve or hollow cylinder, inclosing the collar B and forming the body of the bit-stock. The sleeve C is provided, above the collar B, with a contracted portion, *d*, having ratchets or teeth *d'* formed in its lower side, for engagement with the teeth *b* of the collar B,

and a cylindrical bore or cavity for the reception of a spiral spring, *e*. The upper or outer end of the sleeve C is provided with a cavity, *f*, made square in cross-section, and having secured in its end a square bearing, *g*, for holding the outer portion of the tang H of the bit. *i* is a square bearing arranged in the cavity *f* of the sleeve C, so as to slide therein, and having a square perforation, *j*, for the reception of the inner end of the tang H. The spring *e* bears against this sliding bearing *i*, and tends to hold the same away from the end of the bit-brace A, or near the outer fixed bearing, *g*.

The device for securing the bit in the stock consists of a hollow sleeve, *k*, secured laterally to the sleeve C, immediately in the rear of the outer fixed bearing, *g*; a chisel, *l*, arranged within the sleeve *k*, so as to bear with its edge against the corner of the tang; and a screw-cap, *m*, engaging with an exterior screw-thread on the sleeve *k*, so as to press the chisel *l* against the tang of the bit, as fully described in Letters Patent No. 201,379, granted to me March 19, 1878. Any other suitable fastening device may, however, be used, if preferred.

N is a sleeve arranged on the end A of the brace, below the ratchet-collar B, and *n* are teeth formed in the upper side of the sleeve N, to engage with the ratchets or teeth *b'* on the lower side of the collar B. The sleeve N is provided with an exterior screw-thread, which engages in an internal screw-thread formed in the lower portion of the sleeve C, for connecting the sleeves C and N together. *o* is a set-screw passed through the sleeves C and N, to prevent the same from becoming separated or working loose in using the brace.

The ratchets *d'* and *n* are arranged at such a distance apart that when one set is thrown in engagement with the corresponding set of ratchets on the collar B the other set will be free, thus enabling the operator to use the brace either to the right or left, as may be most convenient.

In inserting the bit into the stock the inner end of the tang is received in the sliding bearing *i*, whereby it is centered at once and prevented from becoming displaced when the fastening device is tightened. The spring *e* tends to throw the lower ratchets, *n*, in engagement with the ratchets *b'*, while the pressure on the

bit in using the brace has the effect to cause the upper ratchets, *d'*, to mesh with the ratchets *b*. By sliding the sleeve C forward or backward either pair of ratchets can be thrown in engagement and the bit operated to the right or left, while by giving the sleeve C an intermediate position neither set of ratchets is engaged, and the brace can be turned back without turning the bit.

P is a screw-sleeve arranged loosely on the portion A of the brace, and provided with an internal screw-thread, corresponding with the thread on the sleeve N. *q* is a stop secured to the end A of the brace within the sleeve P, so that when the latter is screwed to the lower end of the sleeve N the lower contracted portion of the sleeve P will shear against the stop *q*, and thereby cause the sleeve P to draw the sleeve C tightly against the ratchet-collar B, whereby the ratchets are prevented from operating and the bit-stock rendered rigid, permitting the brace to be used like an ordinary rigid brace.

I claim as my invention—

1. The combination, with the sleeve C, of the fixed end bearing, *g*, sliding bearing *i*, having a perforation, *j*, and spring *e*, substantially as and for the purpose set forth.

2. The combination, with the brace A, provided with ratchet-collar B, of the sleeve C, provided with ratchets *d'*, fixed bearing *g*, sliding perforated bearing *i*, and spring *e*, substantially as and for the purpose set forth.

3. The combination, with the brace A, provided with ratchet-collar B and stop *q*, of the sleeve C, provided with ratchets *d'*, screw-sleeve N, having ratchets *n*, and screw-sleeve P, substantially as and for the purpose set forth.

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Witnesses:

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