C. H. AMIDON.

BIT-BRACE WRENCHES.

No. 193,632. Patented July 31, 1877.

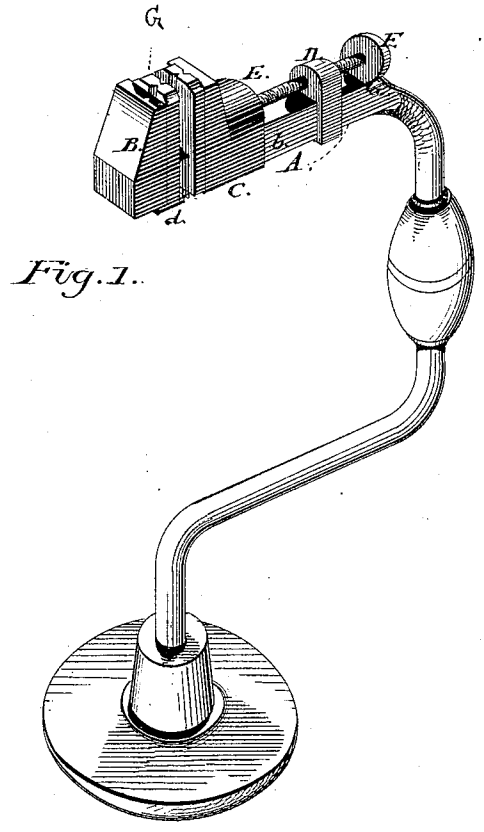


Fig. 1.

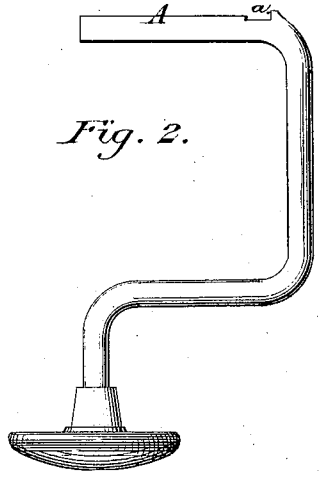


Fig. 2.

Fig. 3.

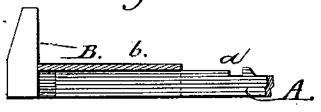


Fig. 4.

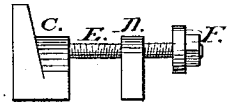
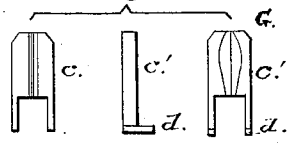


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES H. AMIDON, OF MILLER'S FALLS, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO E. R. SAXTON, OF BUFFALO, NEW YORK.

IMPROVEMENT IN BIT-BRACE WRENCHES.

Specification forming part of Letters Patent No. **193,632**, dated July 31, 1877 ; application filed May 14, 1877.

To all whom it may concern:

Be it known that I, CHARLES H. AMIDON, of Miller's Falls, in the county of Franklin, and Commonwealth of Massachusetts, have invented a new and useful Improvement in Bit-Brace Wrenches, which improvement is fully set forth and described in the following specification and accompanying drawings, in which—

Figure 1 is a perspective view of my wrench in working position. Fig. 2 is the bit-brace shank without the attachments for use. Fig. 3 is the outer movable jaw. Fig. 4 is the inner movable jaw with a lug and right and left screw attached. Fig. 5 are adjustable clamps or supplementary jaws to fit in between the sliding jaws for the purpose of griping a bit or other tool.

The object of my invention is to provide a wrench suitable and convenient for all kinds of work, which shall be attached to the arm of a bit-stock, so as to be turned quickly and with much power, and which shall also be adapted to hold a bit for boring.

In the drawings, Fig. 2 represents the ordinary form of an iron bit-stock or bit-brace having the arm A somewhat larger than commonly made, and squared, so as to hold firmly the sliding jaws, and give strength enough for the intended use of turning nuts, having on the upper side and near the handle a slot, *a*, cut in to receive and hold loosely the burr by which the screw E is driven.

Fig. 3 shows the outer jaw of the wrench, which is attached to a square sleeve open on the under side. The square sleeve *b*, which moves freely backward and forward over arm A, also passes through the inner jaw C of wrench.

Fig. 4 represents the inner jaw C, with its lower part enlarged backward to receive near the top the right end of the right and left screw E, which gives it a forward and back motion, the lower and larger part also being cut through large enough to receive the sleeve of the outer jaw B, sliding on the arm A of the brace.

The sleeve *b*, which, in practice, would be a continuation of the outer jaw B, has attached to it a lug, D, through which passes the screw E.

The shank of the right and left screw E turns in the lug D, and gives motion indirectly to the jaw B on the end of the sleeve *b*, while the same turn of the burr F gives motion in an opposite direction to the inner jaw C, through the left end of the screw E, as it revolves about its axis.

On the extreme end of the screw is the burr F for actuating the screw in the jaws, having a bearing in the slot cut in the arm A to receive it, by which it is prevented from longitudinal motion, and secured by a nut screwed onto the end of the screw E.

Fig. 5 represents the supplemental jaws or clamps, intended to hold a bit, screw-driver, &c., made of thin metal and of the size of the jaws, with legs projecting down to straddle the sleeve, clasping it firmly, and to close upon a bit with the motion of the jaws.

One face of each of these supplemental jaws G has a vertical triangular-shaped slot for griping a round-shanked bit, the other a vertical ovoid slot to hold a square-shanked bit. One of these jaws has small feet *d* projecting under the sides of the jaw, to prevent being drawn out with the bit in boring.

The operation of the wrench is as follows: The jaws being in a closed position, the screw E is turned to the right by the burr F, which bears in its slot against the arm of the brace. The outer jaw B is forced out by the action of the left-hand screw operating in the lug which is fast to the sleeve carrying that jaw, while at the same time the right-hand screw, acting in the inner jaw C, correspondingly draws that jaw away from the outer one. A reverse motion of the screw in like manner closes the jaws.

It will be seen that, by a movement of the burr F to the right or left, the jaws are made to separate from or approach each other simultaneously, the central point between them being always the same, and in a direct line with the axial line of brace.

I claim as my invention—

1. A bit-brace wrench having the inner jaw

C acted upon directly, and the outer jaw B indirectly, by a right and left screw, E, the center between said jaws being fixed and unchangeable in the axial line of the brace, as described, for the purpose set forth.

2. In a bit-brace wrench, a movable outer jaw attached to a sleeve sliding on the arm of a brace, said sleeve guiding a free movement of the inner jaw in its approach to or separation from the outer, the two jaws preserving between them an unchanging center, as described.

3. In a bit-brace wrench, the inner jaw C sliding on the sleeve *b*, in combination with the outer jaw B attached to sleeve *b*, said jaws being operated by the right and left screw E, as and for the purposes set forth.

4. The supplementary jaws *c c'*, as described, one or both of which are provided with feet *d*, secured at right angles to said jaws to prevent their movement outward, for the purpose set forth.

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Witnesses:

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