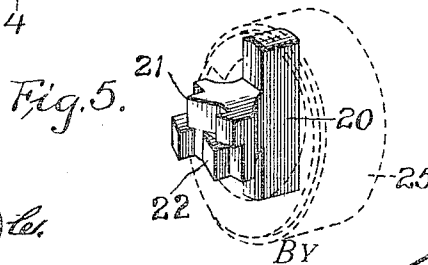
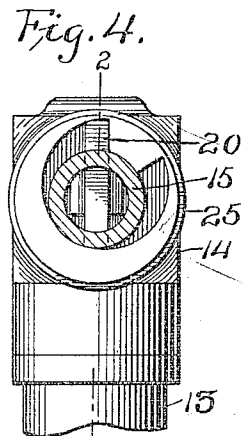
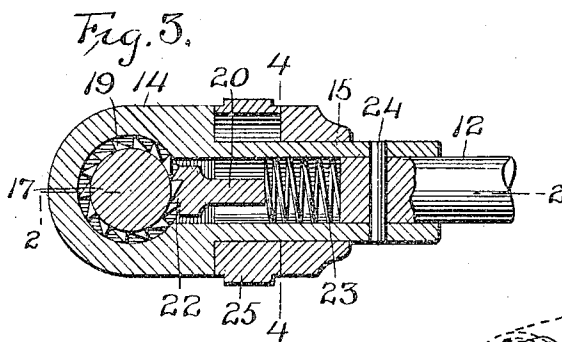
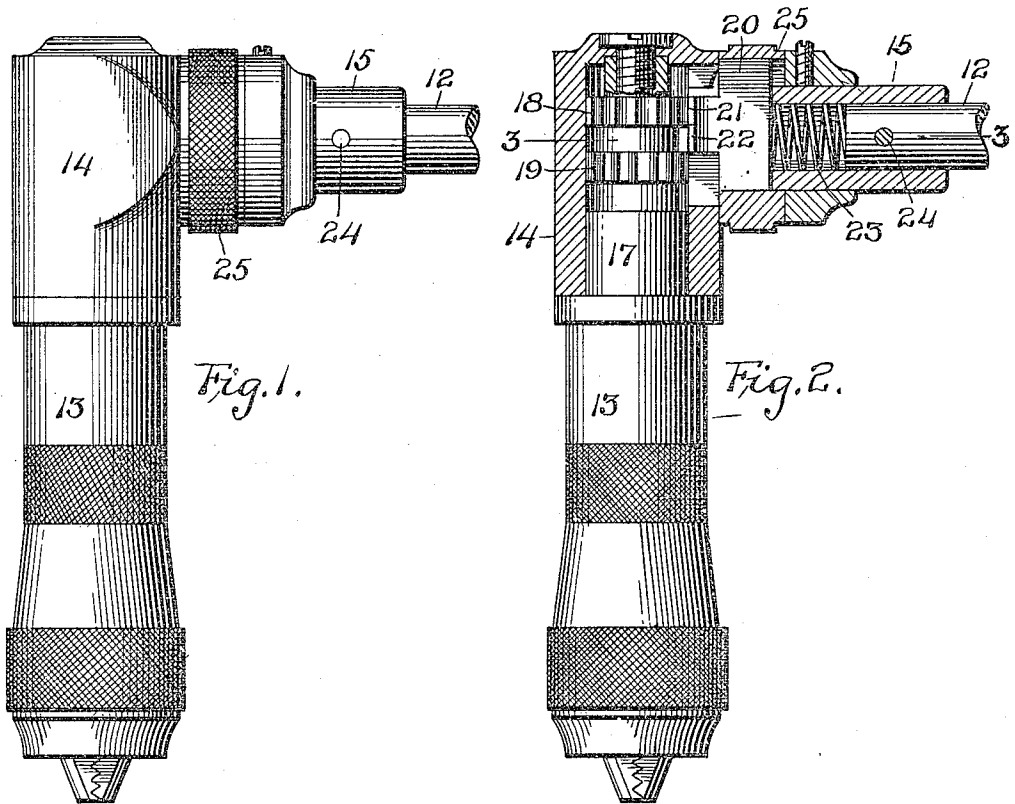


E. S. MARKS.
 BIT BRACE.
 APPLICATION FILED OCT. 12, 1909.

957,696.

Patented May 10, 1910.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD S. MARKS, OF AUBURN, NEW YORK, ASSIGNOR TO OHIO TOOL COMPANY, A CORPORATION OF NEW YORK.

BIT-BRACE.

957,696.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed October 12, 1909. Serial No. 522,287.

To all whom it may concern:

Be it known that I, EDWARD S. MARKS, a citizen of the United States, residing at Auburn, in the county of Cayuga and State of New York, have invented or discovered certain new and useful Improvements in Bit-Braces, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to bit braces used for boring, for driving screws, and for similar purposes, and has for its object to improve the ratchet mechanism frequently employed in devices of this character, and provide a ratchet brace adapted for a wide range of work.

The more particular objects of my invention, together with means whereby the same may be carried into effect, will best be understood from the following detailed description of one form or embodiment thereof illustrated in the accompanying drawings. It will be understood, however, that the construction shown and described has been chosen for illustrative purposes merely, and that many changes may be made therein without departing from the spirit and scope of the invention.

In the drawings, Figure 1 is a side elevation of a portion of a brace constructed in accordance with my invention, one end only of the sweep being shown. Fig. 2 is a central vertical section of the parts shown in Fig. 1, on the line 2—2, Figs. 3 and 4, the lower end of the bit holder being shown in elevation. Fig. 3 is a horizontal section on the line 3—3, Fig. 2. Fig. 4 is a transverse vertical section on the line 4—4, Fig. 3, with the spring omitted. Fig. 5 is a detail perspective view of the pawl.

Referring to the drawings, 12 indicates the end bar of the usual sweep or crank at the end of which is carried the stock 14 to which is attached the bit holder 13 having bit holding devices of any suitable form. The stock 14 has an arm or extension 15 for connection with the end bar of the sweep or crank and the said stock 14 has a circular chamber which affords a bearing for the shank 17 of said bit holder, so that the said stock may swing or turn on said shank 17 when desired. Carried by the shank 17 is a ratchet device which, in the construction shown, comprises two oppositely facing circular sets of teeth 18 and 19, spaced apart

from one another longitudinally of the shank 17, and rigid with said stock, being preferably integral therewith. Coöperating with said ratchet device is a pawl 20 partly housed within the stock 14 and arranged for movement with respect to said ratchet device into a plurality of positions for co-operation with said ratchet device in different ways. To this end the pawl 20, as herein shown, comprises a body portion arranged for movement longitudinally of said shank 17, and carrying two oppositely inclined teeth or series of teeth 21 and 22, respectively, adapted to coöperate, respectively, with the ratchet teeth 18 and 19. Said pawl teeth are preferably rigidly carried by or formed integral with the body portion of the pawl 20, and are separated by a less distance than the space between the ratchet teeth 18 and 19, and will preferably be contiguous to each other, or substantially so. For yieldingly holding the pawl teeth in engagement with the ratchet teeth, there is provided a spring 23, arranged in a recess in the arm 15, and engaging at one end the body portion of the pawl 20 and at its opposite end the end of the bar 12 to which said arm 15 is connected, as by the pin 24.

As will now be apparent, when the parts are in the position shown in Fig. 2 of the drawings, the pawl tooth or teeth 21 will engage the ratchet teeth 18 to turn the bit holder in one direction, either intermittently, by oscillating the crank or sweep, or continuously, by rotating said crank or sweep. Movement of the pawl 20 longitudinally of the shank 17 will cause the disengagement of the tooth or teeth 21 from the ratchet teeth 18 and the engagement of the tooth or teeth 22 with the ratchet teeth 19, whereupon the parts will be in position to turn the bit holder in the opposite direction, either intermittently or continuously.

When the pawl 20 is in a position intermediate its opposite extremes of movement above referred to, the teeth 21 and 22 will be in engagement with both circular sets of ratchet teeth 18 and 19, by reason of the fact that the said sets of ratchet teeth are separated from each other longitudinally of the shank 17 of the bit-holder, while the oppositely facing teeth of the pawl are near together, so that they will engage both sets of ratchet teeth, as stated. In this position of the pawl the stock 14 and sweep or crank 12

are locked against movement in either direction with respect to the shank 17 of the bit holder, and the tool may be used as a common bit brace in the usual manner.

5 For producing the above-mentioned longitudinal movements of the pawl 20 with respect to the shank 17 there is provided a cam, preferably in the form of a ring 25, rotatably mounted on the arm or extension 15
10 and having an interior cam face of substantially the form shown in Fig. 4 adapted to engage the ends of the body portion of the pawl 20, whereby rotation of said cam ring will result in a longitudinal movement of
15 said pawl to move the same to any desired one of the three positions above referred to.

From the foregoing it will be seen that I have provided a ratchet brace which is simple in construction, inexpensive to manufacture, and well adapted to the requirements
20 of such a device in performing a wide range of work.

Having thus described my invention I claim and desire to secure by Letters Patent:—

25 1. In a bit brace, the combination with a bit holder having a shank provided with a ratchet device comprising two circular and oppositely facing sets of teeth spaced apart
30 from each other longitudinally of said shank, of a stock encircling said shank and rotatable relative thereto, a sweep or crank with which said stock is connected, a spring-pressed pawl shank provided with oppositely facing teeth which are so disposed
35 longitudinally of said pawl shank that one pawl tooth may occupy the space between the said sets of ratchet teeth, when another tooth is in engagement with one or the other
40 set of ratchet teeth, and mechanical means, engaging said pawl shank, for shifting said pawl to different positions and for positively holding it in place so that the said pawl may be so adjusted that it will be in

engagement with either or with both sets of
45 ratchet teeth.

2. In a bit brace, the combination with a bit holder having a shank provided with a ratchet device comprising two circular and oppositely facing sets of teeth spaced apart
50 from each other longitudinally of said shank, of a stock encircling said shank and rotatable relative thereto, a sweep or crank with which said stock is connected, a spring-pressed pawl provided with oppositely facing
55 teeth which are nearer together longitudinally of said shank than the said sets of ratchet teeth, and means for moving the said pawl longitudinally of said shank so that the pawl teeth will be in engagement with
60 either or with both sets of ratchet teeth, said means comprising a rotatable cam ring coaxial with an arm of said sweep and engaging the opposite ends of the body of said
65 pawl, thus enabling said cam ring to move said pawl into any desired position.

3. The combination with a bit holder 13 having the shank 17 provided with a ratchet device comprising the circular, separated
70 and oppositely facing sets of ratchet teeth 18 and 19, of the chambered stock 14 encircling said shank, the spring-pressed pawl 20 housed in an extension of said stock, and movable longitudinally of said shank, said
75 pawl having a rigid shank and closely disposed and oppositely facing teeth for engagement with said ratchet teeth, and the rotatable cam ring 25 encircling said extension and engaging the opposite ends of said
80 shank and serving to adjust said pawl to any desired position and to hold it positively in place when adjusted.

In testimony whereof I affix my signature, in presence of two witnesses.

EDWARD S. MARKS.

Witnesses:

G. W. BYNON,
N. L. CASEY.