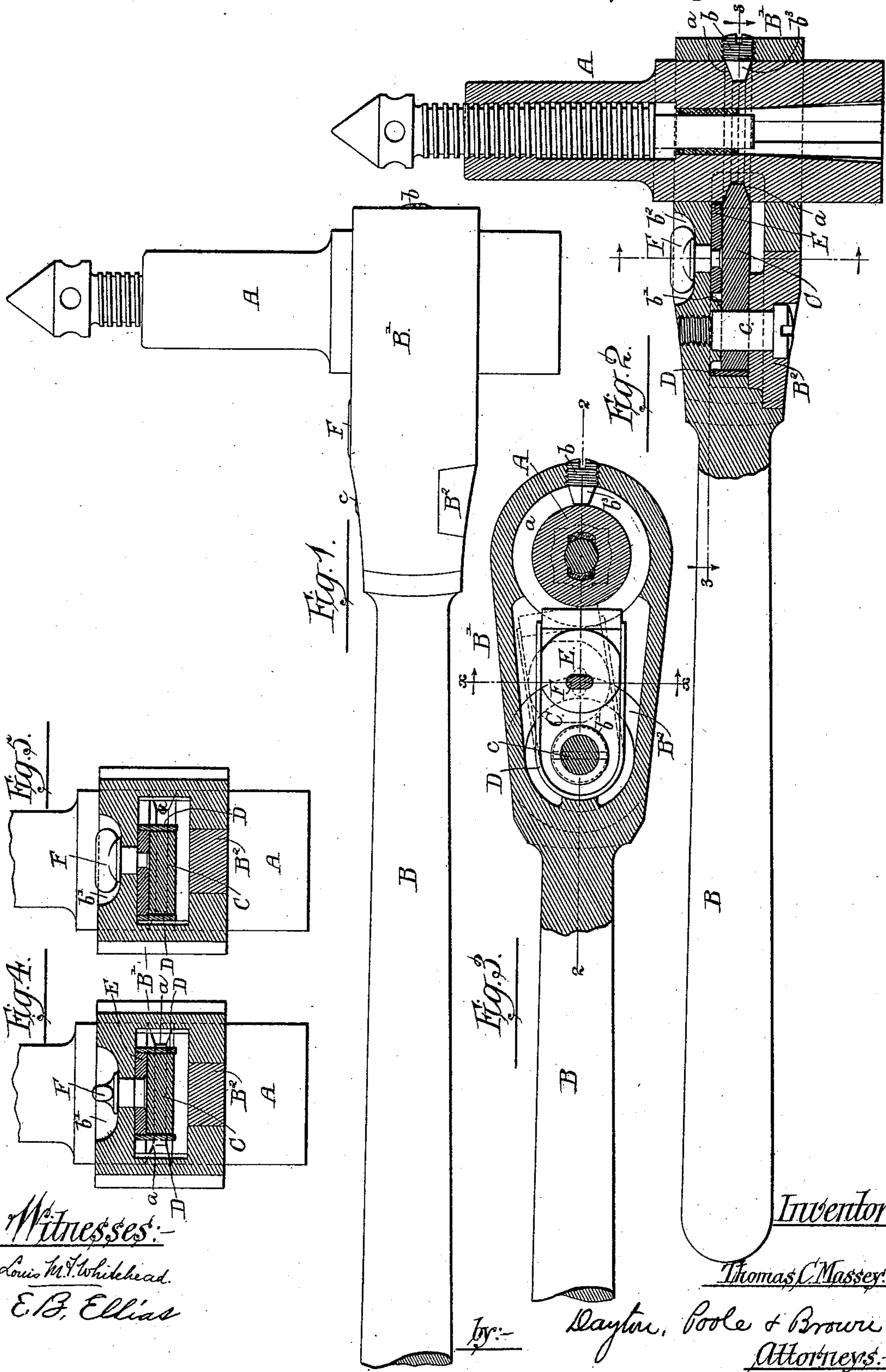


(No Model.)

T. C. MASSEY.
DRILL BRACE.

No. 400,928.

Patented Apr. 9, 1889.



Witnesses:-
Louis M. Whitehead.
E. B. Elias

by:-

Dayton, Poole & Brown
Attorneys:-

Inventor:-

Thomas C. Massey:-

UNITED STATES PATENT OFFICE.

THOMAS C. MASSEY, OF CHICAGO, ILLINOIS.

DRILL-BRACE.

SPECIFICATION forming part of Letters Patent No. 400,928, dated April 9, 1889.

Application filed August 4, 1888. Serial No. 282,013. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. MASSEY, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Drill-Braces; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which
10 form a part of this specification.

This invention relates to improvements in hand-drills or tool-carriers comprising a tool-holding spindle and a hand-lever mounted to turn about the spindle, and provided with
15 mechanism whereby said spindle may be rotated upon its axis by a reciprocatory motion of the hand-lever.

The invention is an improvement upon the device shown in United States Letters Patent
20 No. 376,757, granted January 24, 1888, to James L. Shorrock; and it consists in the several novel features of construction herein shown, described, and more particularly pointed out in the appended claims.

25 In the drawings, Figure 1 is a side elevation of a hand-drill embodying my invention. Fig. 2 is a central vertical sectional view of the same taken upon line 2 2 of Fig. 3. Fig. 3 is a central horizontal sectional view taken
30 upon line 3 3 of Fig. 2. Figs. 4 and 5 are transverse vertical sectional views taken upon lines *xx* of Fig. 3, showing the spring-actuated pawl and the eccentric for operating the same in different positions.

35 In the drawings, A represents a hollow spindle of any familiar pattern provided with a circumferential V or wedge shaped groove, *a*.

B is a hand-lever provided at one end with an enlargement or head, B', constituting the
40 spindle-holder. The head B' is provided with a vertical hole or opening, in which the spindle A is placed. Upon the end of said head B', opposite the handle B, is a horizontally-threaded hole into which a screw, *b*, is inserted,
45 as shown. This screw *b* has a tapering wedge-shaped end, *b*³, which fits within the circumferential groove *a* upon the spindle, thereby holding said spindle in position within the head B', while at the same time permitting
50 the free rotation of the said head about said spindle. The head B, between the opening for the reception of the spindle A and the handle,

is cored out, as shown clearly in Figs. 3, 4, and 5. Within the space thus formed is placed a pawl, C, which is pivoted at *c* near one of its
55 ends, and having its other end made of V shape or tapered to fit into the wedge-shaped circumferential groove *a* of the spindle.

D is a U-shaped spring placed around the pivoted end of the pawl C, so that both leaves
60 or ends of said spring may press upon opposite sides of the said pawl C.

E is an eccentric or cam plate secured above said lever C within the cored-out portion of the head B', and so located with reference to
65 the leaves of the spring as to operate, when turned, upon either one or the other of the said leaves.

Passing through the upper portion of the head B' is a thumb-piece, F, one end of which
70 is secured to said cam-plate E, as more clearly shown in Figs. 2, 4, and 5.

The operation of my invention is as follows: The parts being in position, as illustrated in Fig. 3, a drill or other implement, as illus-
75 trated, is placed within the hollow spindle A in a familiar manner. The thumb-piece F is then turned either to the right or the left, as circumstances require, and the eccentric E is thus moved against one leaf or end of the
80 spring D. The other end of said spring immediately exerts its force toward or presses against the pawl C, thereby turning the latter upon its pivot until the tapered end of the said pawl engages frictionally with the cir-
85 cumferential groove in the spindle A. When the hand-lever B is moved in one direction, the spindle will be turned in the same direction by reason of the frictional contact of said pawl C with said spindle, while by moving
90 the hand-lever back, or in an opposite direction, the pawl C will slip readily around through the groove, and will again take frictional hold within the groove the instant the hand-lever is moved again in the direction
95 in which it was first moved. The tool may be changed at will to work a right-hand or a left-hand drill by reversing the position of the cam-plate C so that it shall bear upon the one or the other end or leaf of the
100 spring D. The pawl C is made of such length that its tapered end will not engage the groove when the pawl is at its intermediate position, but will come very nearly in-

to contact with the groove at such time, so that a very slight angular movement in the pawl is necessary to produce engagement of the parts. In order to still further lessen the amount of movement from a central position required to cause the pawl to bind in the groove, the central part of the tapered end of the pawl is desirably made very slightly thinner than other parts thereof, the difference in thickness not commonly being sufficient to admit of illustration in the drawings. The ends of the spring D may be arranged in any suitable manner to engage the cam-plate E. As herein illustrated, the spring is made of greater width than the pawl C, so as to extend past the pawl at one side of the latter and engage the cam-plate. Said cam-plate is desirably arranged to strike an interior projection, b' , of the head B' , so as to limit the rotary movement of the cam-plate when the latter engages the opposite ends of the spring D. The thumb F is shown as located within a recess, b^2 , in the outer face of the head, this construction being used to prevent liability of accident to the thumb-piece. B^2 is a removable piece or cover forming part of the bottom wall of the head B' . Said cover is held in place by the pivot c , which in the tool illustrated is made in the shape of a headed screw for this purpose. Said cover B^2 enables the pawl and spring to be conveniently inserted within the head.

It will of course be understood that the end portions or leaves of the spring D form the operative portions thereof. It follows, therefore, that springs acting upon opposite sides of the pawl made separate from each other, and of any desired one of a number of well-known forms, may be employed in place of the single U-shaped spring D.

The construction illustrated, wherein a screw b engages the wedge-shaped groove a , is of great advantage as affording a simple and economical method of holding the spin-

dle within the head, and one which avoids the use of shoulders or collars upon the spindle for this purpose. By the use of the screw in the manner set forth no special construction in the spindle is needed for holding it in place, and the opening through the head may be made smooth and cylindric and the same size as the exterior of the spindle. The cost of the tool is thus greatly economized, while the tool is made of neat form and of great durability. This construction is believed to be novel and is herein claimed as part of my invention.

It is to be understood that the main features of my invention may be used in other tools and in machines where it is desired to convert an oscillatory into a rotary motion, and my invention is not therefore limited in its application to a tool of the particular character herein shown.

I claim as my invention—

1. The combination, with a spindle, of a lever mounted to turn about said spindle, a single pawl mounted upon said lever, said spindle and the free end of the pawl being provided with engaging wedge-shaped surfaces, springs located at opposite sides of said pawl, and a revolving cam-plate acting to hold either of said springs out of engagement with the said pawl, substantially as described.

2. The combination, with a spindle provided with a circumferential groove, of a lever adapted to turn about said spindle, a spring-pawl upon the said lever engaged with said groove, and a screw secured in said lever and engaged at its inner end with said groove, substantially as described.

In testimony that I claim the foregoing as my invention, I affix my signature in presence of two witnesses.

THOMAS C. MASSEY.

Witnesses:

C. CLARENCE POOLE,
E. B. ELLIAS.