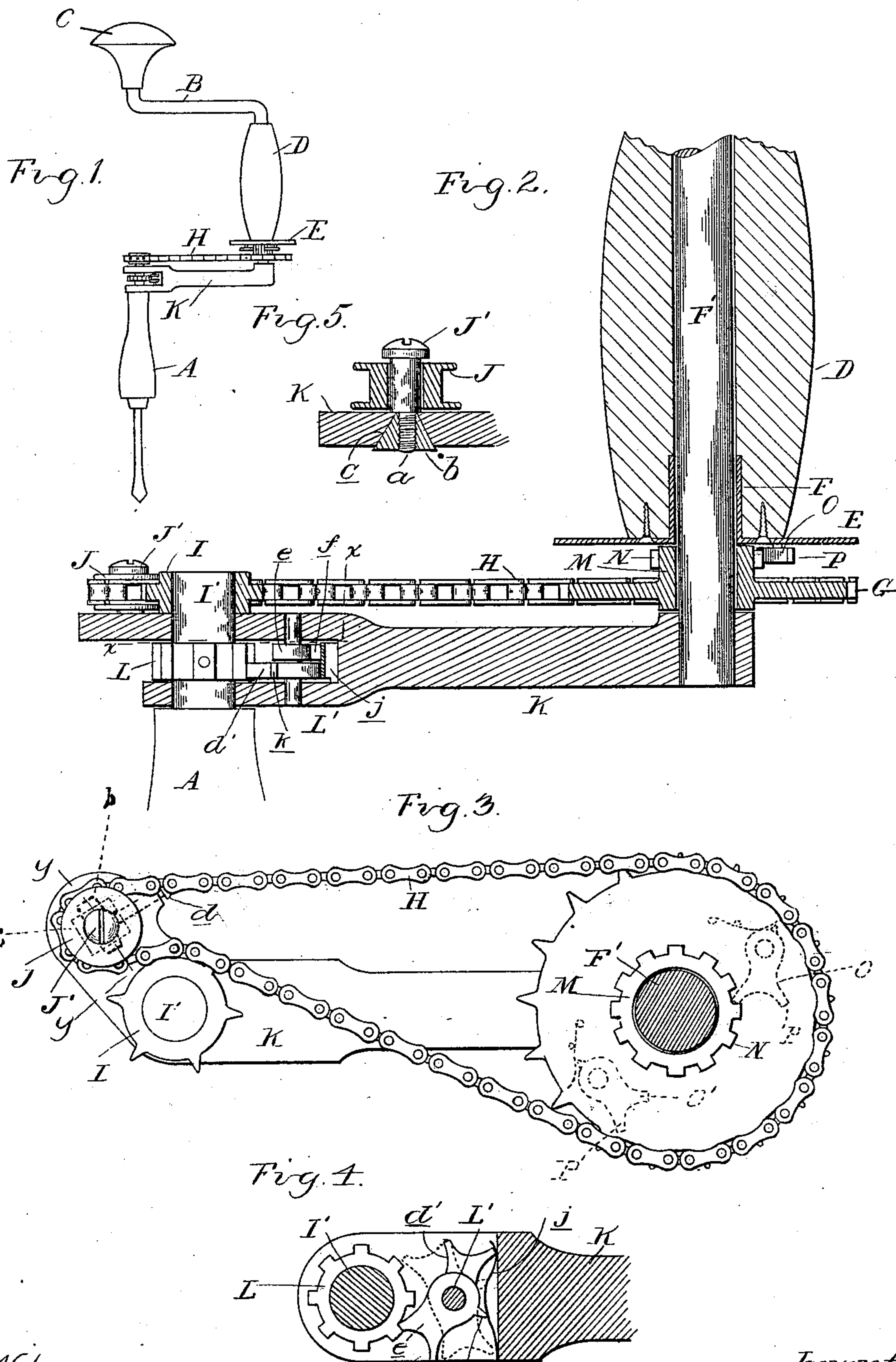


(No Model.)

E. E. ANTHONY.
BRACE DRILL.

No. 521,327.

Patented June 12, 1894.



Witnesses
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UNITED STATES PATENT OFFICE.

ELLIOT E. ANTHONY, OF DETROIT, MICHIGAN.

BRACE-DRILL.

SPECIFICATION forming part of Letters Patent No. 521,327, dated June 12, 1894.

Application filed April 10, 1893. Serial No. 469,719. (No model.)

To all whom it may concern:

Be it known that I, ELLIOT E. ANTHONY, a subject of the Queen of Great Britain, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Brace-Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention consists in the peculiar construction of the actuating mechanism for the drill, whereby the revolutions of the drill may be increased, if desired without increasing the speed of the handle, or whereby the drill
15 may be used as a common drill, turning with the handle, or whereby it may be used as a ratchet drill.

20 The invention further consists in the peculiar construction, arrangement and combination of the various parts, as more fully hereinafter described.

25 In the drawings, Figure 1 is a diagram elevation of my improved device. Fig. 2 is a vertical, central section through the actuating mechanism for the bit. Fig. 3 is a top plan view of the gear. Fig. 4 is a horizontal section on line $x x$ in Fig. 2. Fig. 5 is a vertical section on line $y y$ in Fig. 3.

30 A is the socket journaled at its upper end in the lower end of the crank B, which is provided at its upper end with a swiveled head C for receiving the hand or breast of the workman.

35 D is the handle journaled upon the vertical portion of the crank provided at its lower end with a guard plate E, having an inwardly extending nipple F surrounding the shaft F' which forms the vertical portion of the crank.

40 G is a sprocket wheel journaled on the shaft F' below the handle D.

45 H is a sprocket chain passing around the wheel G and beside the sprocket wheel I at the upper end of a shaft I', which is formed at the upper end of the socket A, thence around the idler wheel J which is journaled on the shouldered screw J'. This screw has a shoulder engaging the upper face of the horizontal portion K of the crank and a screw-threaded portion a , passing through said portion K and entering a tapering nut b , which
50 engages in a tapering slot c , and is adjustable

longitudinally therein by means of the adjusting screw d , so as to give the required tension to the sprocket chain. The outer end of the horizontal portion K of the crank is bifurcated, as shown in Fig. 2, and the sprocket
55 wheels I and idler J are located on top of said arm K; between the bifurcations is a ratchet wheel L.

60 L' is a shaft secured across the bifurcations in rear of the ratchet wheel. Upon this shaft are journaled pawls $d' e$, oppositely arranged in relation to the ratchet wheel, which are provided with a lug f , adapted to bear against the curved spring j , which acts to hold them
55 in their adjusted position. Either or both of these pawls may be engaged with the ratchet wheel and both may be removed therefrom by turning them into the position, shown in Fig. 4 in full lines for the pawl d' .
70

M is the hub of the sprocket wheel G which is extended upward from said wheel on one side and is provided on such extension with the ratchet wheel N.

75 O O' are oppositely arranged spring pawls adapted to be engaged with said ratchet wheel and provided with finger pieces P for moving them in or out.

80 The pawls d' and e' are provided with corresponding finger pieces k .

85 The parts being thus arranged their operation is as follows: If the device is intended to be used for a drill multiplying the speed of the bit, the operator throws in both of the pawls O O' and throws out one or both of the pawls $d' e$. Then the rotation of the crank B by its handle D will turn the sprocket wheel G and through the medium of the sprocket chain will rotate the sprocket pin I and the socket A, carrying the bit. If the multiplication of the speed of the bit is not desired, both
90 of the pawls $e d'$ are arranged with the ratchet wheel L, locking the shaft I' from rotation and thereby causing the bit to turn with the crank at the same speed.
95

If it is desired to use the device for a ratchet drill, one of the pawls O O' is thrown in engagement, whichever is desired to be used, and the corresponding pawl $d' e$, so that rotation in one direction only will turn the drill.
100

The object of passing the sprocket chain around the idler J and at one side of the

sprocket I is to reverse the movement of the latter, thus driving the bit in the same direction that the crank is turned.

What I claim as my invention is—

5 1. In a brace drill the combination with the socket, crank and handle journaled on the crank, of a sprocket wheel journaled below the handle, a ratchet wheel formed integral with the sprocket wheel, oppositely arranged
10 spring pawls on the lower end of the handle adapted to be engaged with the ratchet wheel, a shaft at the upper end of the socket, a sprocket wheel and a ratchet wheel on said shaft, a sprocket chain connecting the wheel
15 on the crank with the sprocket wheel on the shaft, and two oppositely arranged pawls arranged to engage the ratchet wheel on the shaft, substantially as described.

2. In a brace drill, the combination with the socket and crank having a slot therein, of a 20 shouldered screw slidably secured in said slot, an idler wheel journaled on said screw, a sprocket wheel on the crank, a sprocket wheel on the socket, a sprocket chain passing around the idler wheel and sprocket wheel 25 on the crank and engaging the sprocket wheel on the socket, and a screw on the crank engaging the shouldered screw for adjusting the idler wheel, substantially as described.

In testimony whereof I affix my signature in 30 presence of two witnesses.

ELLIOT E. ANTHONY.

Witnesses:

M. B. O'DOHERTY,
N. L. LINDOP.