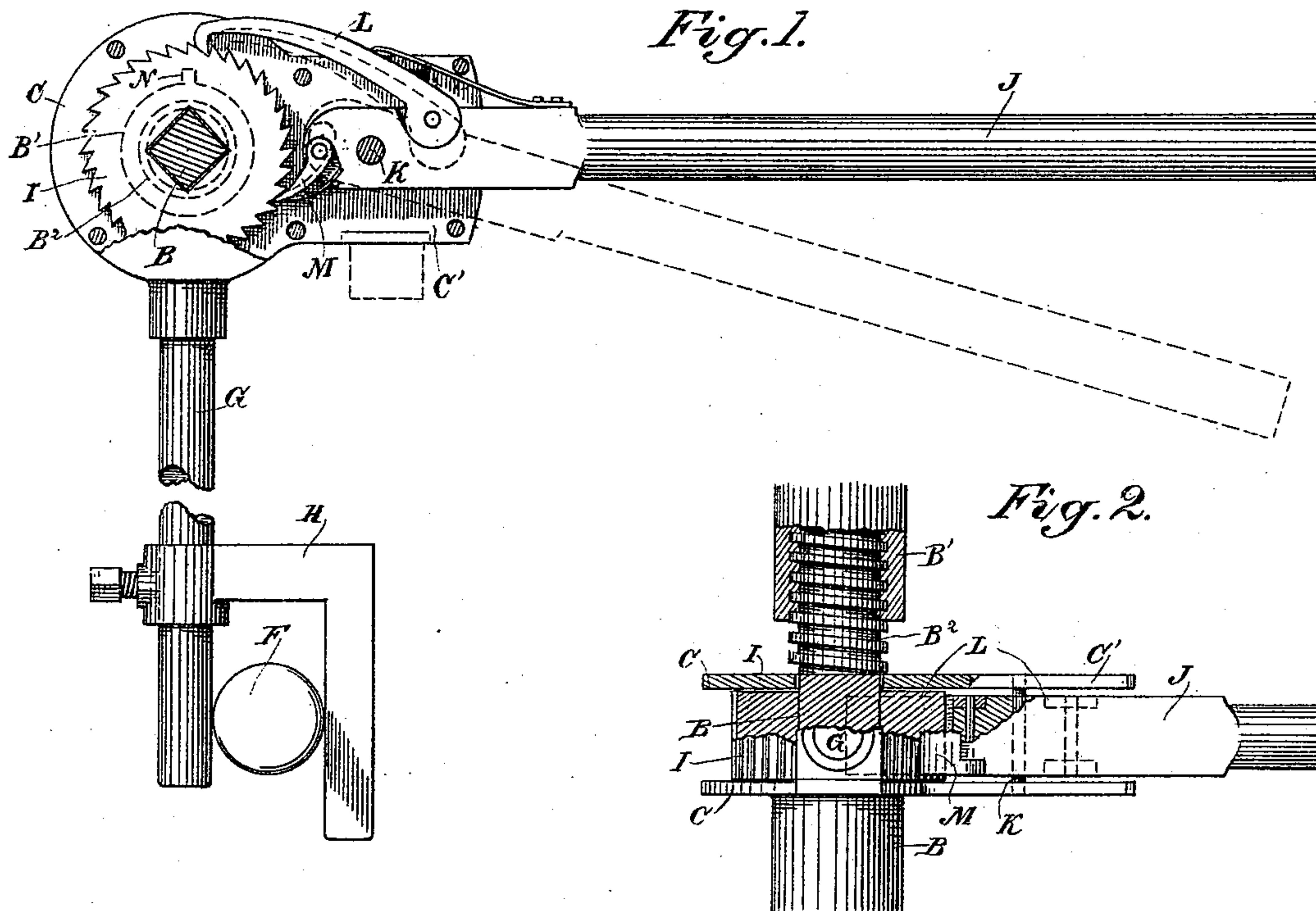


(No Model.)

A. TAYLOR.  
RATCHET BRACE.

No. 490,617.

Patented Jan. 24, 1893.



Witnesses,  
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H. J. J. J.

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# UNITED STATES PATENT OFFICE.

ALFRED TAYLOR, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF  
TO MICHAEL CUSACK AND FRANK KNOBLOCH, OF SAME PLACE.

## RATCHET-BRACE.

SPECIFICATION forming part of Letters Patent No. 490,617, dated January 24, 1893.

Application filed August 4, 1892. Serial No. 442,175. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED TAYLOR, a citizen of New South Wales, residing in the city and county of San Francisco, State of California, have invented an Improvement in Ratchet-Braces; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device for operating drills and similar mechanism, in which the drill is caused to advance by the movement of a lever.

It consists of a mechanism whereby an approximately continuous rotary motion is given to the drill by the reciprocation of a lever arm, and in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a horizontal section taken through the device so as to show the ratchet pawls and lever. Fig. 2 is an elevation of the same showing a part of it in cross section. Fig. 3 is a view showing the application of my device.

The tool A is fixed in a socket in the shank B which extends upwardly through a casing C within which it rotates freely. The socket piece extends through the casing in which it turns freely, and the extension is screw-threaded as shown at B<sup>2</sup> and fits within a correspondingly threaded hollow sleeve B', the upper end of which fits a center D upon the arm E, and it is rotated intermittently so as to feed the drill forward as will be hereinafter described.

The casing C has an arm G extending from one side so as to pass by the fixed standard F, and upon this arm is adjustably secured an L-shaped piece H, one arm of which is perforated to fit the arm G to which it is secured at any desired point by a set screw. The other arm of H extends outwardly parallel with G so as to pass upon the opposite side of the standard F, and the casing C is thus held stationary and prevented from turning. Within the casing C is a toothed ratchet wheel I keyed to the drill carrying shank B.

The casing C has an extension C', shown in the present case at right angles with the arm G. This extension has a slot or chamber

made in it open at one side and closed at the opposite side as shown. Within this slot is fulcrumed a lever J upon the fulcrum pin K which is placed at some distance from the inner end of the lever J.

L and M are two pawls, the former being fulcrumed to the lever J exterior to the fulcrum pin K, and the latter is fulcrumed to the inner end of the lever J at an equal distance from the fulcrum pin. These two pawls engage the ratchet I upon opposite sides of the shank B, and the operation will be as follows:—

The casing C remains stationary, while the lever J is moved backward and forward upon its fulcrum pin within the casing. When the lever is moved in one direction, the pawl L acts to draw the ratchet I around a part of a revolution, and when the lever is again moved in the opposite direction the pawl M engages the opposite side of the ratchet, and thus continues its rotation.

Upon the upper end of the shank B is a projecting lug N, and from the arm E a spring or stop O projects downwardly so as to engage this lug and prevent the rotation of the shank B until such time as the lug is forced to pass the stop O. This is done at each complete rotation of the shank B by the reciprocations of the lever J, and the drill is thus caused to advance into the material which is being bored as soon as the friction between the screw-threads of B' and B<sup>2</sup> becomes sufficient to overcome the tension of the spring stop O. As the drill advances, the guide arms G and H move freely along the guide and supporting standard F until the drill has advanced as far as is desirable. The rapidity of the feed is regulated by the position of the spring stop O. If it engages the lug N, near the outer end, it releases by a slight friction and advance of the drill, but if it overlaps more it retains the parts longer and the drill advances farther before the stop is released. By this construction I am enabled to make the movement of the drill practically continuous, and to simplify the operating mechanism.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. In a drilling apparatus, a rotary drill



socket, a casing through which said socket extends, a fixed standard at one side, an arm extending from the casing upon one side of the standard, and a second arm adjustable upon the first extending upon the opposite side of the standard forming a guide whereby the casing is prevented from rotating, a ratchet wheel secured to the drill socket within the casing, a lever arm fulcrumed within the casing and movable independently thereof, and pawls secured to the lever arm engaging the ratchet whereby the latter is rotated by the reciprocation of the lever arm, substantially as herein described.

2. A drill apparatus consisting of a casing having a ratchet wheel contained therein, a drill socket turning loosely in the casing and having the ratchet wheel secured thereto, a guide arm extending from one side of the casing and engaging a vertical standard whereby the arm and casing are prevented from rotating while allowed to advance in the direction of the length of the standard, a chambered extension upon one side of the casing, a lever fulcrumed in this extension so that the inner end projects beyond the fulcrum pin, pawls pivoted to the lever, one exterior and the other interior to the fulcrum pin, said pawls engaging the ratchet wheel upon opposite sides of the center whereby the reciprocations of the lever within the casing rotates the ratchet and drill socket, substantially as herein described.

3. In a drill, a casing, a drill socket extending through said casing and turning loosely therein, a ratchet wheel secured to the drill socket within the casing, a chambered extension at one side of the casing, a lever fulcrumed within said extension movable upon its fulcrum pin independently of the casing, pawls pivoted to the lever exterior and interior to the fulcrum pin so as to move in opposite directions and engaging the teeth of the ratchet upon opposite sides of the center, a guide rod extending outwardly from the casing adapted to engage a vertical stationary standard whereby the casing is prevented from rotation while allowed to advance along the standard, a screw extension of the drill socket, and an interiorly threaded sleeve fitting said screw having the upper end made conical, a corresponding socketed support against which the cone of the sleeve fits, a lug upon the exterior of the sleeve and a spring stop projecting downward from the stationary support and engaging the lug whereby the rotation of the sleeve is arrested and made intermittent for the purpose of feeding the drill forward at intervals, substantially as herein described.

In witness whereof I have hereunto set my hand.

ALFRED TAYLOR.

Witnesses:

GEO. H. STRONG,  
S. H. NOURSE.