

No. 841,638.

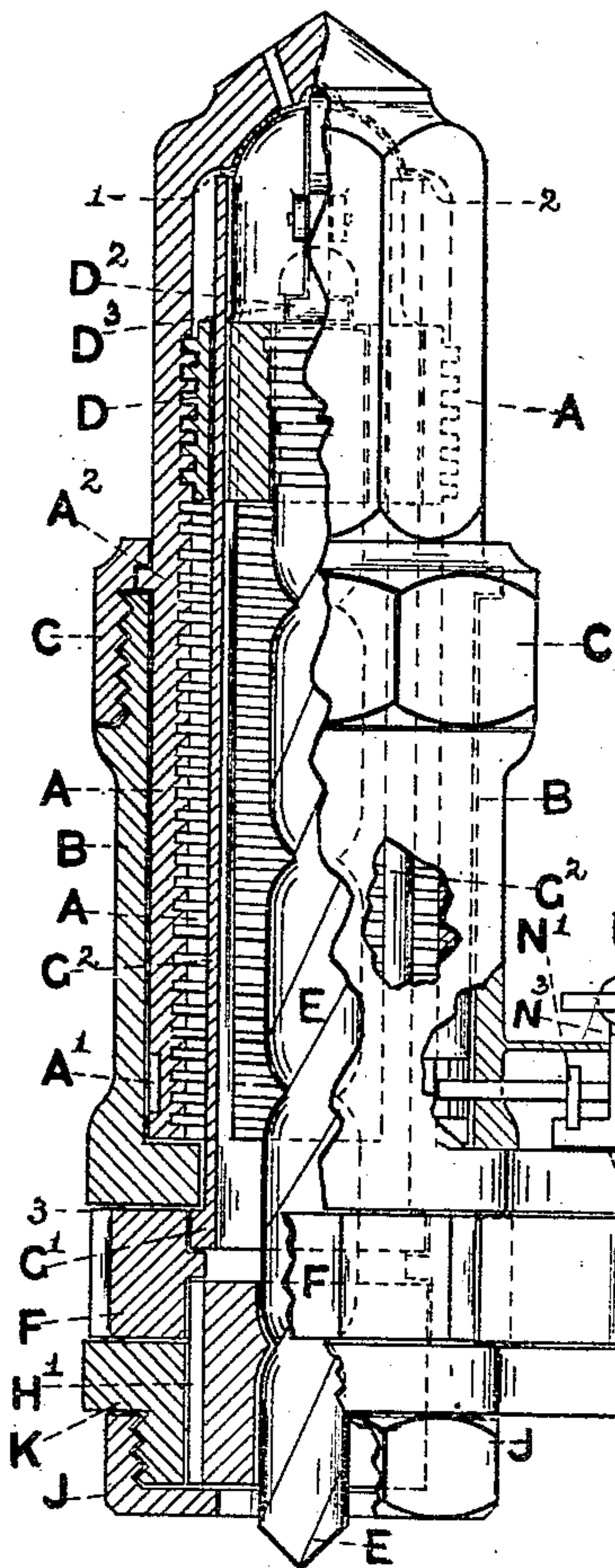
PATENTED JAN. 15, 1907.

G. & W. A. DAWSON.

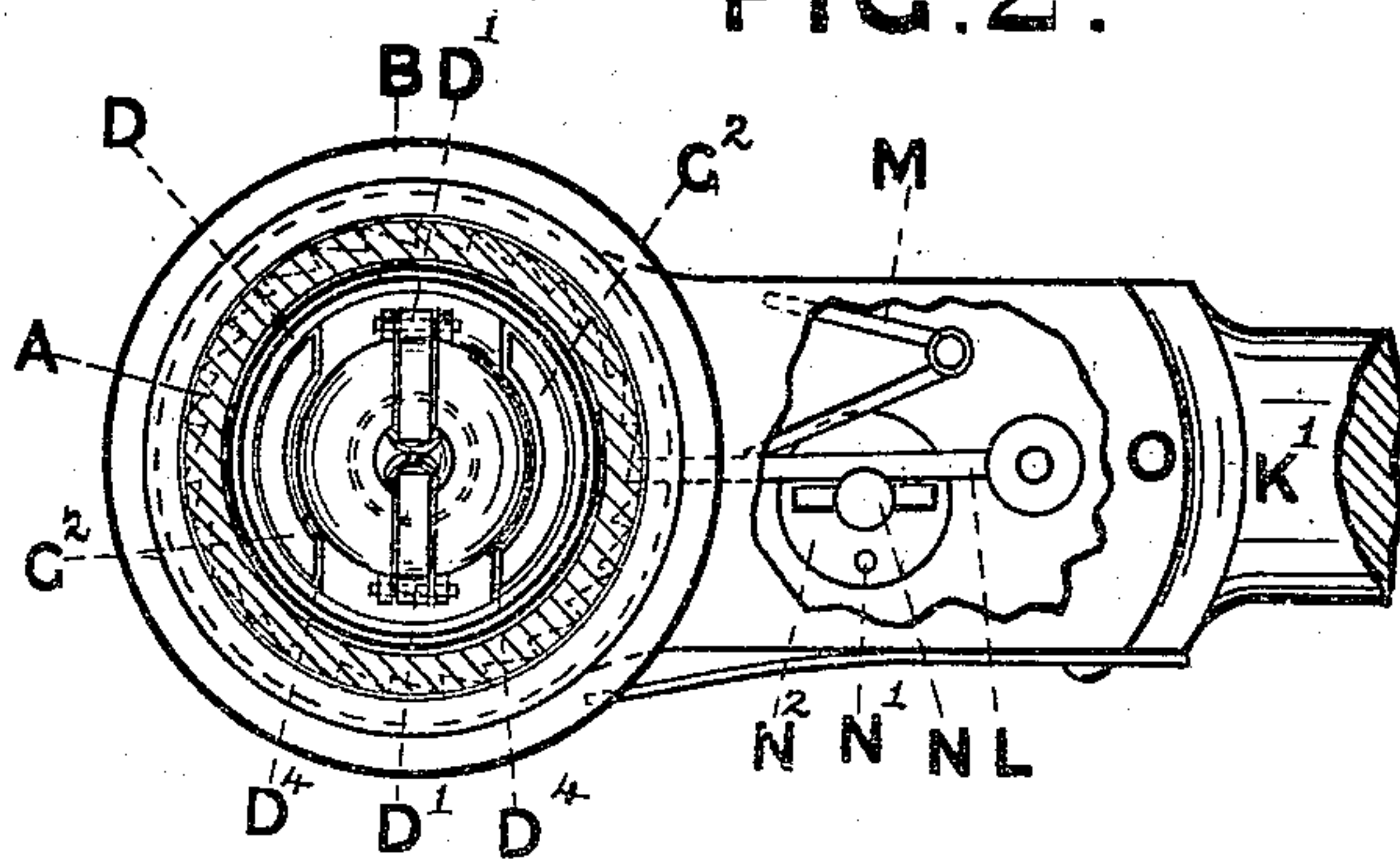
## RATCHET BRACE.

APPLICATION FILED FEB. 24, 1908.

**FIG. 1.**



**FIG. 2.**



**FIG. 3.**

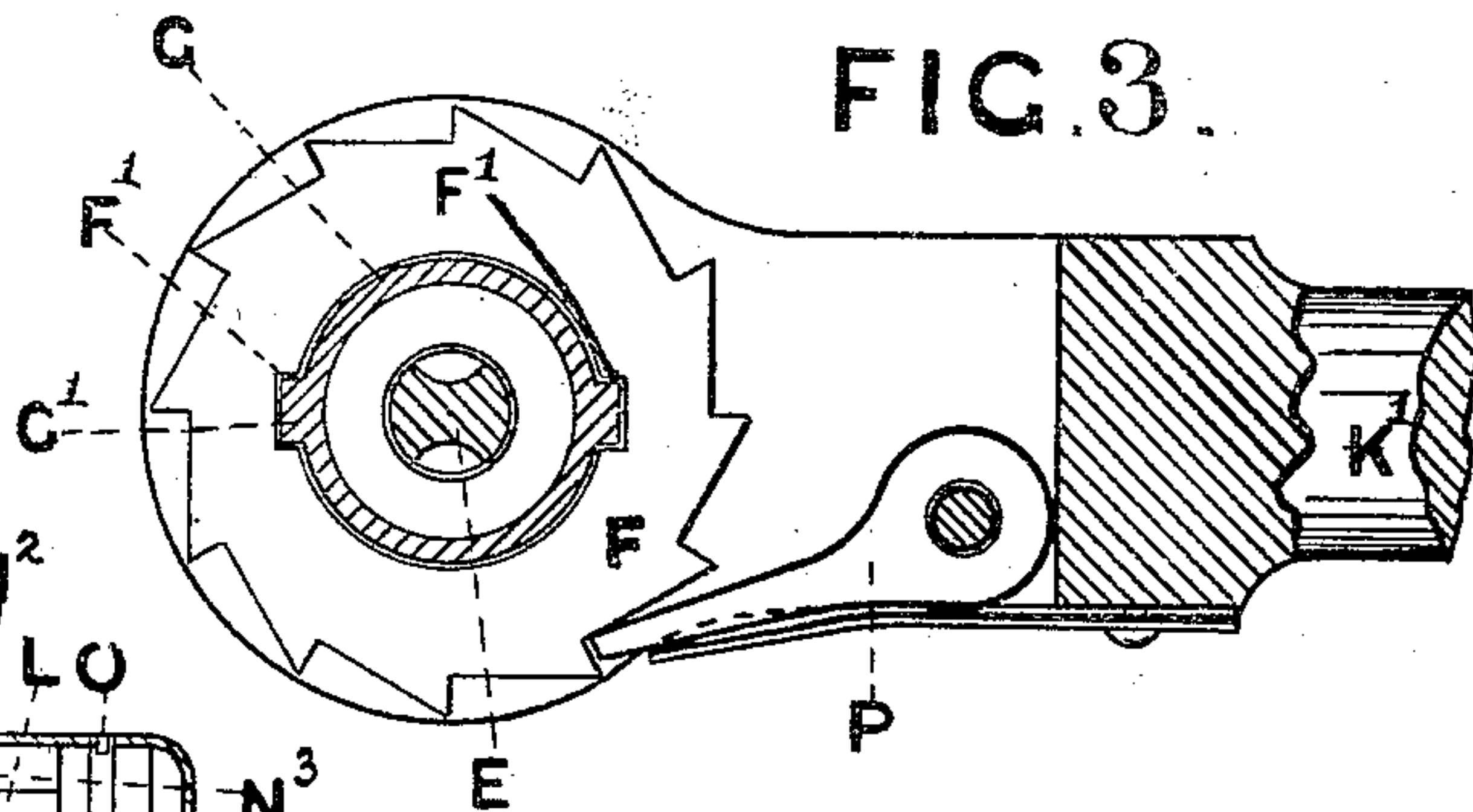


FIG. 4

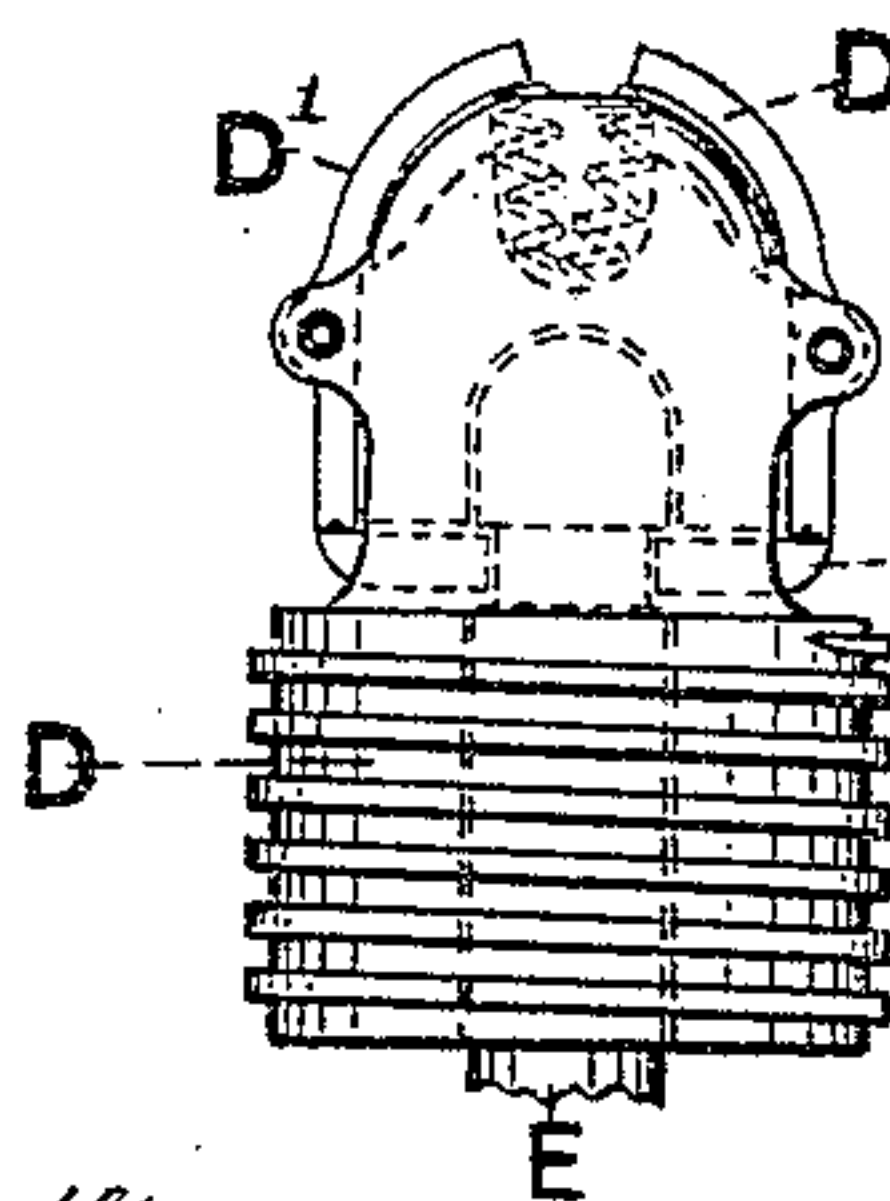


FIG. 5

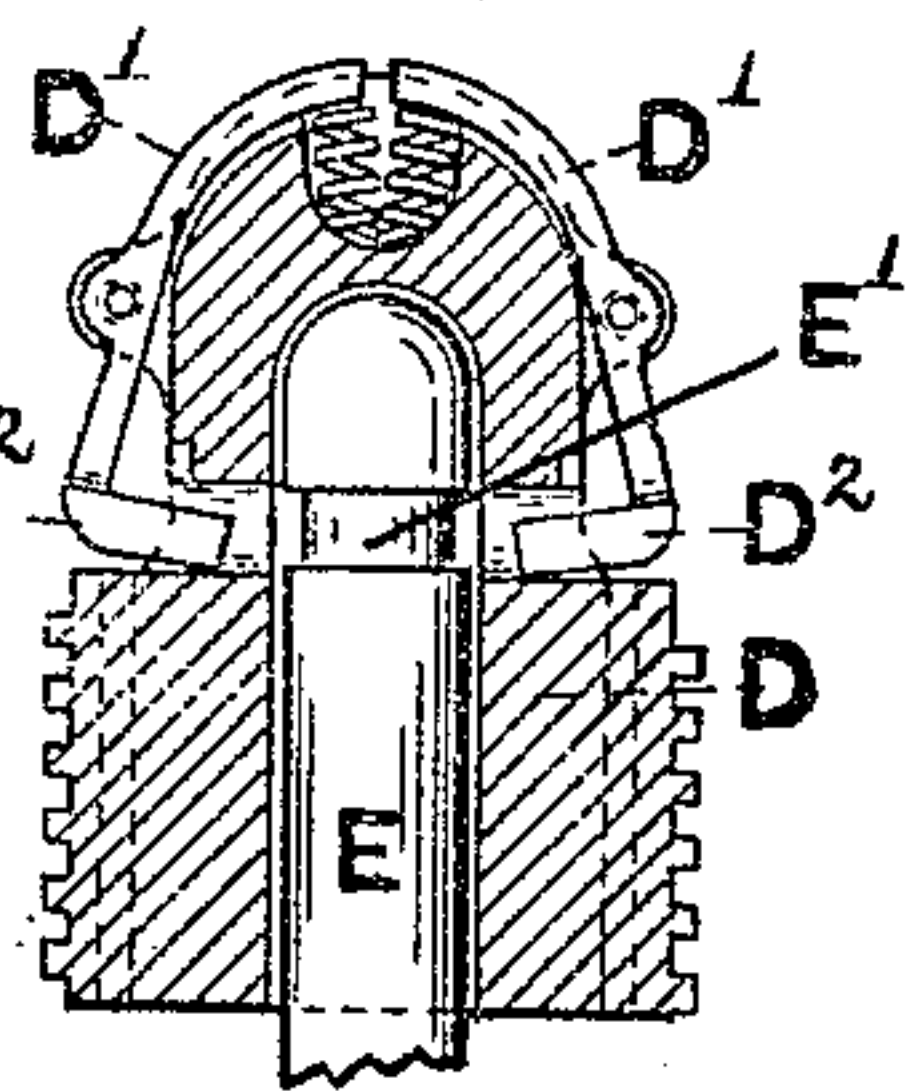
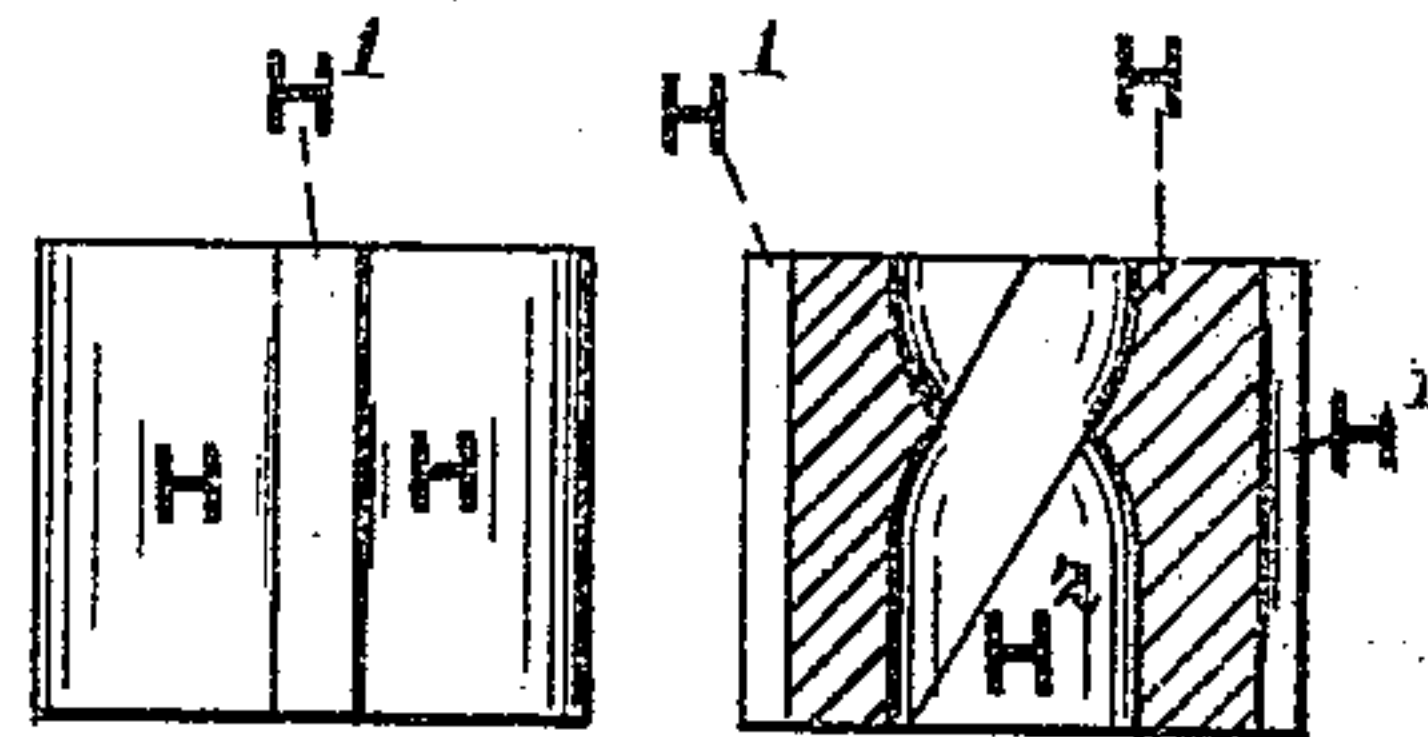


FIG. 6      FIG. 7



Witnesses:

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# UNITED STATES PATENT OFFICE.

GEORGE DAWSON AND WILLIAM ALFRED DAWSON, OF KINGSTON-UPON-HULL, ENGLAND.

## RATCHET-BRACE.

No. 841,638.

Specification of Letters Patent.

Patented Jan. 15, 1907.

Application filed February 24, 1906. Serial No. 302,724.

*To all whom it may concern:*

Be it known that we, GEORGE DAWSON, engineer, and WILLIAM ALFRED DAWSON, engineer, subjects of the King of Great Britain, residing at Kingston-upon-Hull, England, have invented new and useful Improvements in Ratchet-Braces; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a side view of a ratchet-brace, partly in section, with our improvements applied. Fig. 2 is a sectional view on the line 1 2 of Fig. 1, assuming Fig. 1 to be a complete view. Fig. 3 is a sectional view on the line 3 4 of Fig. 1, assuming Fig. 1 to be a complete view. Fig. 4 is a side view of the pressure-disk for forcing down the drill. Fig. 5 is a sectional view of same. Fig. 6 is a side view of the device for rotating the drill. Fig. 7 is a sectional view of same.

The ratchet-drill is provided with an internally-threaded feed-box and head A, which revolves in a right or a left hand direction, as required. Such feed-box fits loosely within a tubular part B of the ratchet-brace. This feed-box, in addition to being internally threaded, is provided with teeth A' at the bottom on the outside and has an annular rib A<sup>2</sup> formed on it. A box-nut C, which screws onto the top of the tubular part B of the ratchet-brace, which is threaded to receive it, by bearing on the rib of the feed-box prevents said feed-box from working up or lifting.

Within the feed-box A is what may be termed a "pressure-disk" D for carrying the drill E and putting the pressure on said drill. This pressure-disk is externally threaded, so as to engage the thread on the inside of the feed-box and has a central bore in it for the head of the drill to pass into, the top of such pressure-disk being preferably reduced in size and being provided with pivoted spring-levers or snaps D', the top ends of which project over the top of the reduced part of the pressure-disk, which is preferably of dome shape, the bottom ends of such spring-levers being in the form of noses D<sup>2</sup>, which pass through slits or holes D<sup>3</sup> in such top part and engage an annular groove E' in the top of the drill E.

Fitting into the ratchet-wheel F is a hollow disk G, provided with a feather or feathers G' to slide into a groove or grooves F' in

such ratchet-wheel to insure such disk G turning only with said ratchet-wheel. Said disk G has one, two, or more uprights or stanchions G<sup>2</sup>, which project up into the feed-box A and into the pressure-disk D, which is provided with slits or holes D<sup>4</sup> to receive them, said uprights by passing into such holes in the pressure-disk causing the rotation of such disk when the feed-box is rotated. Below the disk G and also engaging the ratchet-wheel F, by means of a feather or feathers H', is a die H, which has a central twist-bore H<sup>2</sup> to correspond with the twist of the drill, such die being prevented from falling out by means of a box-nut J, which screws onto the bottom part of the frame K of the ratchet-brace.

A pawl L, backed by a spring M, engages the teeth on the bottom of the feed-box A, said pawl being capable of being moved out of engagement with such teeth by means of an upright pin N', mounted on the disk-shaped base N<sup>2</sup> of a turn-button N, the stem N<sup>3</sup> of which passes through a bridge O, secured to the frame K of the brace.

A pawl P, secured to the frame K of the brace, engages the teeth of the ratchet-wheel in the usual manner.

The action of the tool is as follows: The drill being first placed in position by being passed through the die H to such a height that its head is clipped by the noses of the spring-levers or snaps D' on the pressure-disk D, when it is required to use the tool it is nipped up to the metal to be drilled or bored in the usual manner and when so set is operated by the brace handle or shaft K' in the ordinary way. Such brace handle or shaft by being pulled around, as hitherto, rotates first the feed-box A, which is provided with preferably two teeth and a little over to one tooth of the ratchet-wheel F, the said feed-box being rotated by means of the pawl L. When such feed-box has been rotated the distance of two teeth or a little more, the pawl of the ratchet-wheel then comes into operation and rotates such ratchet-wheel, which in its rotation causes the rotation of the disk G, and consequently of the uprights or stanchions G<sup>2</sup>, which are a part of such disk, said uprights G<sup>2</sup> by passing into the pressure-disk D causing such pressure-disk to rotate within the internally-threaded feed-box A, down which it is caused to travel by



the pawl L engaging the teeth on the bottom of such feed-box, rotating said feed-box at a travel of two teeth and a little over to one tooth of the ratchet-wheel, the feed-box on  
 5 the first pull of the tool-handle being carried around part of a rotation by its pawl L before the ratchet-wheel makes its first part of a rotation, the pressure-disk D being thus caused to travel down the feed-box during  
 10 its descent, putting the pressure on the drill E, rotation being imparted to the drill by the twist-bore in the die H, so that both pressure on and rotation of the drill are obtained by the one action of pulling around the handle  
 15 of the tool.

The feed can be stopped by throwing the pawl L, which engages the teeth A' on the bottom of the feed-box A, out of engagement with such teeth. This is effected by turning  
 20 the button N so that the eccentric-pin N', mounted on the base N<sup>2</sup> of such turn-button, presses the pawl L out of contact with such teeth, the spring M yielding to allow such pawl to move clear of the teeth.

25 When it is required to release the drill E, the feed-box A is rotated by means of a spanner or the like in the opposite direction to that in which it rotates, when it causes the pressure-disk D to descend, and by being so  
 30 rotated the pressure-disk is caused to travel up the interior of such feed-box until the top ends of the spring-levers D' come in contact with the top of the feed-box, when they are pressed and their noses leave the annular  
 35 groove E' in the drill-head, such drill being thus released from the pressure-disk, and by unscrewing the box-nut J both the drill E and the die H can be drawn out.

What we claim is—

40 1. In a ratchet-brace, the combination,

with a support, and an internally-screw-threaded feed-box journaled in the said support; of an externally-screw-threaded pressure-disk for the tool engaging with the said feed-box and provided with a longitudinal driving-hole, a die for driving the tool  
 45 also revoluble in the said support, a disk provided with a driving projection which engages slidably with the said driving-hole, driving devices for revolving the said die and  
 50 disk simultaneously, and disengageable driving devices for revolving the said feed-box.

2. In a ratchet-brace, the combination, with a support provided with an operating-handle, and an internally-screw-threaded  
 55 feed-box journaled in the said support; of an externally-screw-threaded pressure-disk for the tool engaging with the said feed-box and provided with a longitudinal driving-hole, a ratchet-wheel journaled in the said support,  
 60 a die for driving the tool, and a disk provided with a projection which engages slidably with the said driving-hole, both said die and disk being operatively connected with the said ratchet-wheel, a pawl for revolving the  
 65 said ratchet-wheel carried by the said support, and disengageable ratchet mechanism operatively connecting the said feed-box with the said support whereby said feed-box is revolved with the said die and disk or is al-  
 70 lowed to remain stationary at will.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGE DAWSON.

WILLIAM ALFRED DAWSON.

Witnesses:

LOUIS E. KIPPAX,

FRED. HAROLD RHODES.