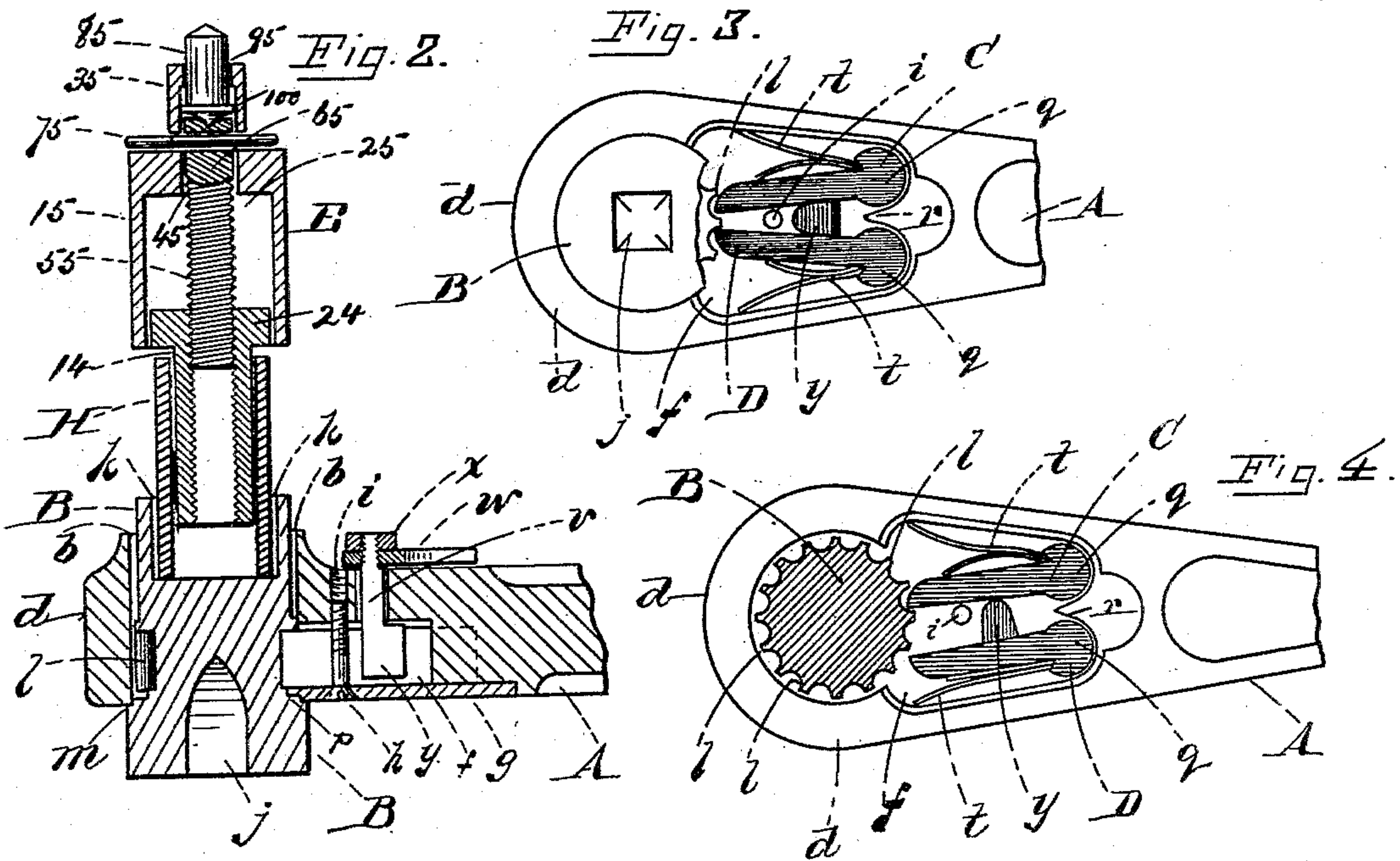
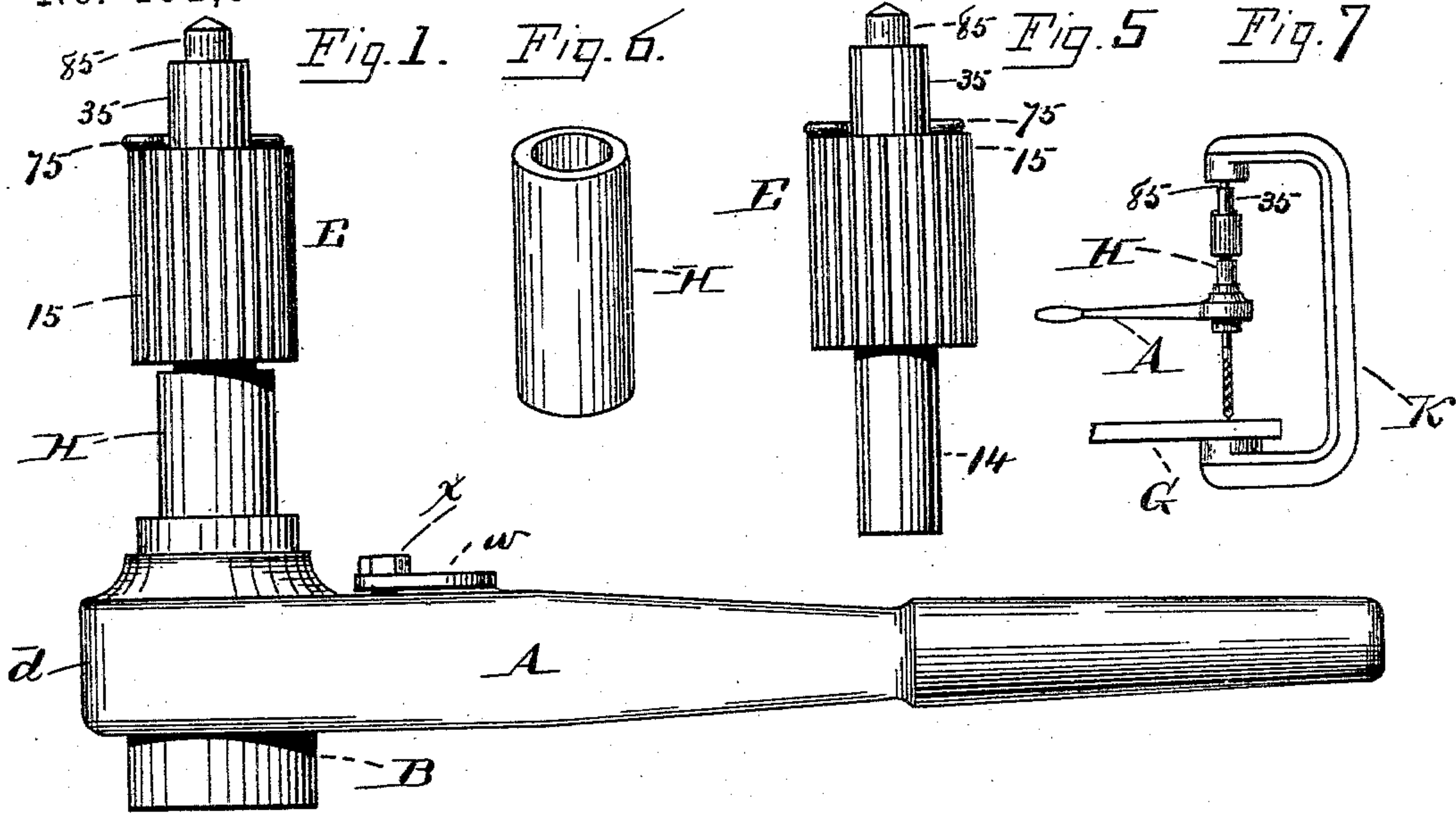


(No Model.)

H. M. GLINES.
RATCHET DRILL.

No. 401,344.

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WITNESSES:
Robert Matthews.
C. M. Spruay.

INVENTOR:
Humphrey M. Glines
PER C. C. Shawlee,
ATTY.

UNITED STATES PATENT OFFICE.

HUMPHREY M. GLINES, OF BOSTON, MASSACHUSETTS.

RATCHET-DRILL.

SPECIFICATION forming part of Letters Patent No. 401,344, dated April 16, 1889.

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To all whom it may concern:

Be it known that I, HUMPHREY M. GLINES, of Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Ratchet-Drills, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of my improved drill-ratchet; Fig. 2, a vertical longitudinal section of the same, the handle being represented as broken off; Figs. 3 and 4, bottom plan views enlarged, the plate being removed to show the pawls; Fig. 5, a side elevation of the feed detached; Fig. 6, a perspective view of the pipe detached, and Fig. 7 an elevation showing the ratchet in use with an ordinary drill-bracket.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to a combined right-and-left hand drill-ratchet; and it consists in certain novel features, as hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the body or handle of the ratchet; B, the ratchet block or wheel; C D, the pawls, and E the feed, considered as a whole. The head *d* of the body A is provided in its forward end with a circular opening, *b*, in which the block B is fitted to revolve. A horizontal chamber, *f*, is formed in the head *d* and opens into the opening *b*, the lower wall of said chamber being formed by a detachable plate, *g*, held in position by a screw, *h*, (see Fig. 2,) which is inserted in a screw-hole, *i*, in said head.

The ratchet-block B is provided centrally in its lower end with a square hole, *j*, adapted to receive the head of a drill in the usual man-

ner, the upper end of said block being provided with a vertical circular groove or socket, *k*, adapted to receive the end of a pipe or tube, H. A series of teeth or corrugations, *l*, are formed peripherally on the block B in position to register with the mouth of the chamber *f*, and below said teeth is formed an annular groove, *m*, (see Fig. 2,) into which the dovetailed forward end, *p*, of the plate *g* projects, whereby said block is retained in position in the opening *b*. Two pawls, C D, are loosely and horizontally disposed in the chamber *f*, the points of said pawls being rounded on one side and in engagement with the teeth *l* of the ratchet-block. The opposite or inner ends, *q*, (see Figs. 3 and 4,) of said pawls are round and are fitted to work in circular recesses *r*, formed in the inner end of the chamber *f*. A V-shaped spring, *t*, is disposed between each pawl and the adjacent side of the chamber *f*, said springs acting expansively to hold the points of the pawls in engagement with the teeth of the ratchet-block.

A vertical rod, *v*, Fig. 2, provided on its upper end with a handle, *w*, and screw-threaded to receive a nut, *x*, is fitted to revolve in a vertical opening through the upper wall of the chamber *f*, said rod projecting downward between the pawls C D, and is provided on its lower end with a cam projection, *y*, flat on one side and rounded on the opposite side, as best seen in Figs. 3 and 4, the purpose of said cam being to throw one of the pawls out of engagement with the ratchet-teeth.

The feed E comprises a cylinder, 15, corrugated on its outer face, as shown in Figs. 1 and 5, said cylinder being provided with an inwardly-projecting annular flange, 25, Fig. 2, near its upper end, and with a vertically-arranged cap or extension, 35, surrounding the central opening, 45, in said flange. A vertically-arranged screw-threaded rod, 55, is disposed within the cylinder 15, its head 65 projecting into the cap 35, said rod being secured therein by a pin, 75, passing through said cap and head. A vertically-arranged bearing, 85, cone-shaped at each end, is fitted to revolve in a central opening, 95, in the cap 35, the lower end of said bearing being disposed in a socket in the head 65 of the rod 55, said end being also provided with an annular flange,

100, to prevent it from being accidentally withdrawn from the cap. An interiorly-threaded nut, 14, Fig. 2, is disposed on the rod 55, and is provided with a head, 24, the body of said nut being adapted to easily enter the pipe H, which bears against said head when in use.

In the use of my improvement, when the cam-bar *v* is turned by means of its handle *w* into the position shown in Fig. 3, the springs *t* are permitted to force the pawls C D into engagement with the teeth of the ratchet-block B, thereby locking the same. By turning said bar either to the right or left one of said pawls may be thrown out of engagement with said teeth, enabling the ratchet-block to be revolved either to the right or left, as may be desired, when the handle A is removed. As shown in Fig. 4, the pawl C, being in engagement with said block, would move it from left to right when the handle is moved in a corresponding direction in a manner that will be readily understood by all conversant with such matters without a more explicit description. A section of ordinary pipe, H, is disposed in the socket *k* of the ratchet-block B, and the body of the nut 14 inserted therein. The upper end of the bearing 85 is then brought into contact with some stationary object and the handle A operated in the usual manner. The pipe H, being in contact with the head 24 of the nut 14, causes said nut to tend to unscrew from the screw-bolt 55, thereby forcing said pipe against the ratchet-block B and increasing the feed of the drill.

It will be understood that the pipe H may be of any length suitable to effect the necessary bearing to operate the feed, thereby obviating the necessity of "blocking up" the bearing 85 or the article being drilled.

In Fig. 7 the device is represented as in use with an ordinary drill-bracket, K, the bearing 85 engaging in a socket in the upper arm of said bracket, and a plate, G, which is to be drilled, being disposed on the lower arm in the usual manner.

Having thus explained my invention, what I claim is—

1. In a drill-ratchet, the combination of a body, a corrugated ratchet-block fitted to rotate therein and provided with a socket, two

spring-actuated pawls loosely disposed in said body in engagement with said ratchet, a cam-rod for alternately disengaging said pawls, a feed mechanism, and a pipe adapted to enter said socket and receive said feed mechanism, substantially as described.

2. In a drill-ratchet, the combination of a handle provided with a ratchet-block socket, a chamber opening therein, a corrugated ratchet-block fitted to revolve in said socket, two pawls disposed in said chamber, springs for holding said pawls in engagement with the corrugations of said block, a socket in said block, a pipe adapted to enter said socket and receive a feed mechanism, and a plate for closing said chamber, the forward end of said plate projecting into a groove in the ratchet-block, substantially as and for the purpose set forth.

3. In a drill-ratchet, the feed mechanism E, comprising the cylinder 15, screw-bolt 55, bearing 85, and nut 14, in combination with the pipe H, ratchet-block B, provided with the socket *k*, and adjunctive mechanism for actuating said block, substantially as set forth.

4. In a drill-ratchet, the feed mechanism E, comprising the cylinder 15, provided with the cap 35, the screw-bolt 55, secured in said cap, the bearing 85, provided with cone-shaped ends and fitted to rotate in said cap and the head of said bolt, the pipe H, and the nut 14, all being combined and arranged to operate substantially as described.

5. In a drill-ratchet, the feed mechanism E, in combination with pipe H, the ratchet-block B, having the socket *k* for receiving the nut 14 of said feed, and adjunctive mechanism for actuating said ratchet, substantially as described.

6. In a drill-ratchet, the feed mechanism E, provided with the nut 14, having the head 24, in combination with the pipe H, adapted to receive the body of said nut and engage the head thereof, the ratchet-block B, provided with the socket *k* for receiving said pipe, and adjunctive mechanism for actuating said ratchet, substantially as set forth.

HUMPHREY M. GLINES.

Witnesses:

O. M. SHAW,
E. M. SPINNEY.