

No. 755,933.

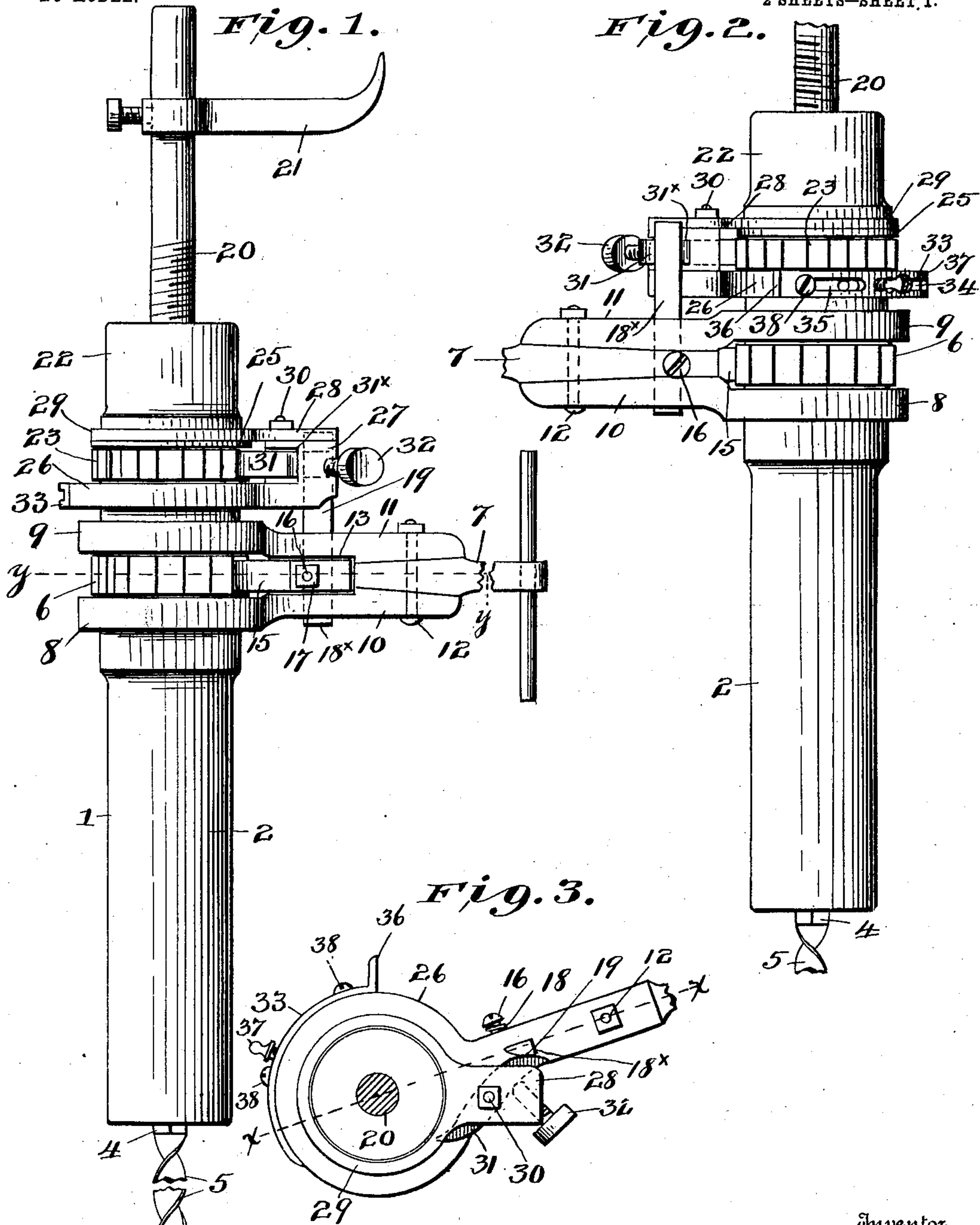
PATENTED MAR. 29, 1904.

T. L. PYBURN.  
RATCHET DRILL.

APPLICATION FILED SEPT. 15, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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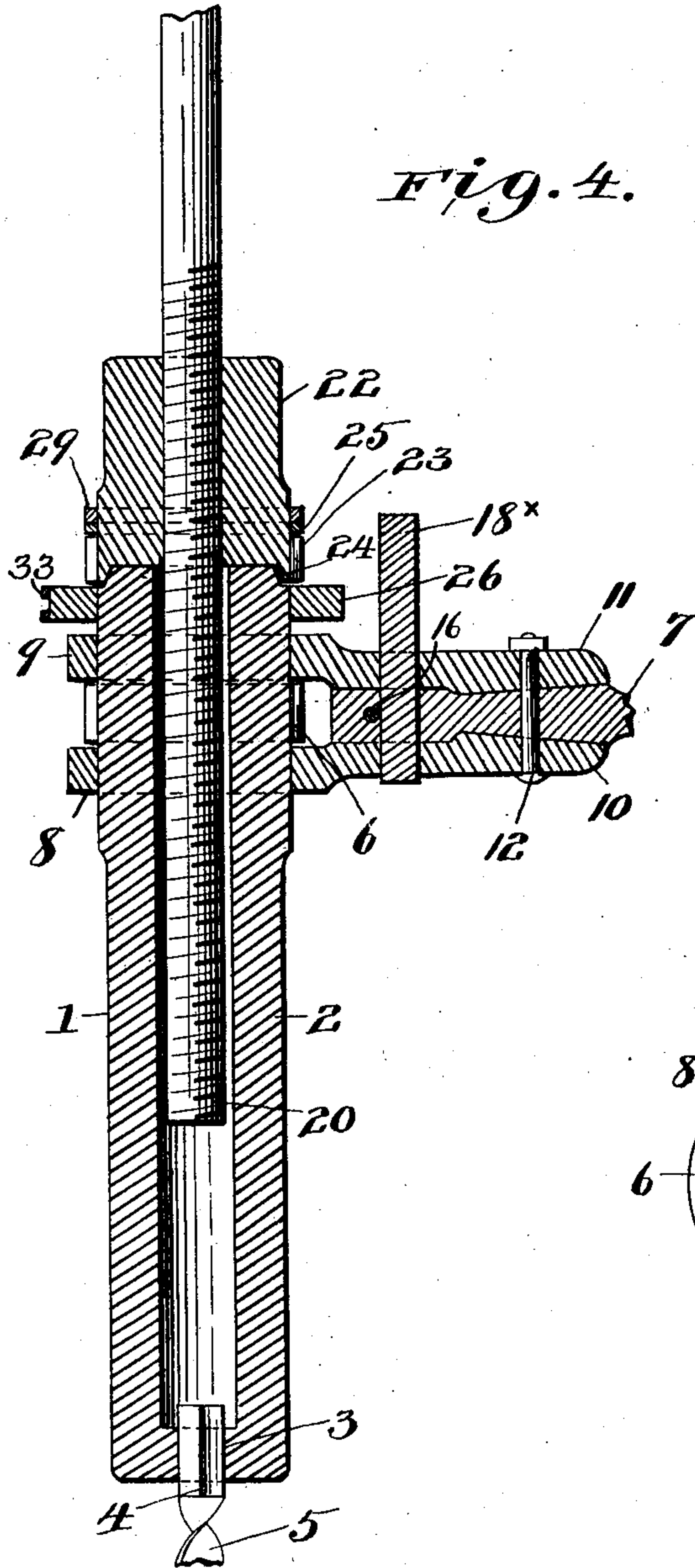
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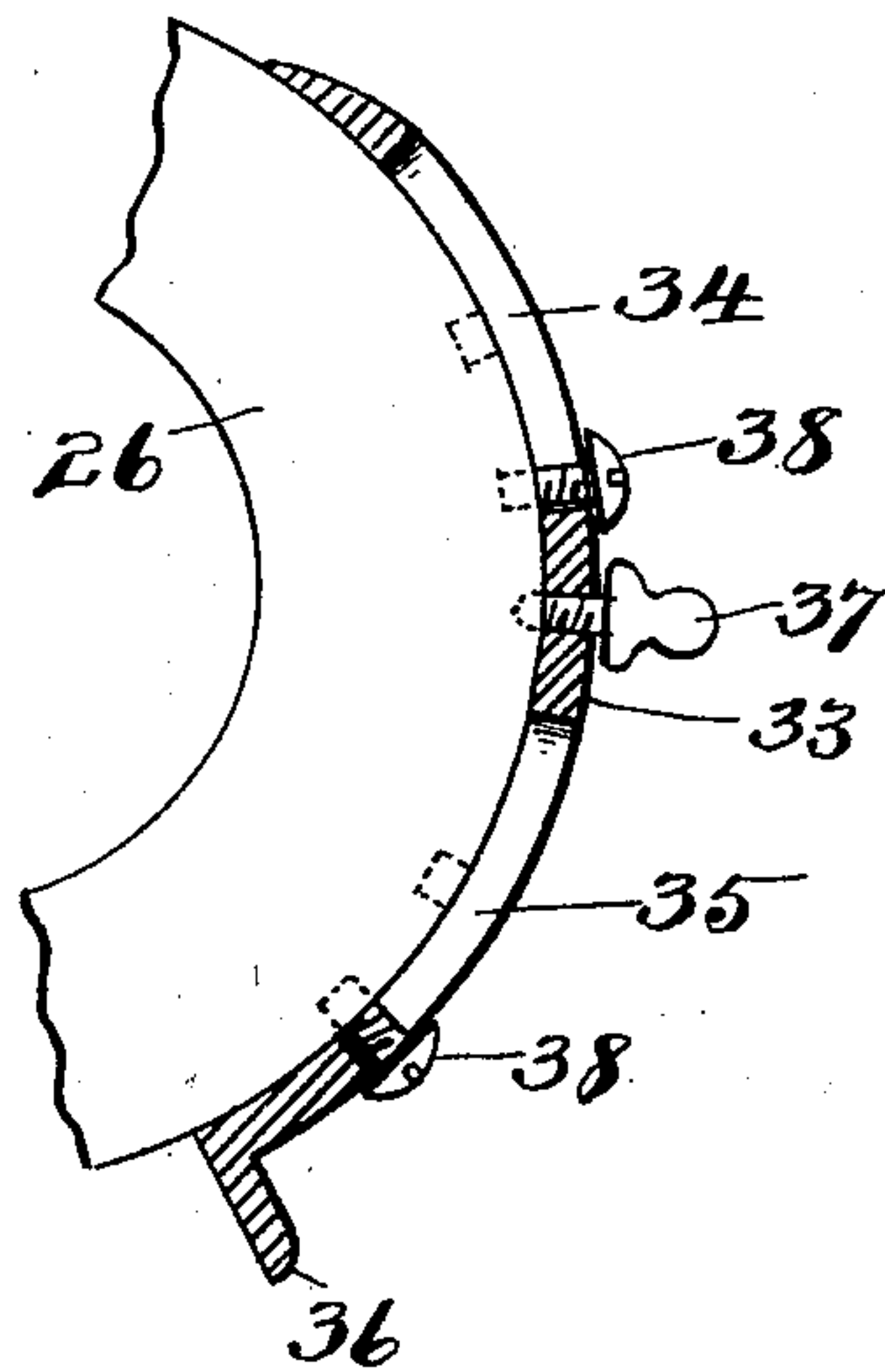
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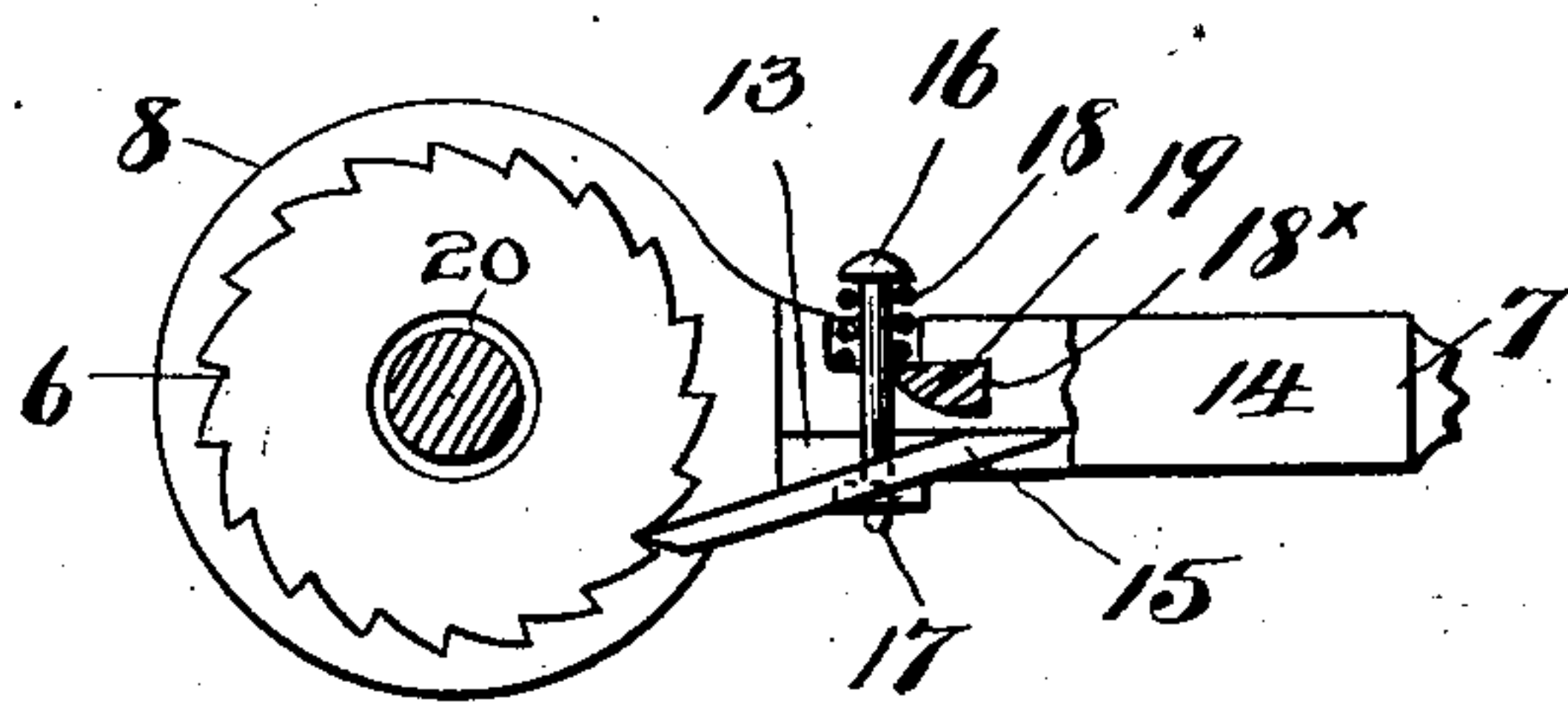
2 SHEETS—SHEET 2.



*Fig. 6.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

THOMAS L. PYBURN, OF DUNLAP, TENNESSEE, ASSIGNOR OF ONE-HALF  
TO CLINTON K. WATKINS, OF DUNLAP, TENNESSEE.

## RATCHET-DRILL.

SPECIFICATION forming part of Letters Patent No. 755,933, dated March 29, 1904.

Application filed September 15, 1903. Serial No. 173,282. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS L. PYBURN, a citizen of the United States, residing at Dunlap, in the county of Sequatchie, State of Tennessee, have invented certain new and useful Improvements in Ratchet-Drills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in ratchet-drills, and more especially to that class of drills for use in mining coal and drilling holes in rocks, ore, and other material. It has for its object to provide a ratchet-drill which is very simple, inexpensive, and durable in construction, easily operated, and capable of being operated by the reciprocating movement of a hand-lever which revolves the drill and feeds it simultaneously.

A further object of my invention is to provide means for changing and varying the length of feed of the drill and also regulating the feed, so that it may be fast or slow, as desired.

My invention consists in the construction, combination, and arrangement of the several features, as more fully hereinafter described and claimed.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side view in elevation of the ratchet-drill ready for use; Fig. 2, a side view in elevation of the opposite side; Fig. 3, a top plan; Fig. 4, a central vertical section on line *x x* of Fig. 3; Fig. 5, a horizontal section on line *y y* of Fig. 1; Fig. 6, an enlarged detail section of the gage-plate.

Referring to the drawings, in which like numerals of reference denote like parts throughout the several views, 1 represents the ratchet-drill, 2 the tubular stock provided at one end with a square or other shaped opening 3, adapted to receive the shank 4 of the bit or drill 5, which may be of any desired kind. The other end of the tubular stock is provided on its exterior with an annular ratchet 6.

7 is a lever provided at one end with a cross-

piece for the purpose of adapting it to be grasped by the operator with both hands.

8 and 9 are collars which loosely embrace the tubular stock, one above and the other below the ratchet 6, said collars provided with shanks 10 and 11, respectively, secured to the opposite sides of lever 7 by means of a bolt and nut 12. A recess 13 is cut in the inner end 14 of the lever 7, and 15 is a pawl, one end seated in said recess and the other end engaging the teeth of the annular ratchet 6. A screw-bolt 16 is passed loosely through the end 14 of the lever 7 and through the pawl and is provided with a screw-nut 17. A spiral spring 18 is provided under the head of the screw-bolt 16 for the purpose of allowing the bolt to move in the direction of its length, and thus give the pawl 15 a spring action, the amount of spring action being regulated by the nut 17.

18<sup>x</sup> is a post projecting upwardly from the lever 7 and provided with a beveled portion 19.

20 is the feed-screw, which fits loosely and moves freely in the bore of the tubular stock 2 and is adapted to be supported at its outer end in any suitable manner, preferably by a step 21.

22 is the feed-nut, which is interiorly screw-threaded and mounted on the feed-screw and is provided at one end with a ratchet 23, having an annular recess 24 in its under side, in which the upper end of the tubular stock 2 is seated, and 25 is an annular washer on the top of the ratchet 23, which encircles the said stock.

26 is an annular collar which loosely embraces the tubular stock just above the collar 9 of the lever 7, said collar provided with an upwardly-extending lug or projection 27.

28 is a plate provided with an annular collar 29, which loosely embraces the feed-nut 22 and is seated and moves on the top of washer 25. A screw-bolt 30, having a suitable nut, secures the plate 28 to the collar 26.

31 is a pawl without springs, pivoted diagonally in a slot 31 in projection 27 and on the bolt 30, said pawl being adapted to engage the ratchet of the feed-nut.



32 is a thumb-screw mounted in the projection 27 of the collar 26, its end adapted to contact with the pawl 31 and throw it out of engagement with the ratchet 23 of the feed-nut  
5 or limit its movement.

33 is an adjustable gage-plate provided with slots 34 35 and at one end with a lip 36, and 37 is a set-screw for the purpose of locking the gage-plate in the desired position, said  
10 plate being slidably secured on the periphery of the collar 26 by means of screws 38, which screw into holes in the collar 26.

If a different feed is desired, the ratchet of the feed-nut may be removed and another ratchet  
15 having more or less teeth substituted, and the ratchet on the tubular stock may also be removed and changed, if found desirable.

I do not wish to be limited to the precise construction as shown and described, as the  
20 same may be changed somewhat without departing from the spirit of my invention.

In operating the ratchet-drill the gage-plate is adjusted to the desired position—that is, so it will allow feeding of the desired number of  
25 threads, preferably four threads to the inch. The lever is moved backward, the pawl 15 moving loosely over the ratchet 6 until the lever comes in contact and is stopped by the lip on the gage-plate. Then the lever is moved  
30 forward, and in moving forward the pawl 15 engages the ratchet 6 and rotates the drill without feeding it until the beveled portion of the post 18 strikes the rear end of the pawl 31, which causes said pawl to engage the  
35 ratchet 23 of the feed-nut 22, and this in turn causes the feed-nut to move on the feed-screw and feed the drill forward.

The interval between the time the lever starts and the feed commences can be regulated by the gage-plate, or if it is desired to  
40 drill for any reason without feeding it is only necessary to screw the thumb-nut 32 in against the pawl 31 until it forces said pawl out of alinement with the teeth of the ratchet 23 of  
45 the feed-nut 22, when the feed-nut will not operate.

What I claim is—

1. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut thereon having  
50 a ratchet, a collar loosely embracing said stock and provided with a gage-plate on its edge, means for adjusting said gage-plate, a pawl on said collar, a lever provided with means designed to contact with the gage-plate and  
55 limit the backward movement of said lever and contact with the pawl on the collar and cause said pawl to engage the ratchet of the feed-nut and feed the drill-stock on the forward movement of said lever, substantially as  
60 described.

2. A ratchet-drill provided with a tubular stock, means for operating said stock, a feed-screw, a feed-nut thereon having a ratchet, and a collar loosely embracing the upper portion

of the tubular stock and provided with a pawl  
65 adapted to engage with the ratchet of the feed-nut, a gage-plate on the edge of said collar, and a lever provided with a post, said post designed to contact with the gage-plate and limit  
70 the backward movement of the lever and contact with the pawl on the feed-nut and feed the drill-stock and drill on the forward movement of said lever, substantially as described.

3. A ratchet-drill provided with a tubular stock, a lever provided with means for operating  
75 said stock and a post, a feed-screw, a feed-nut thereon having a ratchet and a collar loosely embracing the upper portion of the tubular stock, a pawl carried by said collar, adapted to be engaged by the post of the lever  
80 and thrown into engagement with the ratchet of the feed-nut, substantially as described.

4. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut thereon, a collar  
85 loosely embracing the said tubular stock and provided with a curved gage-plate on its periphery, means for adjusting said gage-plate, and a lever limited in its movement in one direction by the gage-plate, and adapted to operate  
90 the tubular stock and feed-screw when operated in the opposite direction, substantially as described.

5. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut thereon provided with a ratchet, a collar loosely surrounding  
95 said feed-nut, a pawl loosely pivoted on said collar, and a lever provided with means for operating the tubular stock, and with means for causing said pawl to engage the ratchet of the  
100 feed-nut and rotate the collar to operate the feed-screw, substantially as described.

6. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut provided with a ratchet, a collar loosely surrounding said feed-  
105 nut having a projection provided with a slot, a pawl loosely pivoted in said slot, means for throwing the pawl out of alinement with the ratchet of the feed-nut, and a lever provided with means for operating the tubular stock,  
110 and with means for causing said pawl to engage the ratchet of the feed-nut and rotate the collar to operate the feed-screw, substantially as described.

7. A ratchet-drill provided with a tubular  
115 stock, a feed-screw, a feed-nut provided with a ratchet, an annular collar loosely embracing the tubular stock having a projection with a slot, a plate mounted on top of said projection and provided with a collar embracing the feed-  
120 nut, a pawl loosely pivoted in the slot of the projection, and a lever provided with means for operating the tubular stock and with means for causing said pawl to engage the ratchet of the feed-nut and rotate the collar to operate  
125 the feed-screw, substantially as described.

8. A ratchet-drill provided with a tubular stock, a feed-screw, a feed-nut provided with a



5 ratchet, an annular collar loosely embracing the upper end of the tubular stock and provided with a slot, a pawl loosely pivoted diagonally in said slot, and a lever provided with means for operating the tubular stock and also with means for causing said pawl to engage the ratchet of the feed-nut and rotate the collar to operate the feed-screw, substantially as described.

10 9. A ratchet-drill provided with a tubular stock, a ratchet thereon, a lever provided with annular collars loosely embracing said stock on opposite sides of the ratchet, a recess in said lever, a pawl one end mounted in said recess and the opposite end engaging the said  
15 ratchet, a feed-screw, a feed-nut thereon provided with a ratchet, and a collar loosely embracing the top of the tubular stock, a pawl loosely pivoted in said collar adapted to engage

the ratchet of the feed-nut and means for operating the tubular stock and collar simultaneously, substantially as described.

10. A ratchet-drill provided with a stock, a feed-screw, a feed-nut having a ratchet, a collar loosely surrounding said feed-nut, a pawl  
25 loosely pivoted on said collar, means for throwing said pawl into engagement with said ratchet and operating the feed-nut, and means for operating the said stock and drill, substantially as described.

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

THOMAS L. <sup>his</sup> × PYBURN.  
mark

Witnesses:

T. L. STEWART,  
O. T. KELL.