

No. 712,592.

Patented Nov. 4, 1902.

J. PUECHAGUT.  
ROCK DRILL.

(Application filed Jan. 2, 1901.)

(No Model.)

2 Sheets—Sheet 1.

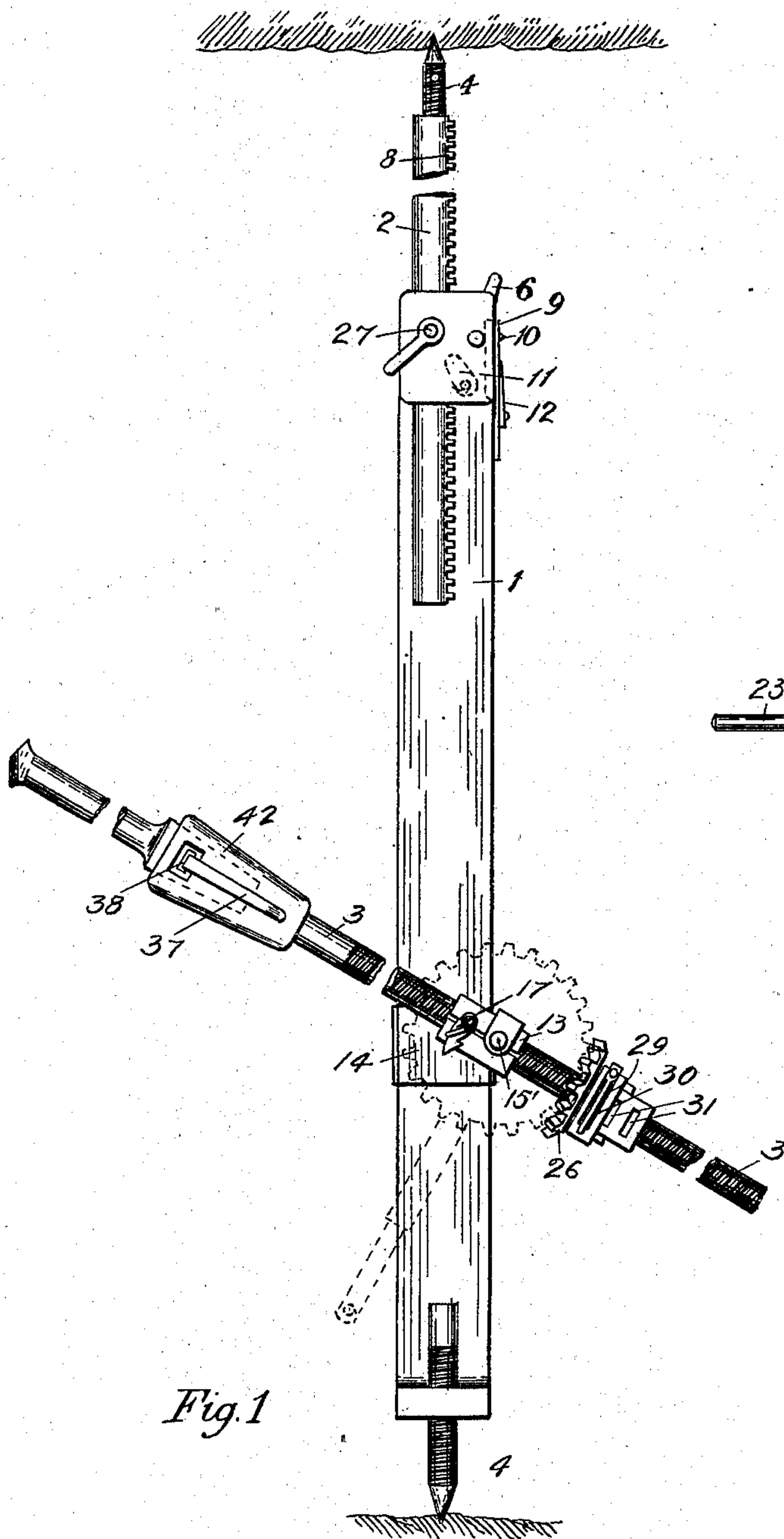


Fig. 1

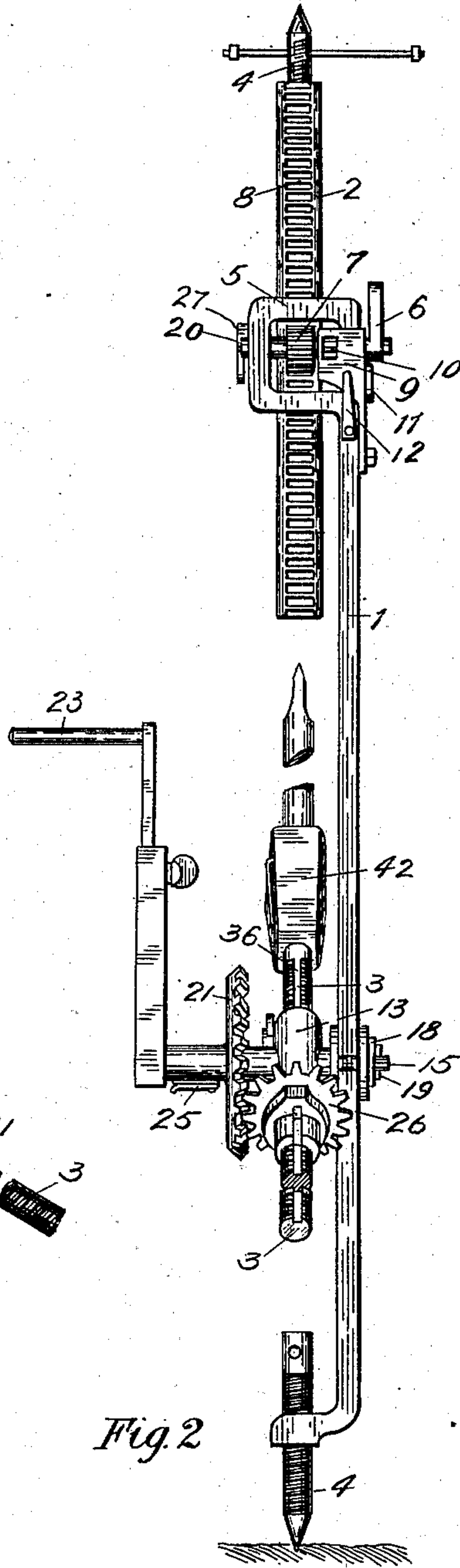


Fig. 2

WITNESSES:  
Chas. E. S. Burch  
F. D. Moss.

INVENTOR  
Joachim Puechagut  
BY  
Pierre Barnes  
ATTORNEY

No. 712,592.

Patented Nov. 4, 1902.

J. PUECHAGUT.  
ROCK DRILL.

(Application filed Jan. 2, 1901.)

(No Model.)

2 Sheets—Sheet 2.

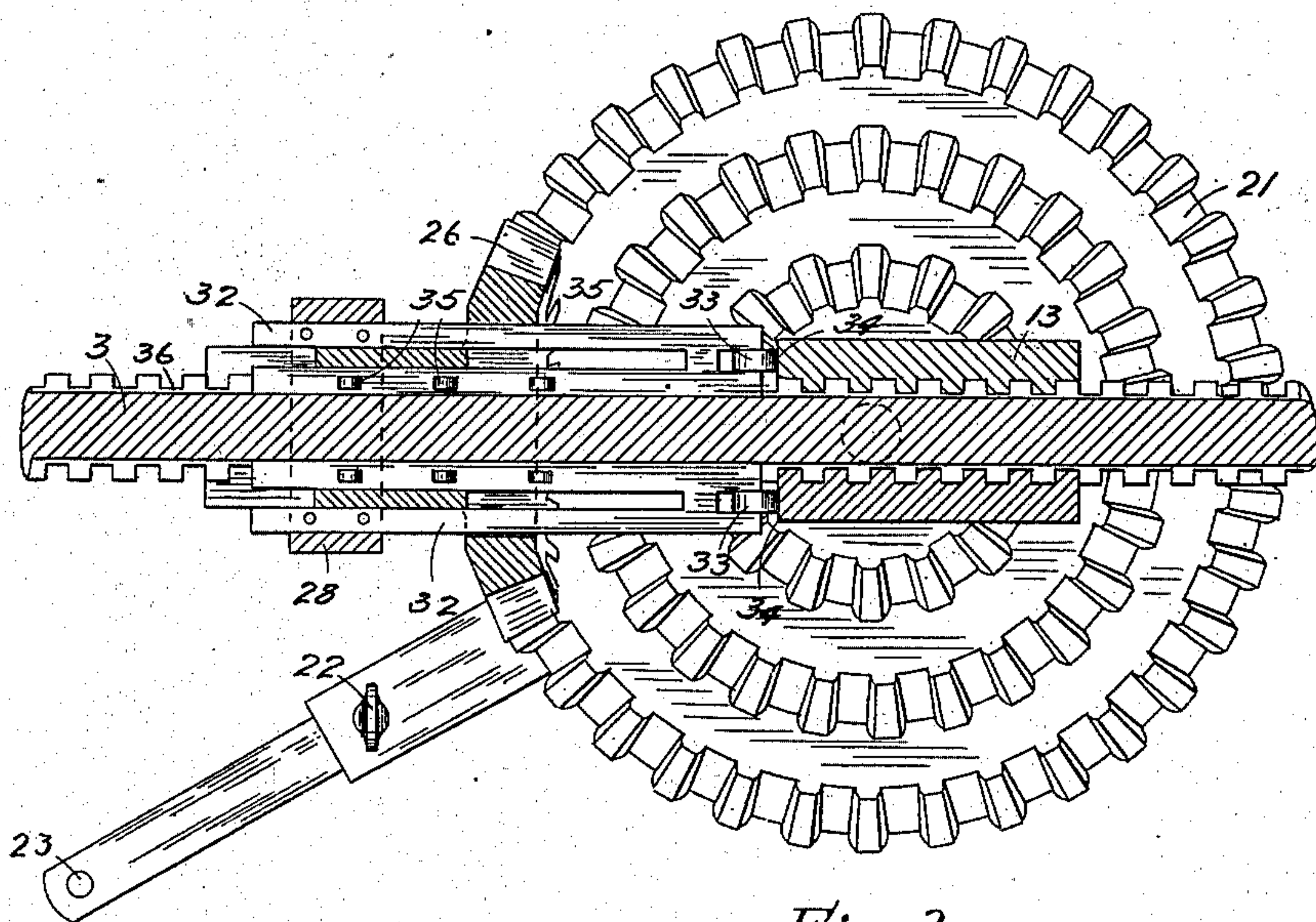


Fig. 3

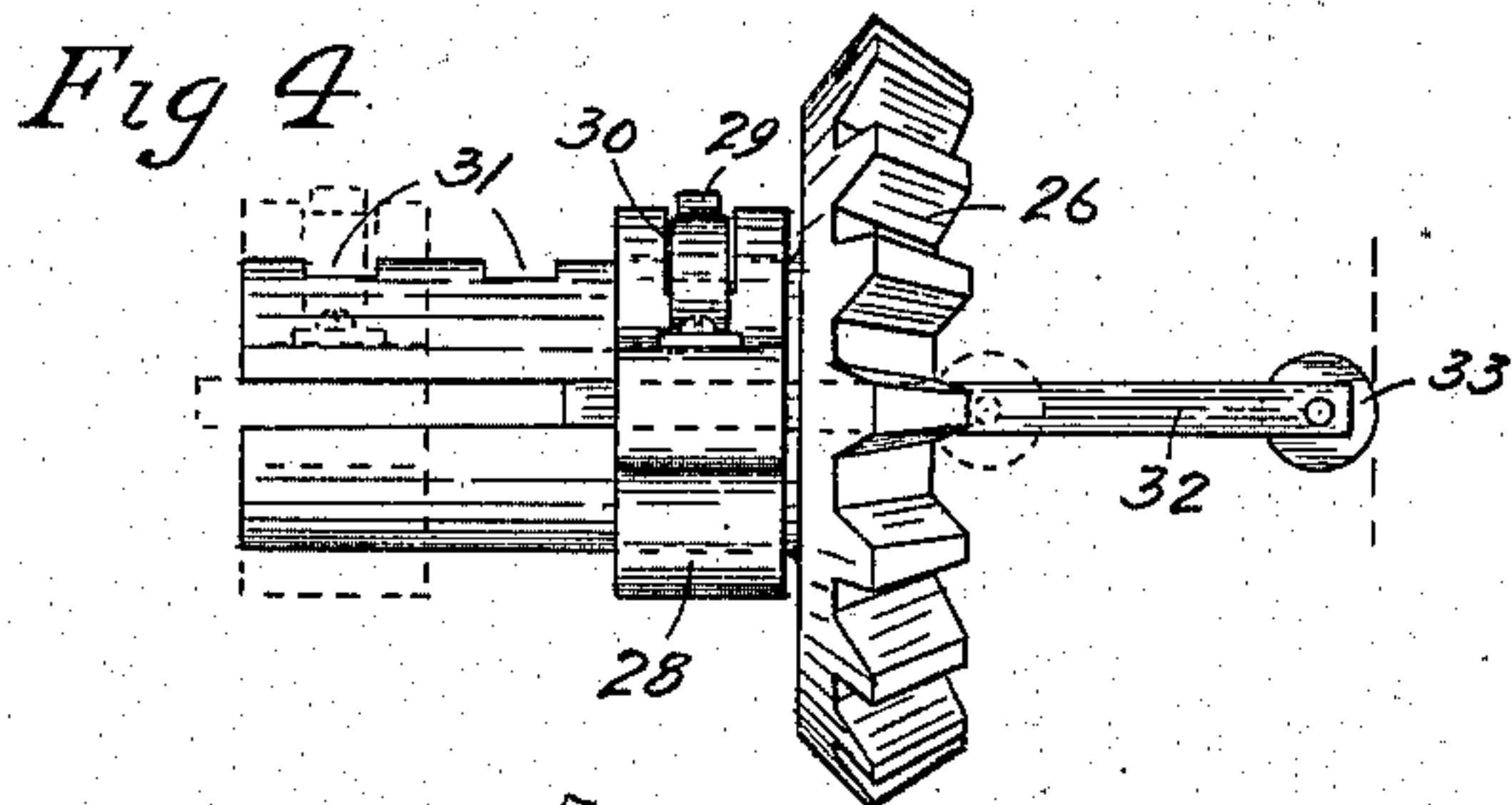


Fig. 4

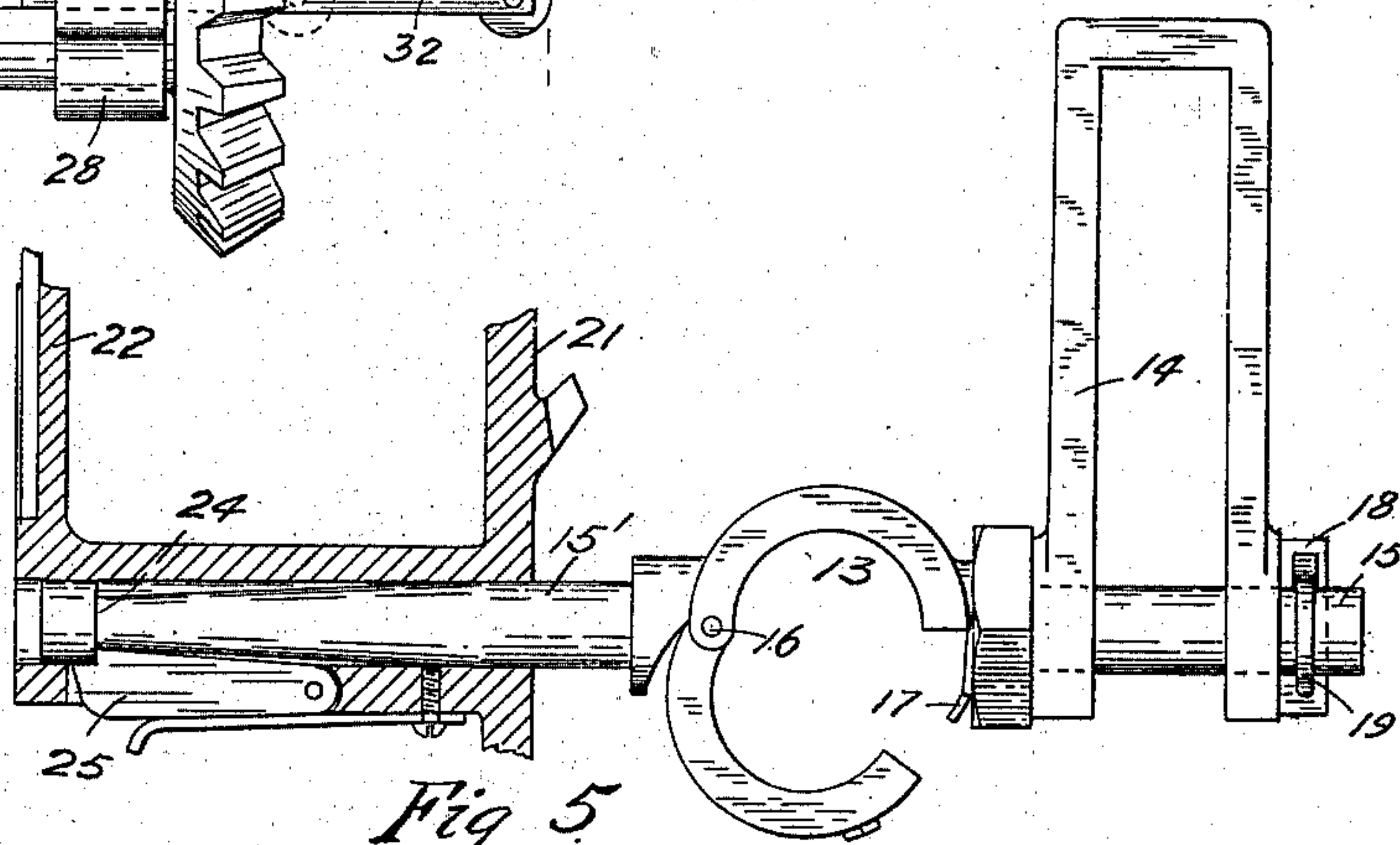


Fig. 5

WITNESSES:

Chas. E. S. Burch  
F. D. Moore.

INVENTOR

Joachim Puechagut

BY

Pierre Barnes.

ATTORNEY



# UNITED STATES PATENT OFFICE.

JOACHIM PUECHAGUT, OF BLACK DIAMOND, WASHINGTON.

## ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 712,592, dated November 4, 1902.

Application filed January 2, 1901. Serial No. 41,918. (No model.)

*To all whom it may concern:*

Be it known that I, JOACHIM PUECHAGUT, a citizen of France, residing at Black Diamond, in the county of King and State of Washington, have invented certain new and useful Improvements in Rock-Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in coal or rock drills, which improvements relate to the entire machine and all of its parts and include principally the construction of the frame, the drill-spindle, and means for mounting and operating it in any direction, the drill-feed, and means for varying the same, and other details, all of which I shall hereinafter describe.

The object of my invention is to provide a simple, light, and easily-operated rock-drilling machine especially adapted for underground work, as in coal-mines, and each of the several improvements which I have made have in view these general results.

In the drawings, where similar numbers refer to corresponding parts in all of the views, Figure 1 is a vertical side view of the machine. Fig. 2 is a vertical front view. Fig. 3 is a central longitudinal section of a portion of the drill-spindle with mounting for the same and the feed mechanism, and Figs. 4 and 5 are details of parts shown in the other figures.

In the drawings the frame is represented by the numerals 1 and 2, which are respectively a main post and extension-piece. This piece 2 is movable longitudinally of the post 1 through chambered offset 5 on the post by means of rack 8 and pinion 7 and crank 6 on a spindle 20, mounted upon the said post. When the frame is being lengthened, the piece 2 is held by a pawl 9, engaging with ratchet-wheel 10, and to permit the shortening of the frame the pawl is disengaged from the said ratchet-wheel by means, preferably, of a cam 11, raising the said pawl against the action of a spring 12.

27 is a locking-screw to secure the frame at any set length.

3 is a drill-spindle, having a socket 42 at one end for the reception of the drill, which is retained in the socket by means of a spring-

hooked catch 37 and a notch 38 in the drill. The spindle is cut with a screw-thread to engage in a nut 13, which is mounted on a slidable carrier 14 by trunnion 15. The nut 13 is made in two pieces and opens on a hinged joint 16 for the insertion or removal of the drill-spindle, and after being closed thereon is locked by a spring-actuated latch 17. Extending upon the opposite side of the nut from the trunnion 15 and in line therewith is a mandrel 15' for mounting loosely a multiple gear-wheel 21 and having near its outer end a shoulder 24 to engage with a spring-actuated latch 25, operating through a slot in the hub of the gear-wheel to prevent the wheel from sliding endwise therefrom.

26 is a gear-wheel splined to the drill-spindle so as to be free to move longitudinally thereon and adapted to mesh with any of the several gears of the multiple wheel 21.

Splines 32 extend through the hub of the gear 26 and that they will move in unison are united by means of a yoke 28 around the hub, and a spring-latch 29, operating through a slot 30 in said yoke, engages with notches 31, positioned upon the hub, so that when the teeth of gear 26 mesh with the teeth of any one of the several gears on the multiple wheel 21 the spring-latch 29 will register with a corresponding notch to lock the splines 32 and cause the revolving friction-rolls 33 in the ends thereof to bear against the end 34 of the nut 13. Rolls 35 are inserted in the spline to reduce the friction between the splines and the sides of the keyway 36. The carrier 14 is slidable upon the frame to permit the drill-spindle and its operating connections to be moved longitudinally of the frame, and is locked thereto in any desired position by clamping the frame between the arms of the carrier by means of the key 18.

22 and 23 are respectively the socket-arm and crank, which is adjustably movable longitudinal of the arm.

The screw-thread upon the spindle forms, with the nut 13, the drill-feed, which may be varied by using the different gears of the multiple gear-wheel, each speed being adapted for a different quality or hardness of the material being operated upon.

The spindle being movable upon the nut-trunnion to vertical angles and the whole



machine turning to any horizontal angle, together with the rectilinear movement of the carrier, makes the machine universal in its action.

- 5 My invention is put in operation as follows: The frame is first placed and secured in position to suitable supports, as the walls of the tunnel or drift, by means of the extension-piece and the clamping jack-screws, as shown.
- 10 The nut 13 is opened to insert the drill-spindle 3 and closed therearound. Then the splines 32 are adjusted and secured within and to the hub of the gear-wheel 26 at one of the said notches, so that when shoved down
- 15 the drill-spindle the friction-rolls 33 bear against the face 34 of the nut and the said gear will be in a predetermined position to mesh with one of the concentric gears of the multiple wheel 21, which wheel is then mounted
- 20 upon the mandrel and prevented from sliding off or out of engagement with the gear 13 by means of the latch 25 provided. An important advantage of my device is that the various parts are so connected or com-
- 25 bined one with the other that it is complete in itself and requires the use of no extraneous means, such as wrenches or bars, liable to be misplaced or lost, to adjust, set, or operate the same.
- 30 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—
1. In a rock-drilling machine, in combination with the frame and rotatable screw-threaded spindle, of a divided nut for said
- 35 spindle hung by a trunnion to a carrier adapted to be moved longitudinally to said frame, means to open and close the nut, a latch for locking the nut, a multiple gear-wheel mounted
- 40 to revolve loosely upon a mandrel integral with said nut, means to prevent the removal of the said gear-wheel from the mandrel, another gear-wheel mounted upon the said spindle so as to be free to move longitudinally
- 45 thereon but splined to rotate therewith, said splines extending through the hub of the last-mentioned gear-wheel and adapted to be secured thereto by a latch adapted to engage with slots cut in the hub of the gear-wheel at
- 50 determined distances so that when the said splines bear against the adjacent face of the nut the said gear-wheel may be set to mesh with any one of the several gears of the multiple wheel, substantially as set forth.
- 55 2. In a device of the character described, a trunnion and a mandrel in alignment with each other, a divided nut interposed between the trunnion and mandrel, a U-shaped carrier having its ends connected together by
- 60 the trunnion passed therethrough, a post on which the carrier is adjustably clamped by the trunnion, a drill-spindle threaded in the divided nut, a gear-wheel splined on the spindle, a crank and multiple gear-wheel mounted
- 65 on the mandrel, and means for adjusting the first-named gear-wheel on the spindle whereby said gear-wheel is caused to mesh

with the several portions of the multiple gear-wheel.

3. In a device of the character described, a spindle, a nut threaded thereon, a mandrel on the nut, a multiple gear-wheel journaled on the mandrel, a second gear-wheel mounted on the spindle, splines located in grooves of the spindle and second-named gear-wheel and bearing on the nut, and means for adjusting the splines within the second-named gear-wheel to cause said gear-wheel to mesh with the several portions of the multiple gear-wheel, substantially as described.

4. In a device of the character described, a spindle, a nut threaded thereon, a multiple gear-wheel journaled on a trunnion of the nut, a second gear-wheel mounted on the spindle, splines located within grooves of the spindle and second-named gear-wheel, friction-rolls on the splines bearing against the sides of the grooves of the spindle and the end of the nut, a yoke connecting the splines, a spring carried thereby to engage any one of several notches in the hub of the second-named gear-wheel whereby said gear-wheel is adjusted in its position with relation to the nut so as to mesh with one or another of the series of teeth on the multiple gear-wheel, substantially as described.

5. In a device of the character described, a spindle, a nut threaded thereon, a multiple gear-wheel journaled on a trunnion of the nut, a second gear-wheel mounted on the spindle, splines located within grooves of the spindle and second-named gear-wheel and bearing on the nut, arms of said splines passing through the second-named gear-wheel and extending along the outside of the hub thereof, a yoke connecting the arms of the splines and slidable on the hub of the second-named gear-wheel, and a catch on the yoke adapted to engage stops in said hub to adjust the position of the second-named gear-wheel with relation to the multiple gear-wheel, substantially as described.

6. In a device of the character described, a threaded spindle, a stationary nut through which the spindle is threaded, a multiple gear-wheel mounted on a mandrel connected with the nut, a gear-wheel splined on the spindle and adjustable with relation to the multiple gear-wheel, and means abutting against the nut for holding the second-named gear-wheel in its adjusted position.

7. In a device of the character described, a threaded spindle, a stationary nut threaded thereon, a multiple gear-wheel mounted on a mandrel connected with the nut, a gear-wheel splined on the spindle and adjustable with relation to the multiple gear-wheel, and means adjustable on the second-named gear-wheel and bearing on the nut for holding the second-named gear-wheel in its adjusted position, substantially as described.

8. In a device of the character described, a threaded spindle, a stationary nut threaded thereon, a multiple gear-wheel mounted on a



mandrel connected with the nut, a gear-wheel splined on the spindle and adjustable with relation to the multiple gear-wheel, and splines bearing on the nut and adjustable in the second-named gear-wheel for holding said gear-wheel in its adjusted position, substantially as described.

9. In a device of the character described, a threaded spindle, a stationary nut threaded thereon, a multiple gear-wheel mounted on a mandrel connected with the nut, a gear-wheel splined on the spindle and adjustable with re-

lation to the multiple gear-wheel, splines for the second-named gear-wheel having rollers traveling within grooves of the spindle and rollers bearing on the nut, and means for adjusting the splines in the second-named gear-wheel, substantially as described. 15

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

JOACHIM PUECHAGUT.

Witnesses:

ISAAC P. CALHOUN,  
SHADRACH EVANS.