

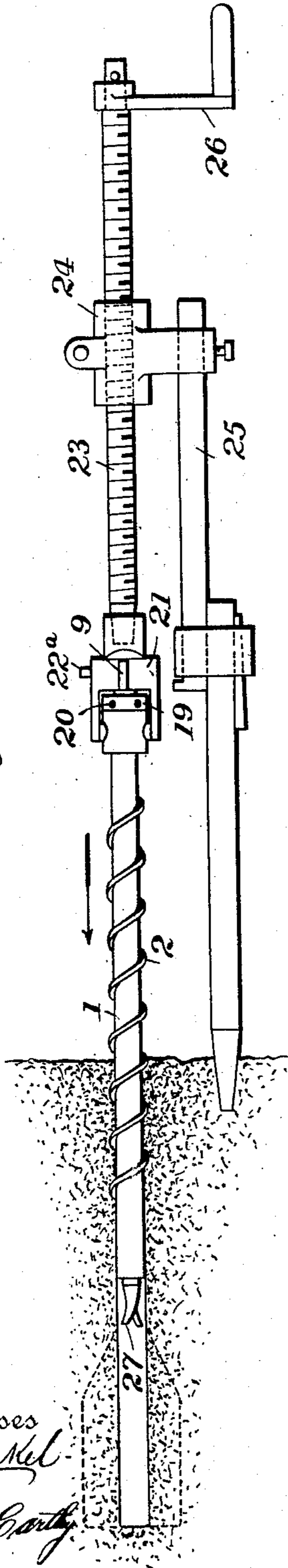
W. T. EVANS & B. T. REILLY.
 DRILLING AND REAMING IMPLEMENT.
 APPLICATION FILED DEC. 16, 1908.

994,307.

Patented June 6, 1911.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
J. G. Linkel
J. J. McCarthy

Fig. 4.

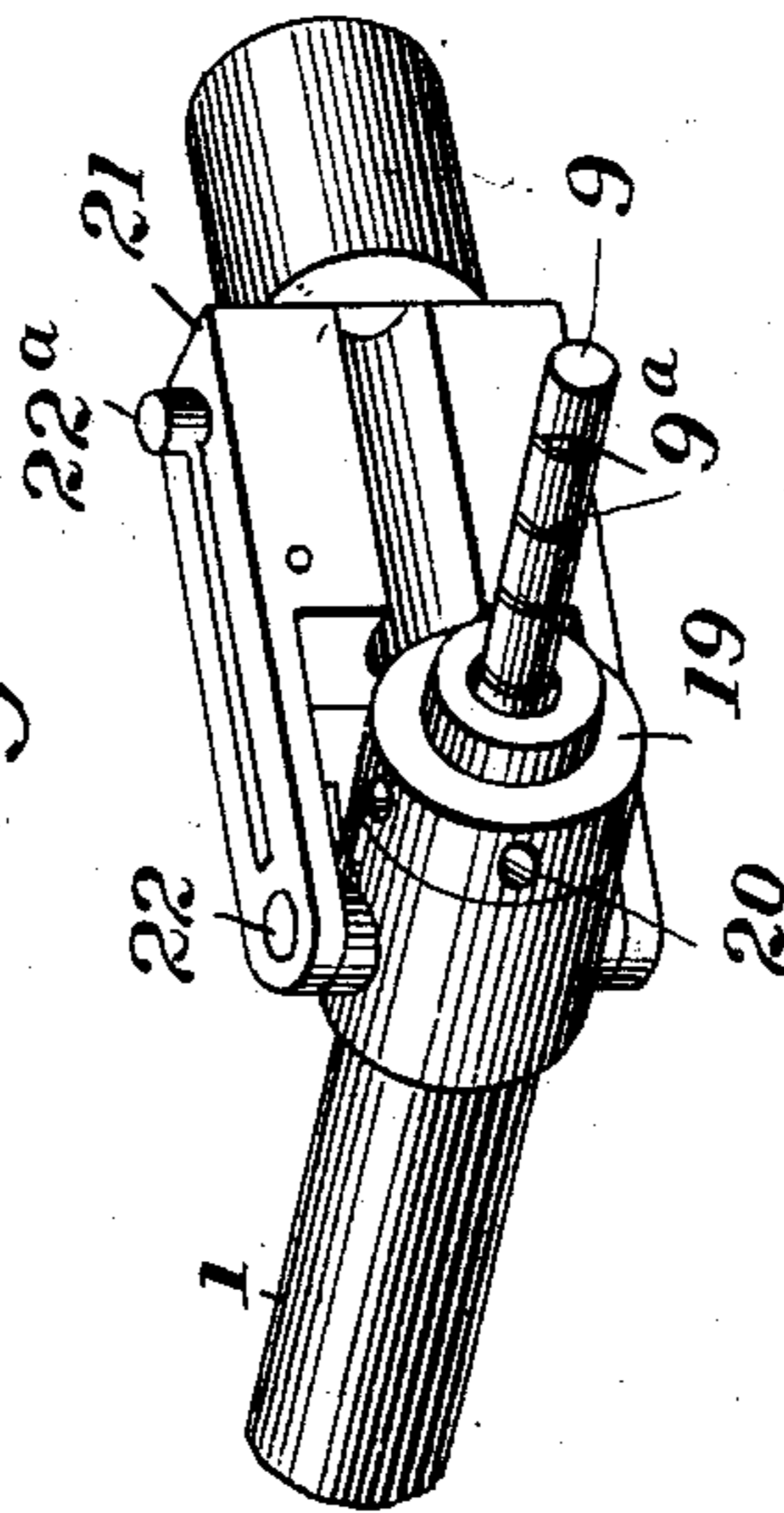
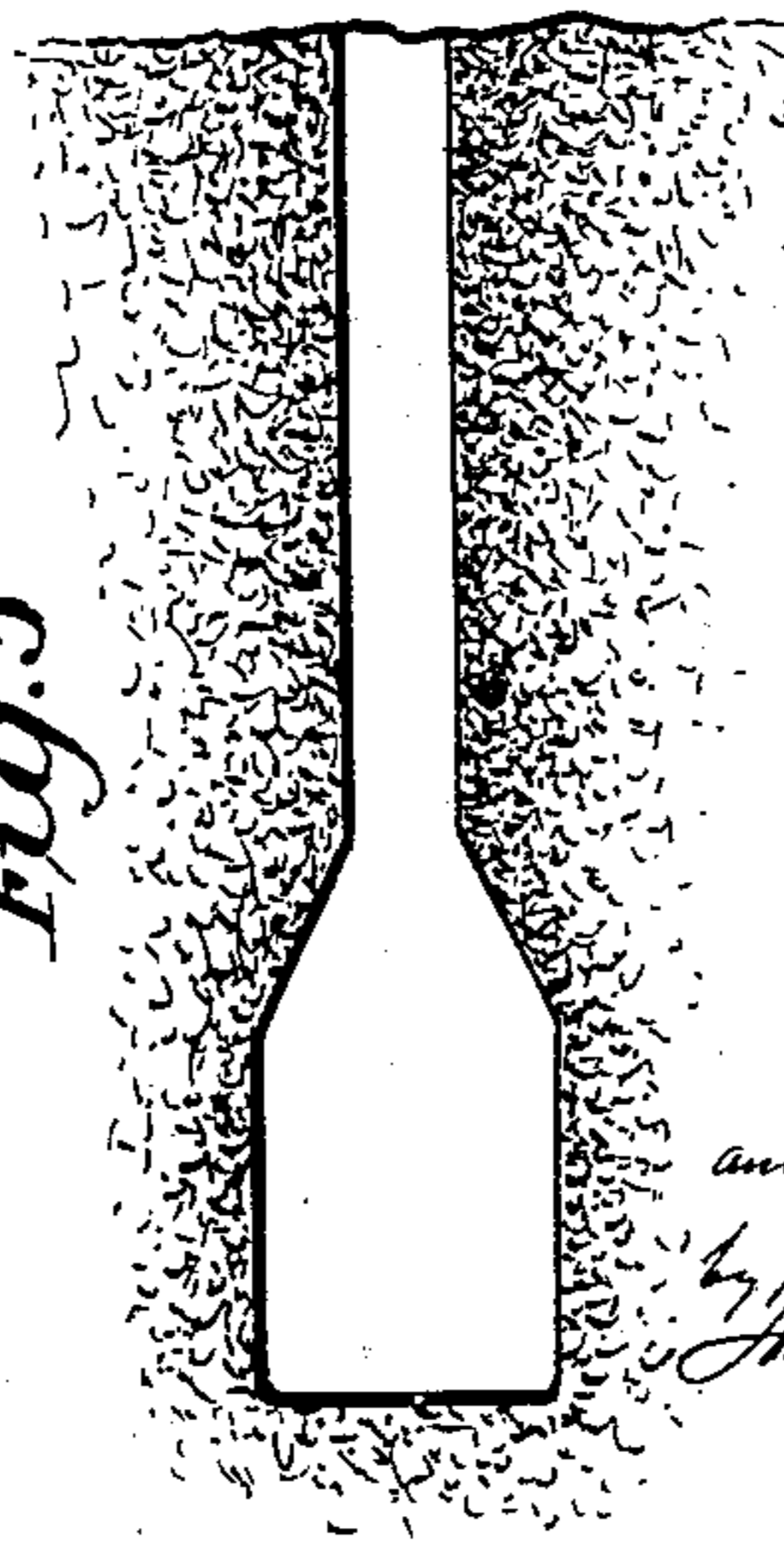


Fig. 5.



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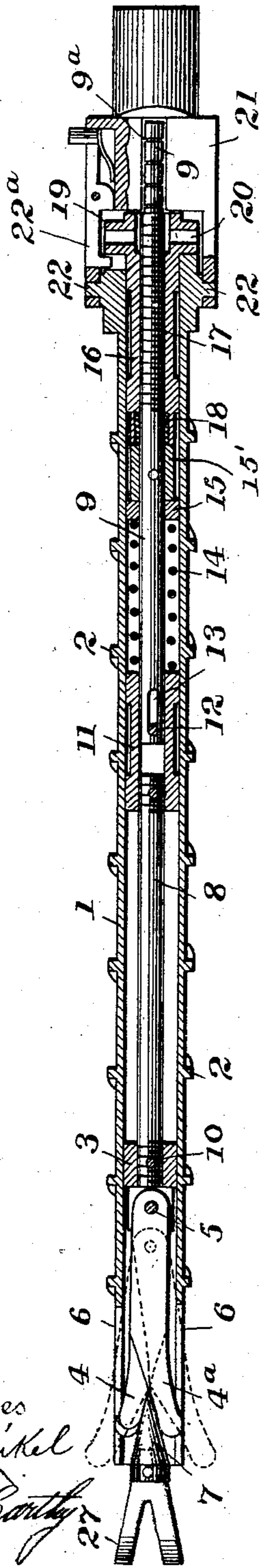
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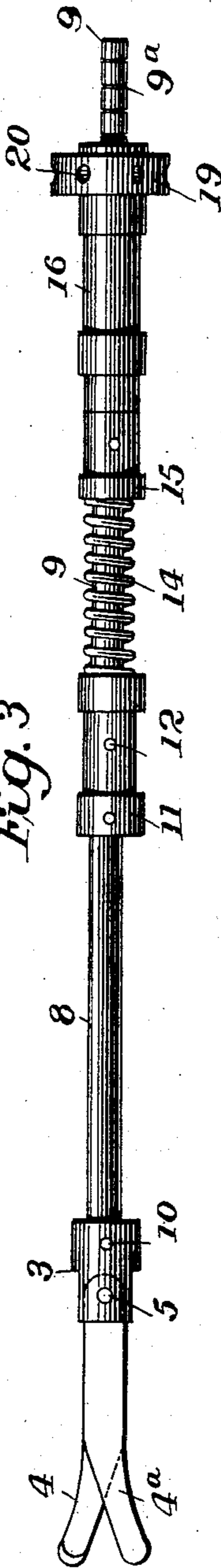
2 SHEETS—SHEET 2.

Fig. 2.



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Fig. 3



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UNITED STATES PATENT OFFICE.

WILLIAM T. EVANS AND BERNARD T. REILLY, OF WILKES-BARRE, PENNSYLVANIA.

DRILLING AND REAMING IMPLEMENT.

994,307.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed December 16, 1908. Serial No. 467,888.

To all whom it may concern:

Be it known that we, WILLIAM T. EVANS and BERNARD T. REILLY, citizens of the United States, and residents of Wilkes-Barre, Luzerne county, State of Pennsylvania, have invented certain new and useful Improvements in Drilling and Reaming Implements, of which the following is a specification.

10 The present invention relates to an improved device for enlarging the bore made by a coal or rock drill. The implement is particularly designed for use by miners to provide an enlarged pocket for the explosive
15 charge at the inner end of such a bore.

The object of the invention is to provide an implement for this purpose which will be durable, compact and easily operated and by means of which a pocket of such shape
20 will be formed that the explosive charge can be more solidly tamped or packed therein than is possible with the pockets produced by the cutting devices heretofore proposed.

In the accompanying drawings, Figure 1
25 is a view illustrating the device in operation; Fig. 2 is a longitudinal sectional view through the device, the means for rotating the same being detached; Fig. 3 is a detail view of the feed bar and attached parts;
30 Fig. 4 is a detail view of the yoke to which the means for turning the device are adapted to be connected; Fig. 5 illustrates the form of pocket produced by the device.

The device comprises an external casing 1
35 which is adapted to be inserted in the bore formed by a drill and preferably there is formed on said casing a spiral rib 2 which as the device is rotated acts to withdraw from the bore the cuttings formed by the
40 blades hereinafter referred to.

Within the casing 1 is arranged a sectional feed bar to one end of which is connected the block 3 which carries the two reaming blades 4, 4^a. These blades which
45 are preferably made elongated, as shown, and arranged to overlap, are pivotally connected to the block or cutter head 3 at 5 and are adapted to be projected through diametrically opposite slots 6 formed in the
50 casing 1. Within the end of the casing 1 adjacent the reaming blades is arranged a spreader 7. This spreader is made in the tapered form shown and extends into the cylinder and between the free ends of the
55 blades 4, 4^a. As the feed bar and cutter head 3 are moved longitudinally toward the

spreader 7 the latter acts to cause the blades 4, 4^a to rock in opposite directions about their pivotal connection 5 so that the blades will be projected through the slots 6 as before described. 60

As shown the feed rod comprises two members 8, 9, the former having one end connected with the cutter head 3 by a suitable thread and a pin 10 and having at its other
65 end a sleeve or tubular portion 11 into which the member 9 extends. A pin 12 in the sleeve 11 extends through a longitudinal slot 13 in the member 9 and provides a connection between the members of the feed rod
70 which permits of a relative longitudinal movement thereof. A spring 14 arranged around the feed bar member 9 and bearing against the sleeve 11 and an abutment comprising a sleeve 15' secured to said feed bar
75 member 9 and a washer 15 acts to normally hold the parts in the position shown in Fig. 2 in which there is a clearance between the adjacent ends of the members 9 and 8 of the
80 feed rod.

The sleeve 15' is arranged at the inner end of an internally threaded sleeve or nut 16 which engages a threaded section 17 of the feed bar member 9 and has its outer end enlarged and bearing against the outer end
85 of the casing 1.

Within a pocket formed at the inner end of the sleeve 16 is arranged a flexible or elastic packing 18 that closely surrounds the feed bar and effectually prevents dust
90 from reaching the threaded section 17 of the feed bar when the device is in use. In the projecting head-like portion 19 of the sleeve 16 are formed a series of sockets 20 adapted to receive a suitable pin or small
95 bar by which the nut can be rotated to move the feed bar longitudinally of the casing 1. A yoke 21 has its limbs pivotally connected at 22 to the casing 1 and is adapted to extend across the outer end of the nut 16 and
100 be held in this position by a pivotally mounted spring pressed latch 22^a having at one end a toe or lug adapted to enter a recess in the casing 1. The outer end of the feed bar member 9 is reduced in diameter and
105 adapted to extend into a suitable groove or channel in the yoke 21. Formed in the outer end of the yoke is a socket adapted to receive the tapered end of the turning bar 23, commonly employed by coal miners. As
110 shown, this bar is preferably threaded and extends through an internally threaded

sleeve 24 mounted on a support 25 that has one end inserted in a suitable socket in the face of the wall or body in which is formed the bore in which the reaming device is to operate. A suitable handle 26 is provided for turning the bar 23 and the reaming device.

The manner of using the improved reaming device may be briefly described as follows: When the miner has drilled a hole of the desired depth, the drill previously employed is withdrawn and the device hereinbefore described is inserted in the bore, the parts then being in the positions indicated in full lines in Fig. 2. The nut 16 is then turned and acts to move the feed bar longitudinally of the casing and project the ends of the reaming blades through the slots 6. As the blades come in contact with the solid walls of the bore the longitudinal movement of the section 8 of the feed bar is arrested but the movement of the section 9 may be continued and thereby the spring 14 is compressed. When the desired compression of the spring 14 has been effected the yoke 21 is latched in the position shown in Fig. 2 and connected with the actuating bar 23. By operating the handle 26 the entire device will be rotated and as the reaming blades cut away the opposed wall the spring 14 will force the feed bar section 8 longitudinal and cause the blades to both move longitudinally and laterally thus forming a pocket at the inner end of the bore. The cuttings formed by the action of the reaming blades will be withdrawn by the spiral rib 2. The form of the pocket produced by the device is shown in the drawings. It will be noticed that the walls connecting the pocket with the body of the bore are gradually tapered so that when the explosive charge is tamped therein it will compactly fill the entire pocket without leaving any vacant spaces, such as would result if the pocket were of uniform width throughout its length.

The device is preferably provided with a stationary cutter 27 so that if desired it may be employed for both drilling a hole and afterward forming a pocket at the inner end thereof, but as above stated, the initial bore may be formed by any desired drill or boring implement.

By adjusting the nut 16 to draw the reaming blades within the casing, and swinging the yoke about its pivots into the position shown in Fig. 4, the nut, feed bar and reaming blades may be simultaneously withdrawn from the casing.

Preferably the portion of the member 9 of the feed rod which extends beyond the outer end of the casing is graduated or provided with a plurality of encircling grooves 9^a arranged at predetermined distances apart. By observing the relation of the nut 19 to the said grooves or graduations 9^a,

the operator is enabled to instantly determine the extent to which the reaming blades are projected from the casing and consequently the relative size of the enlargement or pocket formed at the inner end of the bore.

Having thus described the invention what is claimed is,

1. In a device for enlarging the bore made by a coal or rock drill, the combination of a rotatable tubular casing provided with slots and adapted to be inserted in the bore, a sectional feed rod extending longitudinally of the interior of the casing, reaming blades connected with one end of one of the sections of the feed rod and adapted to be moved laterally through the slots in the casing by moving the feed rod longitudinally of the casing, an abutment on said section the connection between two sections of the feed rod permitting relative longitudinal movement thereof and one of said relatively movable sections having an externally threaded section, an internally threaded sleeve engaging said threaded section of the feed rod and extending beyond the outer end of the casing, an abutment movable by said sleeve a dust guard connected with the inner end of the sleeve and surrounding the feed rod to prevent dust from reaching the threaded section thereof, and a coiled spring arranged between the abutment movable by said sleeve and the abutment on the section of the feed rod.

2. In a device for enlarging the bore made by a coal or rock drill, the combination of a rotatable tubular casing provided with slots and adapted to be inserted in the bore, a sectional feed rod extending longitudinally of the interior of the casing, reaming blades connected with one end of the feed rod and adapted to be moved laterally through the slots in the casing by a relative movement between said rod and casing, means for moving the feed rod longitudinally of the casing and extending through the outer end of the latter, said feeding means, rod and blades being adapted to be simultaneously withdrawn from the casing when the rod has been adjusted to draw the reaming blades into the casing, a yoke pivotally connected to the casing and adapted to swing and extend across the outer end of the casing to prevent the feed rod and reaming blades from being withdrawn, and means for locking the yoke in such position.

3. In a device for enlarging the bore made by a coal or rock drill, the combination of a rotatable tubular casing provided with slots adapted to be inserted in the bore, a sectional feed rod extending longitudinally of the interior of the casing, reaming blades connected with one end of the feed rod and adapted to be moved laterally

through the slots in the casing by a relative movement between said rod and casing, means for moving the feed rod longitudinally of the casing and extending through the outer end of the latter, said feeding means, rod and blades being adapted to be simultaneously withdrawn from the casing when the rod has been adjusted to draw the reaming blades into the casing, a yoke pivotally connected to the casing and adapted to extend across the outer end of the casing to prevent the feed rod and reaming blades from being drawn from the casing, the yoke being adapted to be engaged by a suitable implement for turning the device to cause the blades to act upon the walls of the bore, and a pivotally mounted latch on the yoke adapted to engage the casing to hold the yoke in operative relation thereto.

4. In a device for enlarging the bore made by a coal or rock drill, the combination of a rotatable tubular casing provided with slots adapted to be inserted in the bore, a feed rod extending longitudinally of the interior of the casing and projecting beyond the outer end thereof, reaming blades connected with the inner end of the feed rod and adapted to be moved laterally through the slots in the casing as said rod is moved

longitudinally of the casing, a nut for effecting such longitudinal movement of the feed rod, and a yoke pivoted on the casing and adapted to swing across the nut to restrain it against endwise movement.

5. In a device for enlarging the bore made by a coal or rock drill, the combination of a rotatable tubular casing provided with slots adapted to be inserted in the bore, a feed rod extending longitudinally of the interior of the casing and projecting beyond the outer end thereof, reaming blades connected with the inner end of the feed rod and adapted to be moved laterally through the slots in the casing as said rod is moved longitudinally of the casing, a nut for moving the feed rod and reaming blades longitudinally of the casing, a yoke pivoted on the casing and adapted to restrain the nut against movement, and a shank on the yoke adapted to be engaged by an operating rod.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM T. EVANS.
BERNARD T. REILLY.

Witnesses:

J. T. O'NEILL,
EDWARD STERLING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."