

No. 770,376.

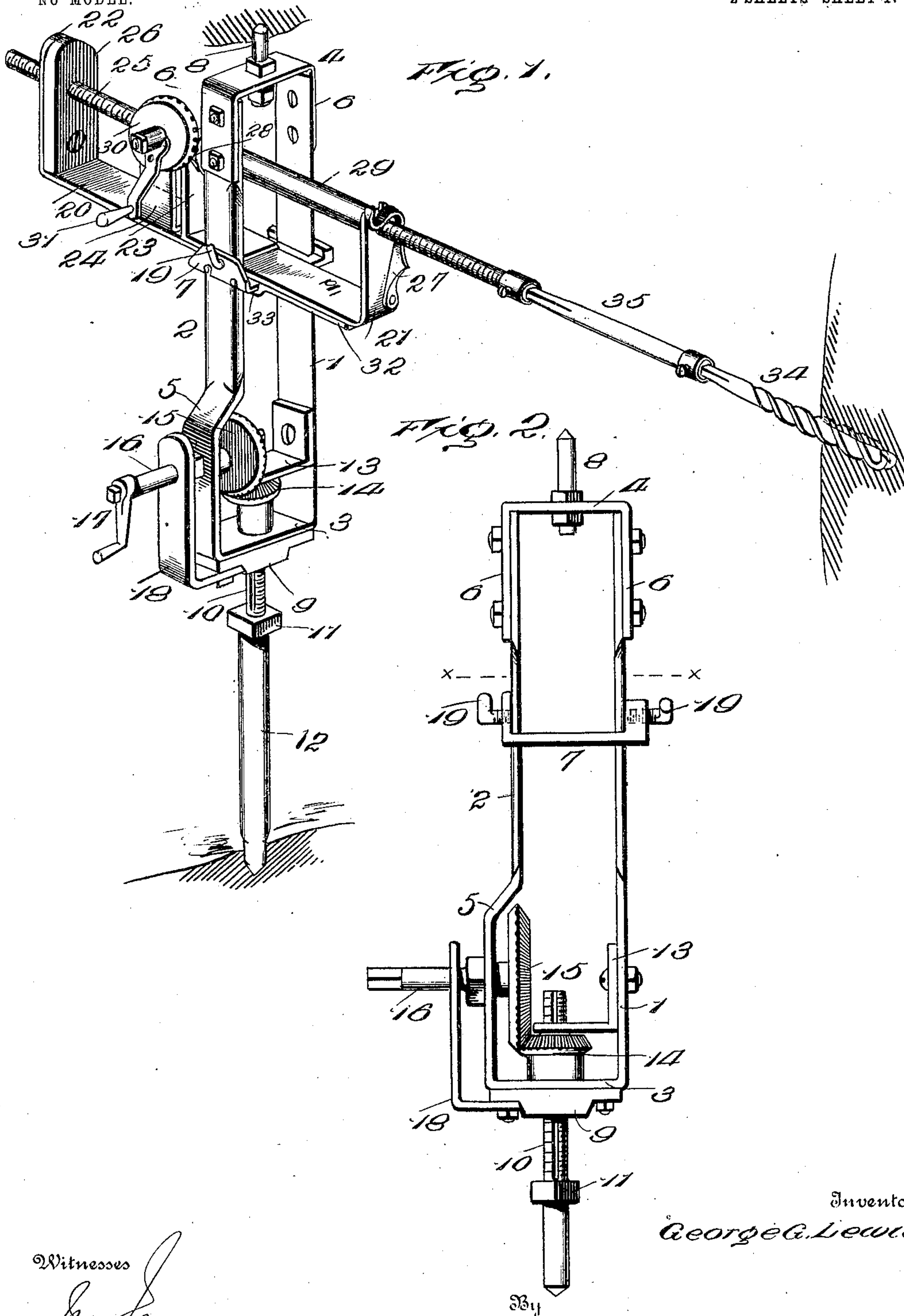
PATENTED SEPT. 20, 1904.

G. G. LEWIS.
MINE DRILL.

APPLICATION FILED FEB. 27, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

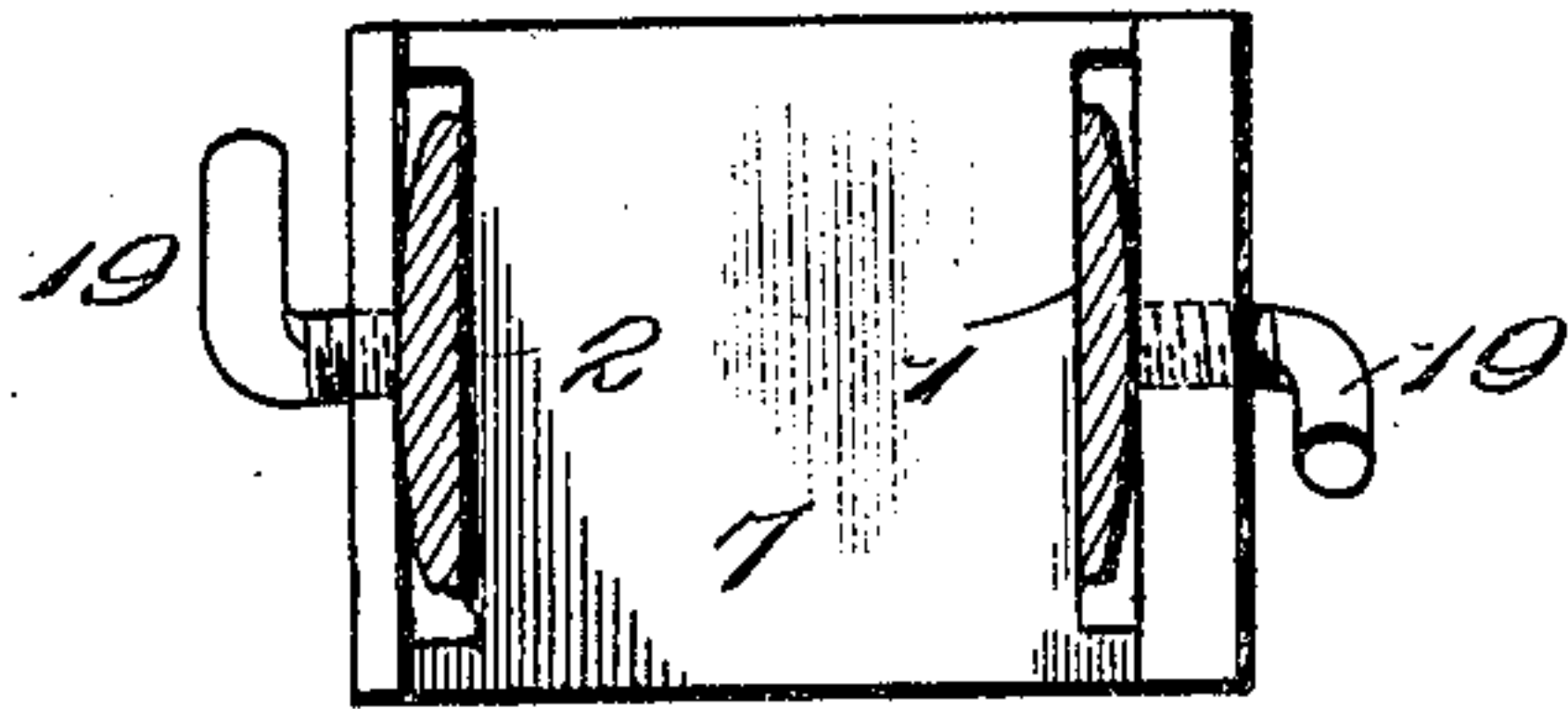


Fig. 4.

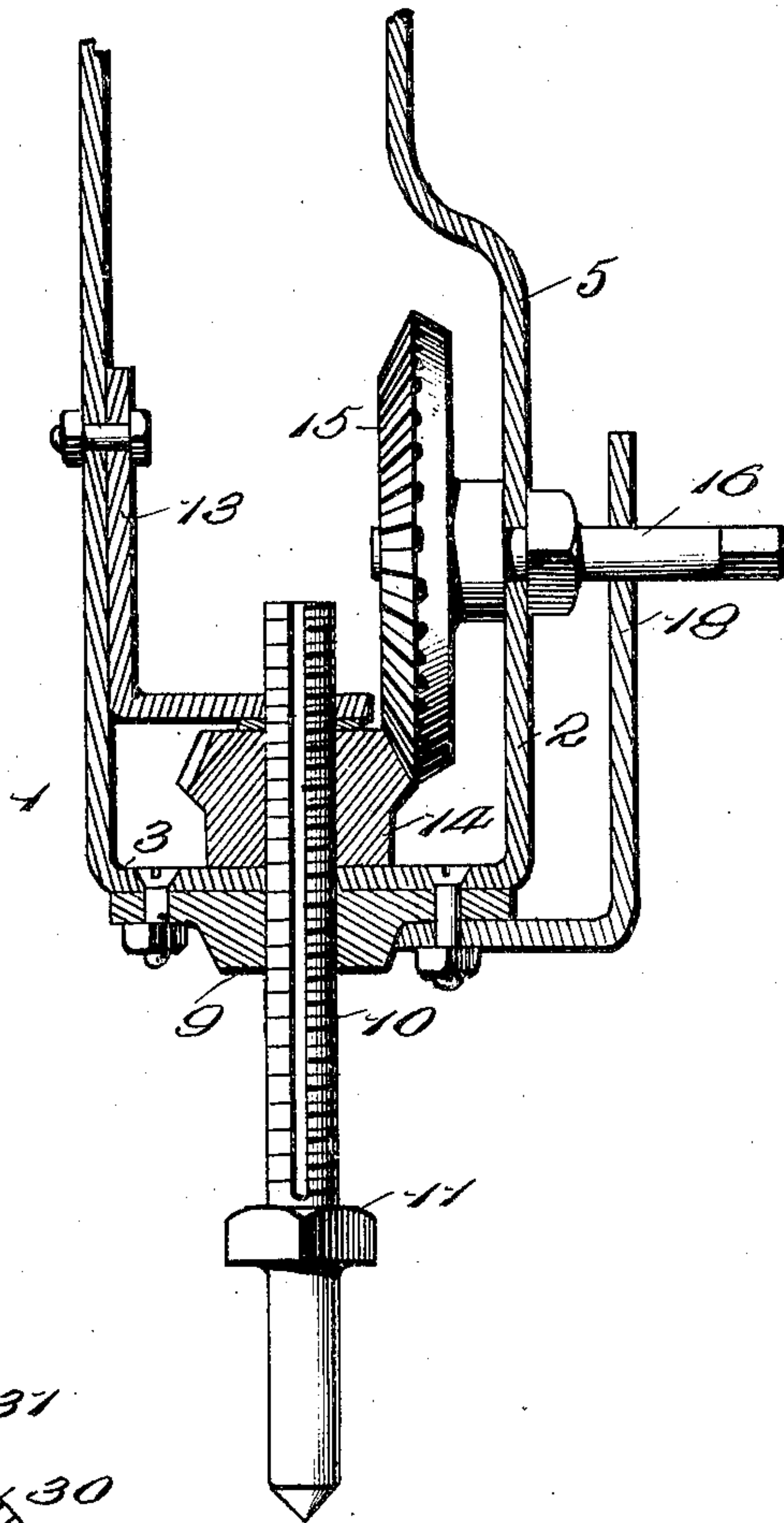
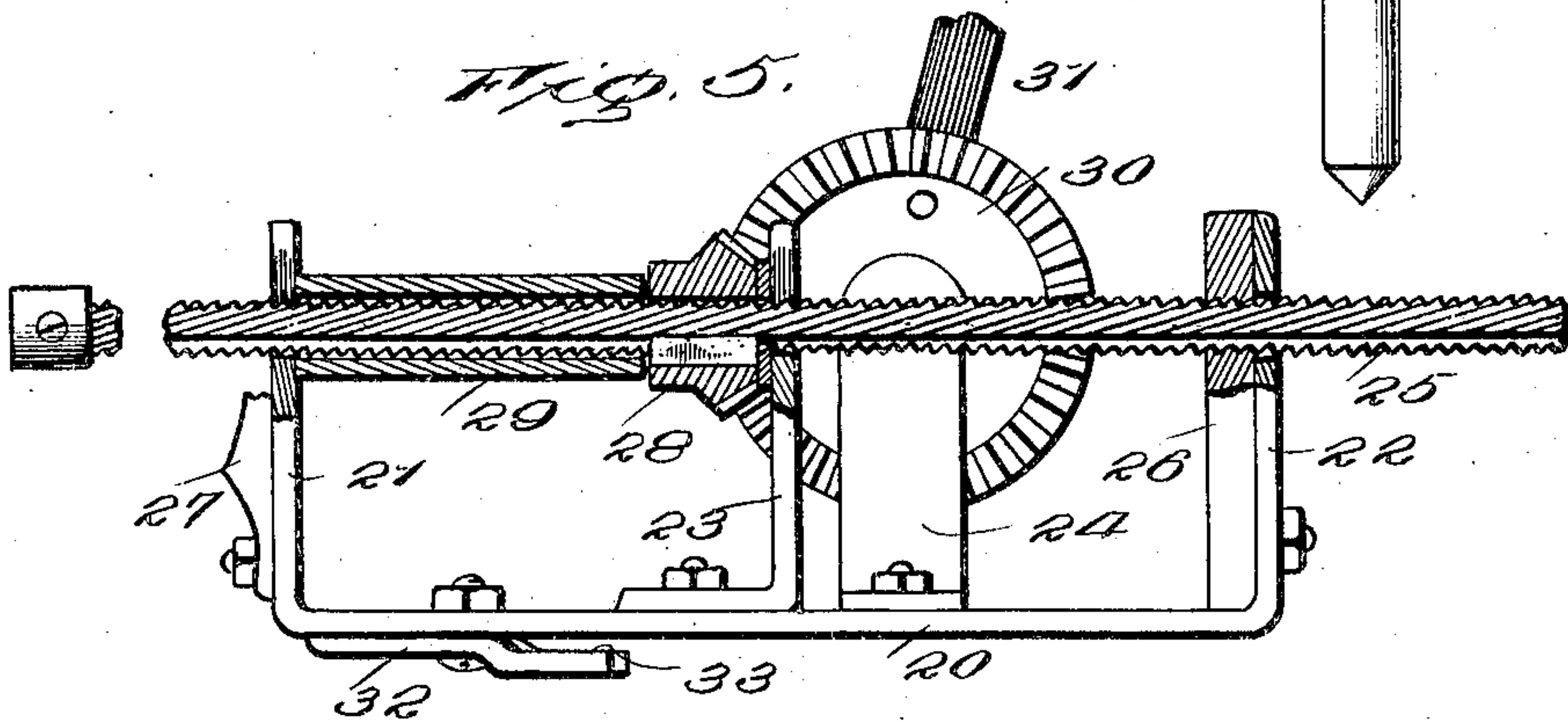


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE G. LEWIS, OF ATHENS, OHIO.

MINE-DRILL.

SPECIFICATION forming part of Letters Patent No. 770,376, dated September 20, 1904.

Application filed February 27, 1904. Serial No. 195,578. (No model.)

To all whom it may concern:

Be it known that I, GEORGE G. LEWIS, a citizen of the United States, residing at Athens, in the county of Athens and State of Ohio, have invented certain new and useful Improvements in Mine-Drills, of which the following is a specification.

This invention has relation to a machine for drilling openings into the bed or formation in mining operations for reception of the explosive employed for blasting, the machine being adjustable and constructed with a view of being readily portable and easily manipulated as regards setting up, shifting, operating, and feeding the drilling-tools.

The invention consists, essentially, of the general construction of the framework and the specific formation and arrangement of the operating parts whereby the objects in view are attained.

The invention also consists of the structural details, novel features, and combinations of parts, which hereinafter will be more particularly set forth, illustrated, and finally outlined in the subjoined claims.

Referring to the drawings hereto attached and forming a part of the specification, Figure 1 is a perspective view of a drilling-machine as it appears when set up for use. Fig. 2 is a front view of the post or upright frame to which the drilling mechanism is detachably fitted. Fig. 3 is a transverse section on the line X X of Fig. 2. Fig. 4 is a vertical section of the post or upright frame, showing the parts on a larger scale. Fig. 5 is a side view of the frame carrying the drill-shaft and operating-gearing, parts being broken away.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The post or upright frame is of skeleton form and comprises companion side bars 1 and 2, lower cross-piece 3, and upper cross-piece 4. The side bar 2 is offset near its lower end, as shown at 5, to provide ample space for reception of the gearing, by means of which the lower point is adjusted, so as to fix the position of the post or upright frame when properly located. The side bars 1 and 2 and the

lower cross-piece 3 are preferably integrally formed, being parts of a single rod or bar bent upon itself between its ends. The upper cross-piece 4 is provided with pendent ends 6, which lie alongside of the upper ends of the side bars 1 and 2 and are bolted or otherwise fastened thereto. The outer side of the bars 1 and 2 is transversely convexed to admit of the rest 7 oscillating when it is required to tilt the frame carrying the drill-shaft, so as to elevate or lower the drill, as may be required. A point 8 is secured to the upper cross-piece 4 and is adapted to enter the roof of the drift, passage, or chamber of the mine. A nut 9 is secured to the bottom side of the cross-piece 3 and receives the upper threaded end of the lower point 10, the latter being provided a distance from its lower extremity with a shoulder 11, against which the upper end of an extension-point 12 abuts when it is required for use. A bracket 13 is attached to the lower portion of the side bar 1, and its horizontal member is apertured to receive the threaded portion of the point 10 and also forms an abutment to limit the upward movement of the bevel-pinion 14, loosely mounted upon the threaded portion of the point 10 and keyed thereto in any accustomed way, so as to rotate therewith.

The lower point 10 is movable and is adjustable by its screw-thread connection with the nut 9. The bevel-pinion 14 receives motion from the bevel gear-wheel 15, with which it is in mesh, said bevel gear-wheel being secured to the inner end of a shaft 16, journaled horizontally in the lower portion of the side bar 2 and having its outer end constructed to receive a crank-handle 17, by means of which said shaft is rotated when required to effect a vertical movement of the point 10. A bracket 18 has its horizontal portion secured to the lower cross-piece 3, preferably by the same fastening employed for attaching the nut 9 thereto. The vertical member of the bracket 18 is apertured to receive the shaft 16, thereby preventing any possible tilting of said shaft in the side bar 2, which would produce a binding of the intermeshing teeth of the gear elements 14 and 15.

The rest 7, which forms a support for the

frame provided with the drilling mechanism, is vertically adjustable upon the post or upright frame and consists of a plate having its end portions slotted to receive the side bars 1 and 2 and having the end bars at the outer sides of the slots formed with threaded openings to receive clamp-screws 19, which are adapted to be turned so as to bring their inner ends in contact with the outer side of the bars 1 and 2, so as to prevent slipping of the rest, yet admit of said rest tilting when it is required to elevate or lower the point of the drill.

The frame provided with the drilling mechanism comprises the longitudinal bar 20, end bars 21 and 22, and intermediate bars 23 and 24. The bars 21 and 23 are notched in their upper ends to provide bearings for reception of the drill-shaft 25. A nut 26 is placed against the inner side of the end bar 22 and is secured thereto and receives the thread of the drill-shaft. A catch 27 is pivoted to the end bar 21, and its hooked end is adapted to engage over the drill-shaft and hold the same in the notched end of the bars 21 and 23. When the drill-shaft is disengaged from the nut 26 and the catch 27 is turned aside, said drill-shaft may be easily removed or placed in position. A bevel-pinion 28 is loosely mounted upon the drill-shaft 25 and is keyed thereto, so as to rotate therewith, and this bevel-pinion is held against the bar 23 by a sleeve 29, loosely fitted upon the drill-shaft and confined between the end bar 21 and the hub of the pinion 28. A bevel-gear 30 is journaled upon a stud extended from the bar 24 and is in mesh with the bevel-pinion 28 and is provided with a crank-handle 31, by means of which the bevel gear-wheel 30 is rotated, so as to impart a simultaneous rotary and forward movement to the drill-shaft. A plate 32 is secured to the longitudinal bar 20, and its inner end portion is spaced from the longitudinal bar, as shown at 33, a distance to receive the rest 7, which when confined between the plate 32 and the bar 20 prevents upward and rearward displacement of the frame after the parts have been assembled and the machine is in operation.

In accordance with this invention the drills are made shorter than usual to facilitate their handling in the mine and avoid the danger attendant upon long drills coming in contact

with electric wires. The drills are also tapered, being larger at their outer ends, whereby they clear the openings better and work easier. A drill of this character is indicated at 34. To compensate for the shortness of the drill and provide a shank of usual length, an extension-piece 35 is provided, the same having a socket at one end to receive the shank of the drill and having its opposite end constructed to enter the socket or chuck at the outer end of the drill-shaft 25.

Having thus described the invention, what is claimed as new is—

1. In a miner's drill, a post or upright frame comprising spaced side bars, upper and lower cross-pieces, points applied to said cross-pieces, a nut secured to the lower cross-piece and receiving the threaded portion of the lower point, a bevel-pinion loosely mounted upon the lower point and keyed to turn therewith, a bracket secured to one of the side bars and having a member receiving an end portion of the lower point and extended over the bevel-pinion, a shaft journaled to the other side bar, a bevel gear-wheel secured to said shaft and in mesh with the bevel-pinion, and a second bracket for receiving the outer end portion of the shaft and secured to the lower cross-piece of the post, substantially as set forth.

2. In a miner's drill, a frame comprising a longitudinal and intermediate and end bars, the intermediate and one of the end bars being notched in their upper ends, a solid and stationary nut secured to the other end bar, a threaded drill-shaft fitted in said nut and supported in the notched ends of said notched bars, a catch pivoted to the notched end bar and adapted to hold the drill-shaft in place, a bevel-pinion loosely mounted upon the drill-shaft and keyed for rotation therewith, a sleeve loosely mounted upon the drill-shaft and confined between the bevel-pinion and the notched end bar, and a bevel gear-wheel journaled to an intermediate bar and in meshing relation with said bevel-pinion, substantially as set forth.

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

GEORGE G. LEWIS. [L. s.]

Witnesses:

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HARRY E. JOURDEN.