No. 776,881. PATENTED DEC. 6, 1904.

R. L. AMBROSE.

MINING COLUMN.

APPLICATION FILED APR. 22, 1904.

NO MODEL.

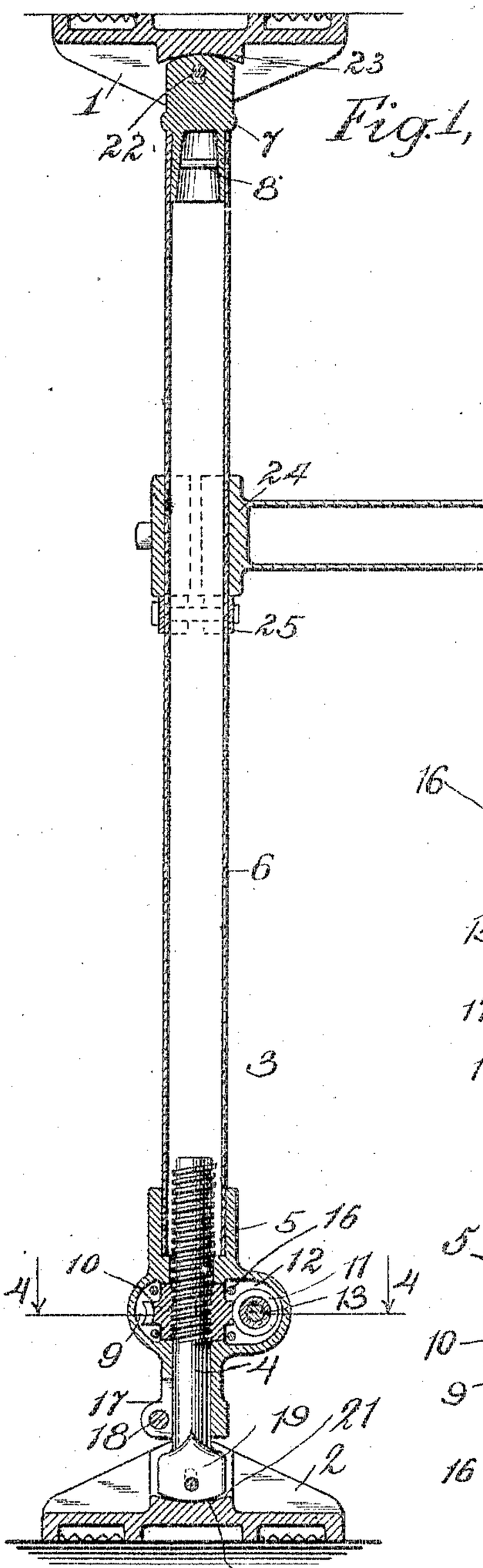

Fig. 1.

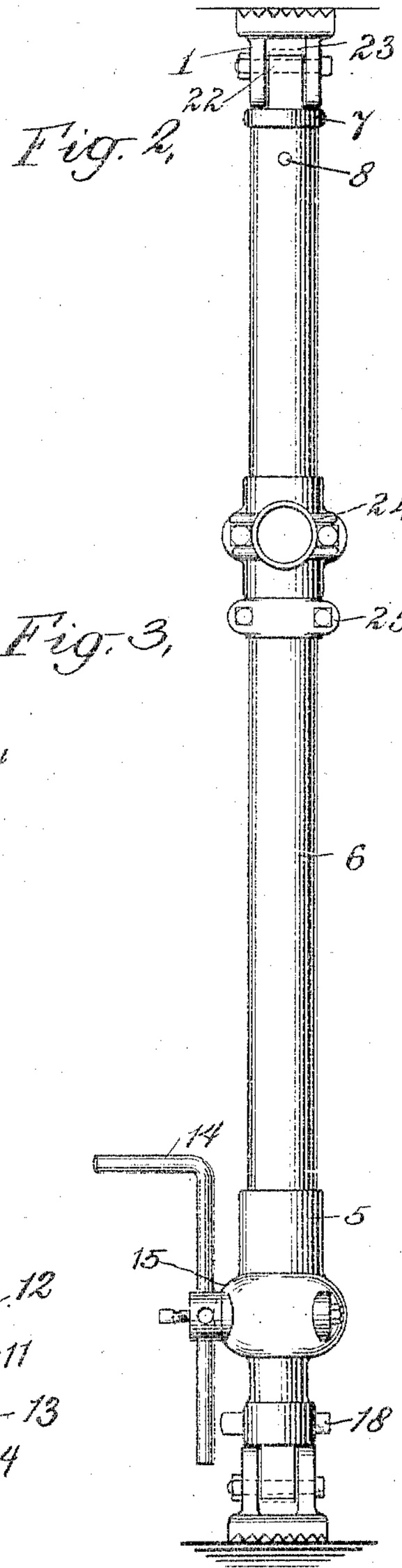

Fig. 2.

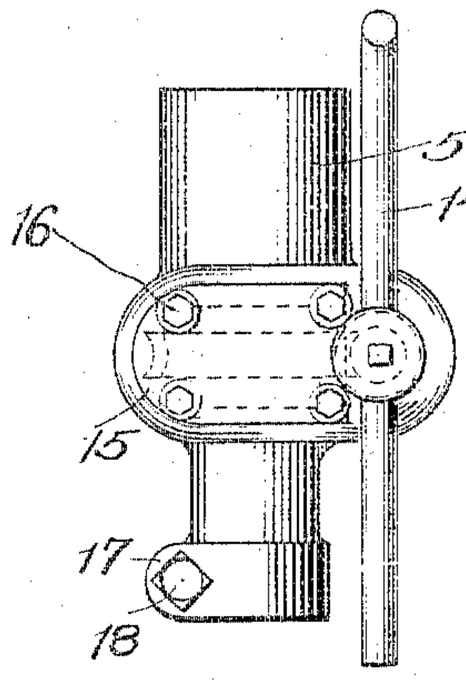

Fig. 3.

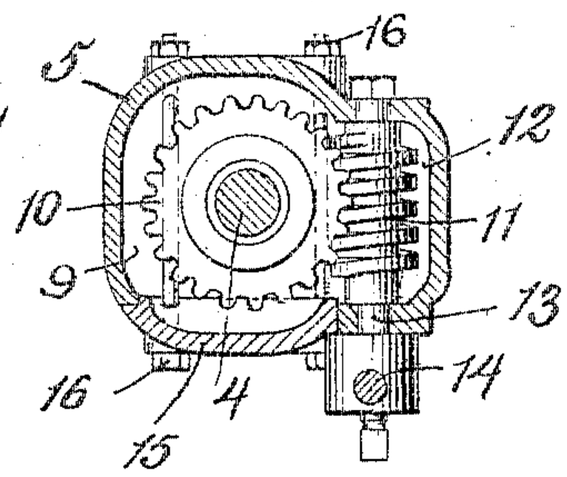

Fig. 4.

WITNESSES:

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No. 776,881. Patented December 6, 1904.

UNITED STATES PATENT OFFICE.

ROBERT L. AMBROSE, OF TARRYTOWN, NEW YORK, ASSIGNOR TO RAND DRILL COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MINING-COLUMN.

SPECIFICATION forming part of Letters Patent No. 776,881, dated December 6, 1904.

Application filed April 22, 1904. Serial No. 204,309. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. AMBROSE, a citizen of the United States of America, and a resident of Tarrytown, county of Westchester, State of New York, have invented certain new and useful Improvements in Mining-Columns, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to mining-columns, and particularly to columns employed for the purpose of supporting rock-drills.

The main objects of my invention are to simplify and improve devices of this character, to provide powerful mechanism for extending the device, to completely inclose the operating mechanism so that it shall be protected from dirt and accidental injury, to provide adequate lubrication for the working parts, and to provide means for locking the parts rigidly in position after they have been adjusted to such position.

To these ends my invention consists in certain improved details of construction and combination of parts, as will hereinafter be more fully set forth.

I will now proceed to describe a device embodying my invention and will then point out the novel features in claims.

In the drawings, Figure 1 is a view in central vertical section of a mining-column embodying my invention. Fig. 2 is a view in side elevation of the same, viewed at right angles to the point of view of Fig. 1. Fig. 3 is an enlarged detail view, in side elevation, of a casing employed and of certain parts in connection therewith. Fig. 4 is an enlarged detail view in transverse section, the plane of section being taken substantially upon the line 4 4 of Fig. 1.

The column as a whole comprises a head-piece 1, a foot-piece 2, a standard 3, and a threaded rod 4. The standard 3 includes a casing 5, a tube 6, and a head 7. The head 7 has a cylindrical portion fitted to the interior of the tube, the end of the tube resting against the shouldered portion, as shown, and a rivet 8 may conveniently be employed for securing the parts together. At its lower end the tube 6 is inserted into a recessed portion of the casing 5 and secured thereto in any desired manner. The casing 5 is chambered at 9 to receive a worm-wheel and operating-worm and has a longitudinal bore for receiving the threaded rod 4, the upper end of which extends into the tube 6. A worm-wheel 10 is fitted in the chamber 9. The upper and lower hub-faces of the worm-wheel are fitted to corresponding faces forming parts of the walls of the said chamber. The worm-wheel 10 is interiorly-screw-threaded and receives the threaded portion of the rod 4, acting as a nut therefor. A worm 11, engaging the said worm-wheel 10, is fitted in a pocket or recess 12, extending laterally from the chamber 9, the said worm mounted upon an operating-spindle 13, extending through the walls of the casing to the exterior thereof. A hub is secured upon the spindle at the exterior of the casing, and a lever 14 is mounted in the said hub to form an operating member therefor. A portion of the casing 5 is made removable, such portion constituting a cap or closure 15, which may be secured in position by bolts or nuts 16. The casing is so constructed with the removable portion in order to permit the insertion of the worm and worm-wheel and to permit ready access thereto. The cap may be also removed for the purpose of filling the chamber 9 with grease, so that the worm and worm-wheel and the threaded portion of the rod may be thoroughly lubricated. The lower portion of the casing 5 is preferably split for a short distance, as at 17, and a bolt and nut 18 is provided, by manipulation of which the lower end of the casing may be pinched, in order to cause the same to frictionally engage the rod 4 to securely hold same in position.

The lower end of the threaded rod 4 is provided with a head 19, which is pivotally connected to the foot-piece 2. This pivotal connection is preferably a loose one—that is to say, the holes for the pin are preferably slotted, the pin being necessary only for the purpose of preventing accidental displacement of the parts. The thrust is taken up by means of engagement between the outer face 20 of the head 19 and an abutment 21, with which

the foot-piece is provided. The upper head 7 is similarly pivoted at 22 to the upper head-piece 1, a similar abutment 23 being arranged as a bearing-piece to resist the longitudinal thrust.

The column may be used for any desired purpose. In the present instance it is shown as supporting a horizontal arm 24, upon which may be mounted a rock-drill, and the usual safety-collar 25 is shown upon the column beneath the arm.

In operation the column is first located in the position in which it is desired to be employed, with the foot-piece 2 resting upon the ground and the head-piece beneath the roof. The operating-lever 14 is then revolved in the proper direction to wind the nut comprised in the worm-wheel 10 upward upon the rod 4, so as to longitudinally extend the device. This will be continued until the column has been sufficiently extended to cause the head and foot pieces to press firmly against the floor and roof, so as to hold the column rigidly in position. When the parts are so adjusted, the bolt and nut 18 may be tightened, so as to cause the casing to firmly grasp the rod, and thus prevent any lateral movement. The column will now be held very firmly in position against any movement whatsoever, while to release the device it is only necessary to slack the bolt and nut 18 and to give the spindle 13 a few turns in the opposite direction.

It will be seen that all the working parts of my device are thoroughly protected against dirt and injury from rough handling, such as devices of this character are subjected to, and that thorough lubrication of the parts is assured. It will also be understood that the operating mechanism, while extremely simple, has great power. It will further be noted that the operating-lever and spindle are well away from the ground. This is a desirable feature, as in mines where devices of this character are employed there is usually a great deal of rubbish and dirt on the ground. The swinging movements permitted to the head and foot pieces will of course compensate for the inequalities of the floor and ceiling levels.

What I claim is—

1. In a device of the character described, the combination with a casing containing a longitudinal bore and an enlarged chamber, of a threaded rod fitted to the longitudinal bore of said casing, a worm-wheel fitted to said chamber and engaging the upper and lower walls thereof, said worm-wheel internally screw-threaded and fitted to the said threaded rod, an operating-worm engaging the teeth of said worm-wheel and located in a recessed portion of said chamber, said chamber provided at another part with a side opening through which the worm-wheel and worm may be removed and replaced, a cap or closure for said opening and an operating-stem for said worm passing through from the recessed part of the chambered portion of the casing to the exterior thereof, the bearings therefor being in an integral portion of the said casing.

2. In a device of the character described, the combination with a casing having a longitudinal bore and a chambered portion, of a threaded rod fitted to the said longitudinal bore, a threaded nut fitted to said rod and located within the said chambered portion, means for rotating said nut also fitted in said chambered portion, the said casing having a portion thereof split, and a bolt and nut located in said casing transverse said split portion, whereby the split portion of the casing may be caused to grip the rod; and head and foot pieces, the one carried by the casing and the other by the threaded rod.

In witness whereof I have hereunto set my hand this 18th day of April, 1904.

ROBERT L. AMBROSE.

Witnesses:

J. ALBERT EARL,

J. WALTER TALMADGE.