No. 747,867. PATENTED DEC. 22, 1903.

C. T. DRAKE.

APPARATUS FOR EXCAVATING ROCK.

APPLICATION FILED DEC. 22, 1899.

NO MODEL.

Fig. 1

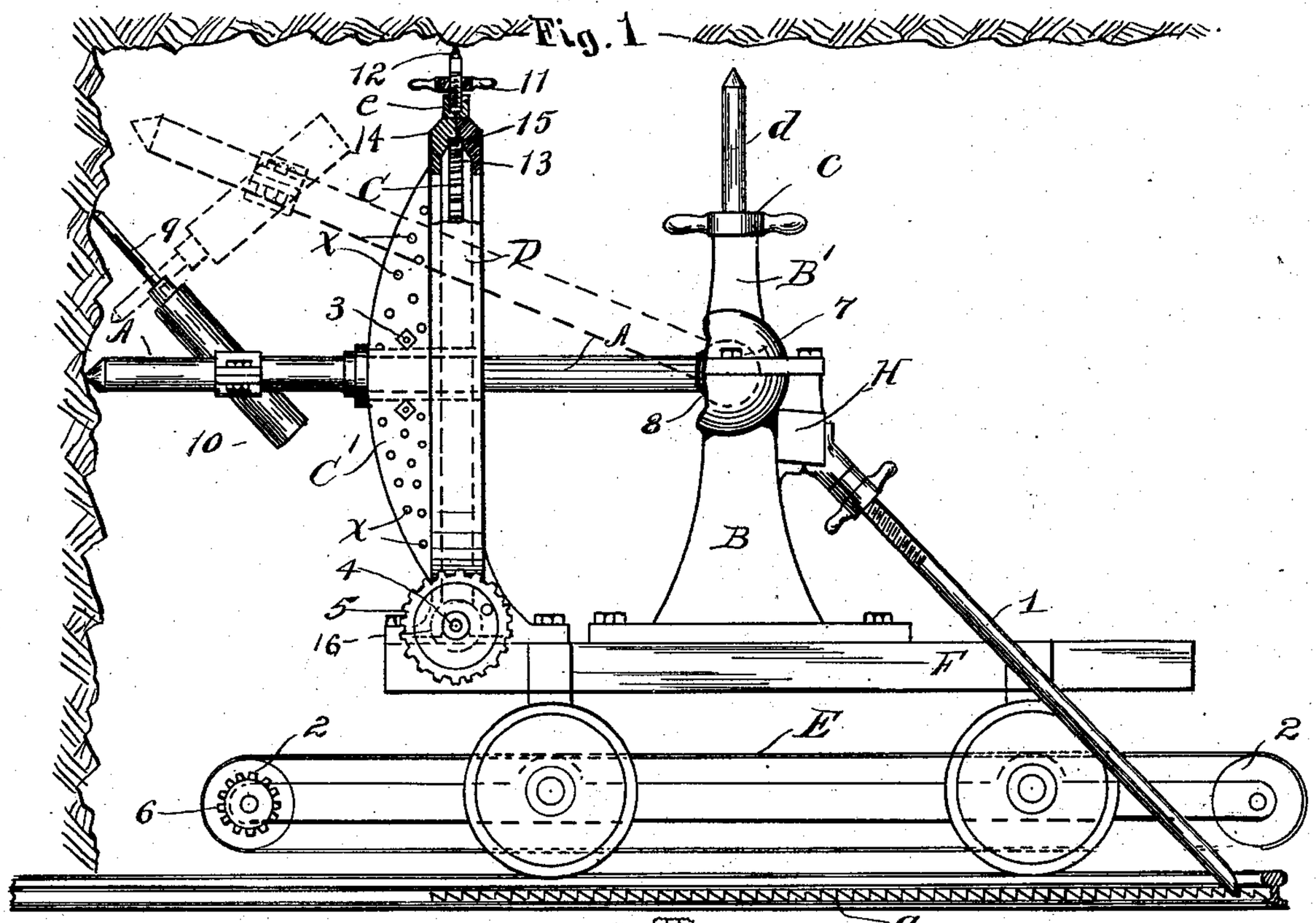
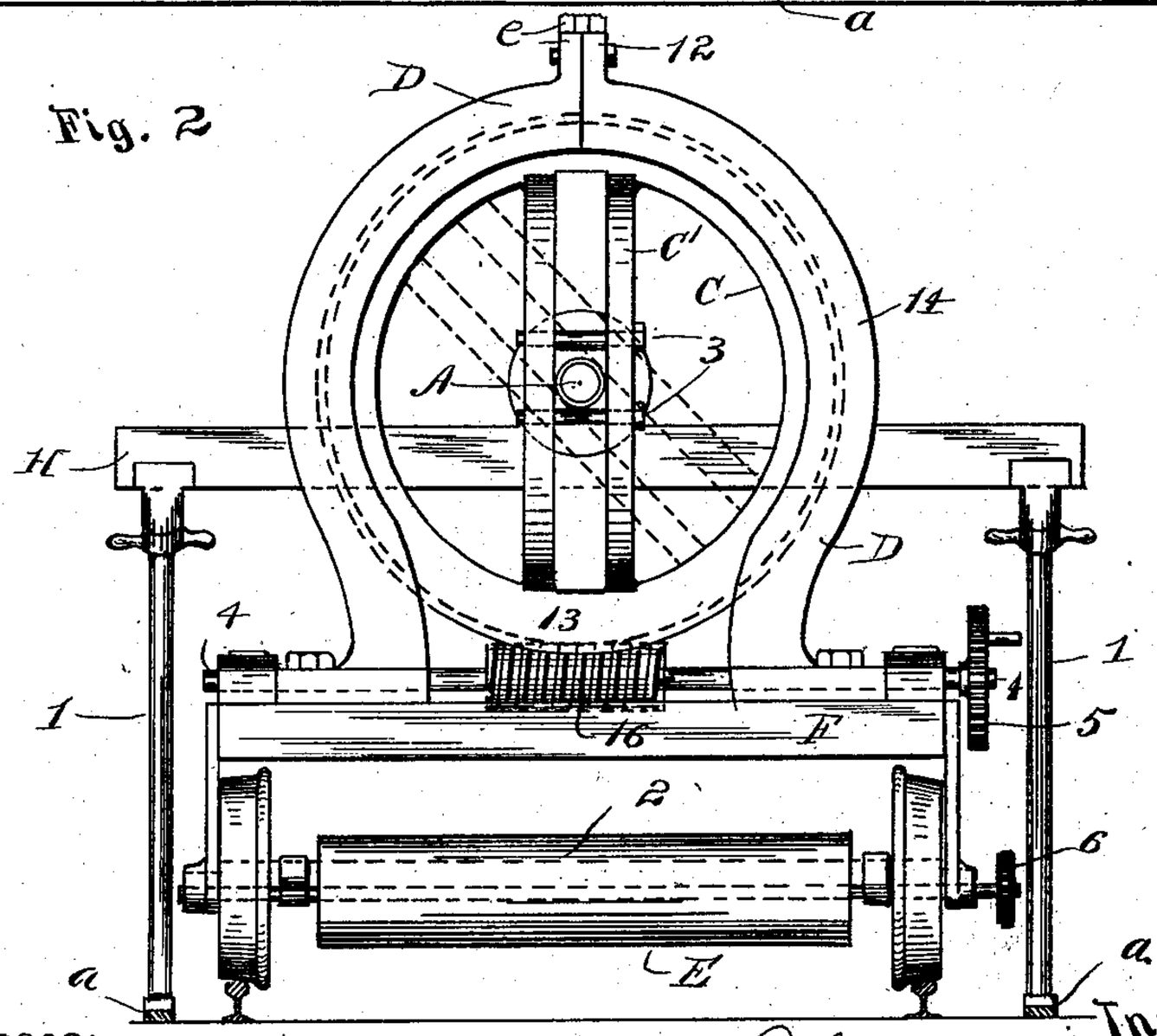


Fig. 2



Witnesses:
G. S. Noble
D. W. McMahon

Inventor,
Chester T. Drake,
by his Atty Chas H. Wood

No. 747,867. Patented December 22, 1903.

UNITED STATES PATENT OFFICE.

CHESTER T. DRAKE, OF CHICAGO, ILLINOIS.

APPARATUS FOR EXCAVATING ROCK.

SPECIFICATION forming part of Letters Patent No. 747,867, dated December 22, 1903.

Application filed December 22, 1899. Serial No. 741,246. (No model.)

To all whom it may concern:

Be it known that I, CHESTER T. DRAKE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Apparatus for Rock-Tunnel Excavation, of which the following is a specification, reference being had to the accompanying drawings.

My invention is an apparatus to facilitate the work of tunneling through solid rock.

The nature of my invention consists in part in the means provided to hold a rock-drill in position while in operation.

It consists also in part in a car provided with means to hold the car rigidly in place and support the rock-drill in position while in operation or carry it away from the heading when the car is run back.

It consists also in part in the means provided to facilitate the work of removing the rock debris.

In the drawings, Figure 1 is a side elevation of my invention, and Fig. 2 is an end or front elevation of my invention.

A is the column-bar or brace-bar.

B is the column-bar support.

C is a rotating radial support confined within the stationary upright ring D.

C′ represents transverse ribs upon the angle-disk C.

E is an apron carrier conveyer supported beneath the car F.

9 is the "bit," and 10 the cylinder, of an ordinary power rock-drill.

In driving a tunnel through solid rock a railway and cars are provided to carry out the rock debris, and in using my apparatus that portion of the track within about a hundred feet of the heading should be extra strong and rigid and may have a strong rack or notched rail strongly secured to it, and a strong car F should be provided to carry the apparatus. The column-bar support B is strongly secured to the frame of the car, and its upper part is bored out so as to form a concave spherical socket 8, open upon its front or left-hand side. The column-bar A is a straight rigid bar and may be pointed at its front end, so as to enter into any convenient hole or recess in the face of the rock heading, and at or near its other end the ball or swell 7 is formed upon it or secured to it and shaped so as to fit within the socket 8, and the cylinder 10 of an automatic power-driven rock-drill may be strongly clamped to and supported by the column-bar, as indicated.

The back side of the support B has a recess between two projecting horizontal ribs, and the middle portion of the strong cross-bar H is placed within the recess and may be permanently secured therein, and the ends of cross-bar H may extend beyond the sides of the car, so that the two brace-studs 1 may be braced against the outer or end portions of the bar H and may have their lower ends engage in the notches of the rack-rails *a* or with any fixed abutment conveniently located, and an extension-screw and nut upon each of the brace-studs 1 will enable them to be extended so as to push the socket and ball forward with great force and hold the column-bar rigidly in place against the rock.

The upper part of B′ of support B is provided with a nut *c* to engage with a screw upon the lower part of the brace-bar *d*, which may be pointed, so as to enter any convenient recess in the roof of the tunnel, and by turning the nut *c* the bar *d* will be forced upward and will press the support B and the car down with great pressure and hold them rigidly stationary.

The upright-ring brace D is rigidly secured to the car at its front end and is formed of two parts 14 15, which are faced off on their adjacent faces and strongly secured together after their interior peripheries are turned so as to fit the periphery of the round disk angle-support C, as indicated in Fig. 1, and when the disk C is placed within the ring D it is held from any movement except a rotary motion within its support by a worm-gear 13, which is formed upon the periphery of the disk, and a worm is secured upon shaft 4 and journaled below the disk so as to mesh with the lower side of the worm-gear, and when turned in either direction it will cause the disk to turn, and when at rest it will hold the disk from turning.

The upward-projecting part *e* of the upright ring D is hollow, so as to receive the lower end of the brace-bar 12, whose upper end may be pointed, so as to bear against the roof

of the tunnel, and a screw upon the lower part of 12 is provided with the nut 11, which bears against the top of the part *e*, and when the nut is turned the bar will be forced up against the roof and will press the ring D and the car downward and hold them from moving.

Two strong ribs C′ are formed on the front face of the disk C and are curved forward, as shown, and holes X are bored through them to receive bolts or pins 3 above and below the column-bar A, which passes through an open slot in the middle of the disk between the ribs C′, and while the ball 7 is held stationary the front end of the column-bar may be oscillated from one end of the open slot to the opposite end of it and may also be moved by the rotation of the disk within ring D and may be held in any position desired.

A carrier apron conveyer E of any suitable construction is properly supported under the deck of the car and is propelled by any suitable motor, and the rock debris is thrown onto the front end of the conveyer and is carried back to the rear of the car and loaded into other cars and hauled away.

I claim as my invention—

1. In an apparatus for excavating rock, the combination of the car, F, the upright ring-support, D, the disk, C, an open slot through the middle of the disk, the bar, A, extending through the slot, means to resist lateral motion of the bar lengthwise of the slot and means for turning the disk and holding the same in its adjusted positions.

2. In an apparatus for excavating rock, the combination of car, F, ring-support, D, disk-support C, C′, bar A, means for adjusting the bar radially in the disk, and means to rotate the disk, C, within the ring, D.

3. In an apparatus for excavating rock, the combination with a car, of a column-bar pivotally supported thereon, a circular frame projecting from said car, a disk rotatably secured within said circular frame, and means for adjustably supporting said column-bar in said disk, substantially as described.

4. In an apparatus for excavating rock, the combination with a car, of a support thereon, a column-bar pivotally secured to said support, a circular frame projecting from said car, means for adjustably supporting said column-bar within said circular frame, and extensible brace-bars projecting from said support and from said circular frame, substantially as described.

Chicago, December 18, 1899.

CHESTER T. DRAKE.

Witnesses:
OSCAR PETERSON,
OSCAR MARTINSON.