R. C. BRITTON.

COAL MINING DRILL.

APPLICATION FILED NOV. 27, 1909.

990,205.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.

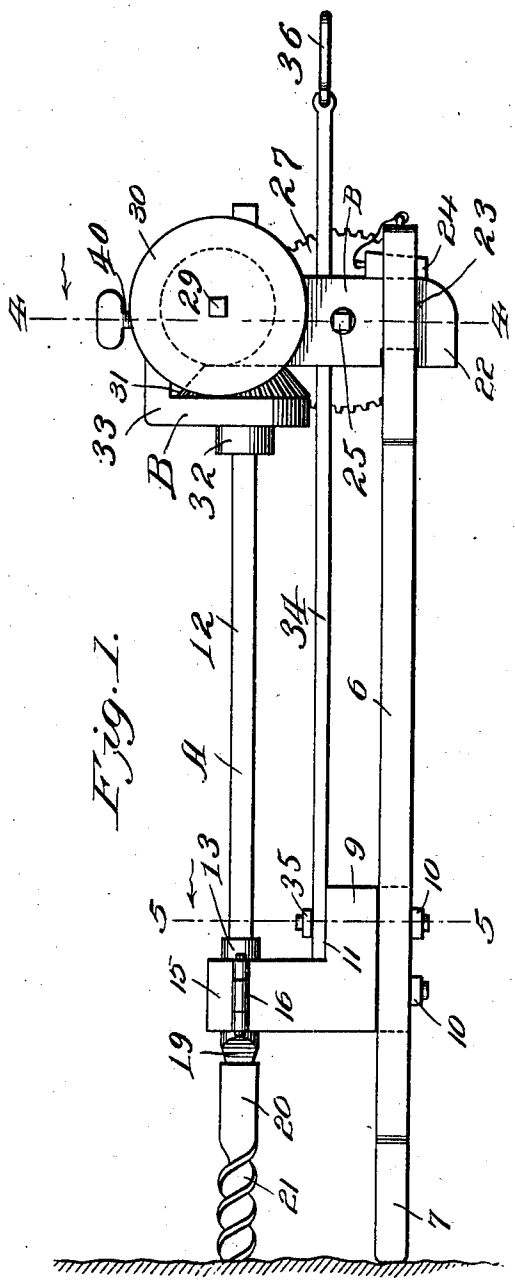


Fig. 1.

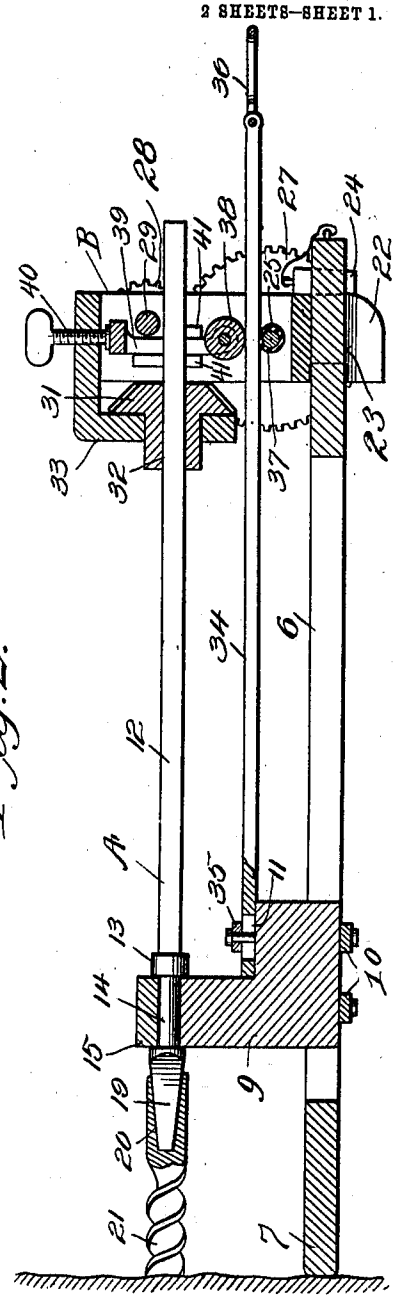


Fig. 2.

Witnesses

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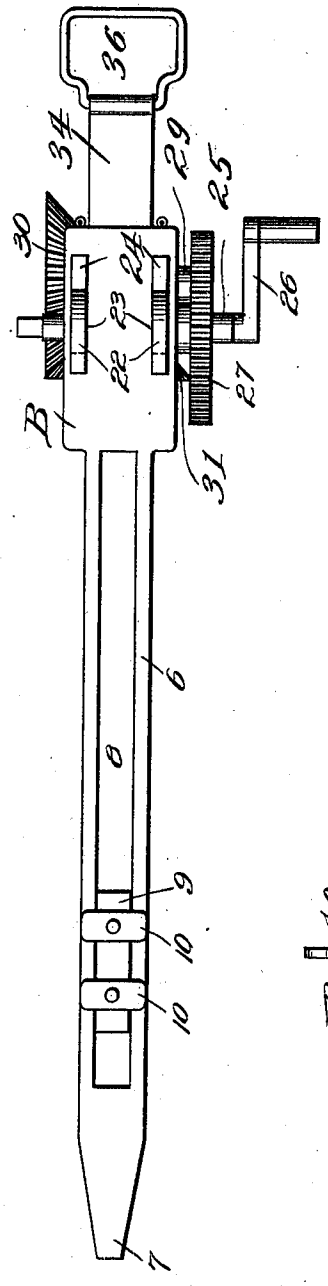


Fig. 5.

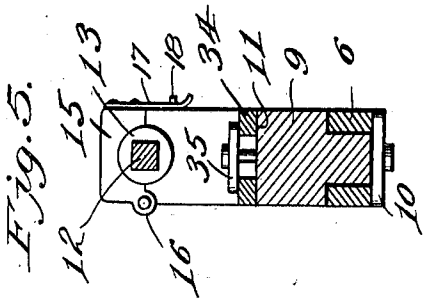


Fig. 5.

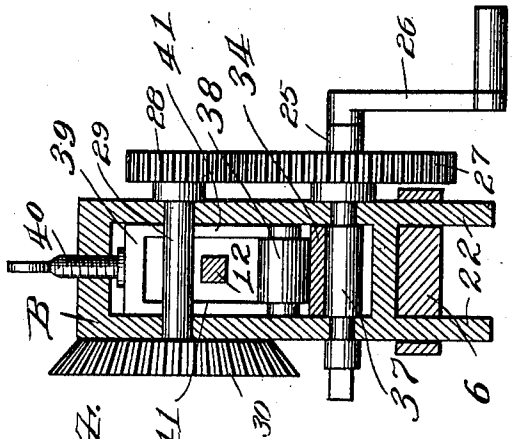


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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COAL-MINING DRILL.

990,205. Specification of Letters Patent. Patented Apr. 18, 1911.

Application filed November 27, 1909. Serial No. 530,161.

To all whom it may concern:

Be it known that I, RICHARD C. BRITTON, a citizen of the United States of America, residing at Buxton, in the county of Monroe and State of Iowa, have invented new and useful Improvements in Coal-Mining Drills, of which the following is a specification.

This invention relates to coal mining drills, and it has for its object to construct a device of this character in which screw threaded feed mechanism shall be dispensed with, the feed movement being effected by a friction mechanism of simple and improved construction.

Further objects of the invention are to simplify and improve the general construction and operation of a device of the character described.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawings,—Figure 1 is a side elevation of a mining drill constructed in accordance with the invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a bottom plan view. Fig. 4 is a transverse sectional view taken on the plane indicated by the line 4—4 in Fig. 1. Fig. 5 is a transverse sectional view taken on the plane indicated by the line 5—5 in Fig. 1.

Corresponding parts in the several figures are denoted by like characters of reference.

The base frame 6 of the improved machine is pointed at its forward end, as shown at 7, to afford a wall-engaging support, and said base is provided with a longitudinal slot 8 for the accommodation of the carriage 9 which is slidably and detachably connected with the base by means of turn buttons 10. The rear side of the carriage is provided with a shoulder or offset 11, and the upper end of said carriage affords a bearing for the forward end of the drill shank A. The latter, throughout the greater portion of its length is non-circular in cross section, as shown at 12, but it is provided near its forward end with a collar 13 abutting upon the carriage and with a cylindrical portion 14 which is supported for rotation in the box or bearing formed in part by the carriage and partly by a box member 15 which is connected with the carriage adjacent to one of its edges by a hinge 16, the opposite edge being provided with a spring catch 17 adapted to engage a latch pin 18. The forward end of the drill shank A is tapered and squared, as shown at 19, for detachable engagement with the socket 20 of a drill 21 of the ordinary auger construction used in connection with this class of machines.

A head block B is provided, the same being equipped with hook member 22 engaging slots 23 adjacent to the rear end of the base, where said hook members may be secured by means of wedges 24, thereby securing the head block in position, detachably, with reference to the base. Supported for rotation in the head block is a shaft 25 having one or more operating cranks or handles 26, said shaft carrying a spur wheel 27 meshing with a pinion 28 upon a counter shaft 29 likewise journaled in the head block, and said counter shaft carrying a bevel gear 30 meshing with a pinion 31, the hub of which has a non-circular aperture 32 for the passage of the portion 12 of the drill shank A, which latter will thus be connected for rotation with said pinion while remaining free to move longitudinally. The pinion 31 is engaged by a bracket 33 connected with the head block and is thereby held in mesh with the bevel gear 30.

A feed bar 34 is detachably connected with the shoulder or offset 11 of the carriage 9 by means of a turn button 35, said feed bar being provided at its rear end with a handle 36 enabling it to be conveniently withdrawn for the purpose of moving the carriage in

a rearward direction upon the base. The feed bar is supported upon the shaft 25, which latter is preferably provided with a drum or roller 37 which may be constructed wholly or in part of india rubber or other suitable resilient material to constitute a friction feed roller. A pressure roller 38 is carried by a frame 39 which is vertically adjustable in the head block by means of a set screw 40 swiveled upon or otherwise suitably connected with said frame; the latter being guided between the cleats or guide members 41 upon the inner faces of the side members of the head block. The frame 39 is suitably constructed in such a manner as to afford ample room for the passage of the drill shank, and the head block is obviously constructed with a like end in view.

In the operation of this device the carriage is first withdrawn by means of the feed bar 34 until it lies conveniently adjacent to the head block, the pressure roller being meanwhile lifted to permit such adjustment to be conveniently made. The pressure roller is now restored by manipulating the set screw 40 in such a manner as to bear against the feed bar with any desired degree of pressure, the feed bar being subjected to pressure between the rollers 37 and 38. By turning the shaft 25 rotary motion will be imparted to the drill-carrying shank, and at the same time the carriage supporting said shank will be moved in a forward direction by the action of the feed roller 37 engaging the feed bar, which latter is pressed against the feed roller by the adjustably supported roller 38. It will be obvious that by manipulating the set screw 40 the pressure upon the feed bar may be gaged according to the various conditions encountered, so that the rapidity of the feed movement may be properly related to the cutting action of the drill.

As will be seen from the foregoing description, this improved drilling machine is simple in construction and is free from the disadvantages offered by more expensive machines having the customary screw feed. Experience has proven this machine to be not only simple and inexpensive, but thoroughly efficient for the purposes for which it is provided.

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

1. In a mining drill, a base, a drill-supporting carriage slidably connected therewith, means for rotating the drill, a feed bar connected with the carriage, and friction rollers engaging said bar.

2. In a machine of the character described, a slotted base, a carriage slidably engaging the base and having turn buttons whereby it is detachably connected with the base, a head block having hook members detachably engaging the base, a drill-carrying shank supported for rotation upon the carriage, means for rotating the drill-carrying shank supported upon the head block, a feed bar connected with the carriage, and friction rollers engaging said bar to impart feed movement to the carriage.

3. In a machine of the character described, a base, a head block connected therewith, a drill-carrying carriage slidably engaging the base, drill-operating means supported upon the head block and including a drill shank and a pinion, the hub of which is provided with a non-circular aperture to engage a correspondingly shaped portion of the drill shank, a driving shaft supported for rotation upon the head block, a feed bar connected with the carriage and supported upon the drive shaft, and a vertically adjustable frame mounted upon the head block and carrying a pressure roller engaging the feed bar.

4. In a machine of the character described, a base member having a longitudinal slot and auxiliary slots adjacent to its rear end, a carriage slidably and detachably engaging the longitudinal slot, a head block having hook members detachably engaging the auxiliary slots, wedges to secure the head block in position, a driving shaft mounted for rotation in the head block and having a spur wheel, a counter shaft mounted for rotation in the head block and having a pinion engaging the spur wheel, a bevel gear mounted upon the counter shaft, a drill-carrying shank mounted for rotation upon the carriage and having a portion of non-circular cross section, a pinion meshing with the bevel gear, the hub of said pinion having an aperture of non-circular cross section for the correspondingly shaped portion of the drill-carrying shank, a bracket connected with the head block and holding the pinion in mesh with the gear wheel, a friction drum upon the drive shaft, a feed bar connected with the carriage and supported upon the friction drum, a suitably guided frame supported for vertical adjustment in the head block, a pressure roller carried by said frame and engaging the feed bar, and a set screw engaging the roller-carrying frame.

5. In a machine of the character described, a longitudinally movable drill supporting carriage, a drill shank supported for rotation upon said carriage and connected therewith for longitudinal movement, means for rotating the drill shank, a feed bar connected with the carriage, friction rollers supported adjacent to opposite sides of the feed bar, means for adjusting one of said rollers to cause the rollers to grip or release the feed bar, and means for actuating the other friction roller to impart feed movement to the feed bar.

6. In a machine of the character described, a longitudinally movable carriage, a feed bar connected therewith, a drive shaft having a friction drum supporting the feed bar, and an adjustably supported frame having a pressure roller engaging the feed bar.

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

RICHARD C. BRITTON.

Witnesses:
PEARL WORTHAM,
C. L. PIDGEON.

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