No. 816,563. PATENTED APR. 3, 1906.

C. C. CRANMER.

MINER'S DRILL.

APPLICATION FILED SEPT. 12, 1905.

Fig. 1.

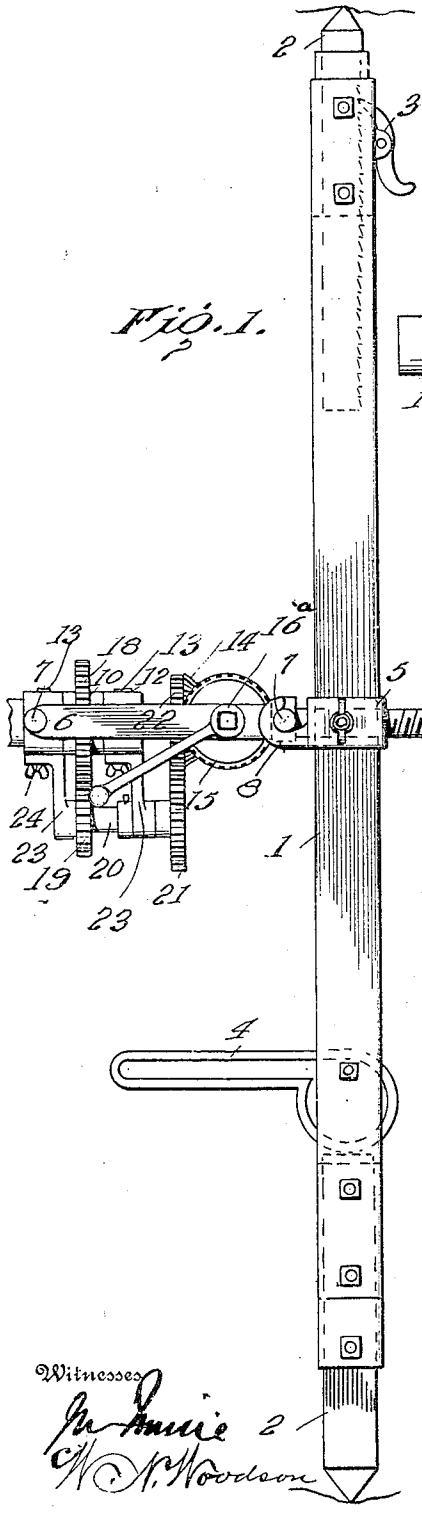


Fig. 3.

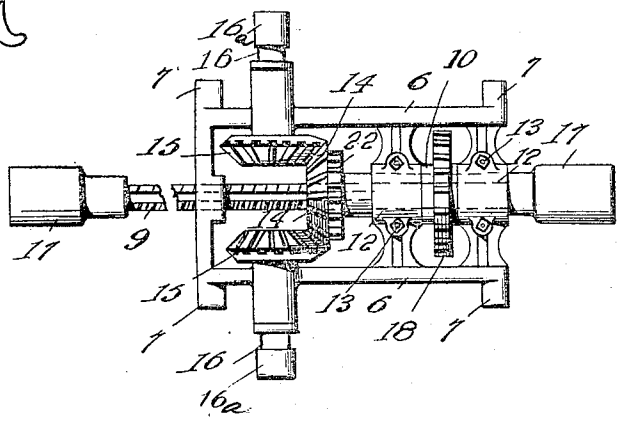


Fig. 2.

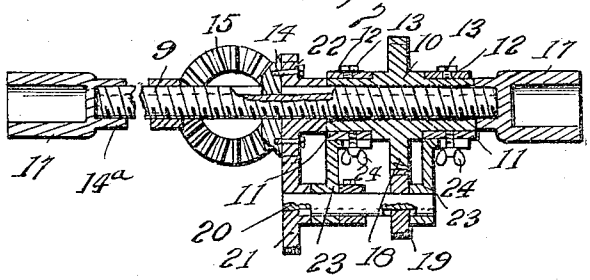
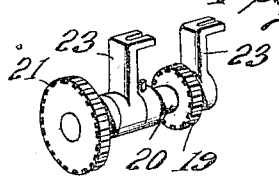


Fig. 4.



Witnesses

W. N. Woodson

Inventor

C. C. Cranmer

By R. A. B. Lacey, Attorneys

UNITED STATES PATENT OFFICE.

CLYDE C. CRANMER, OF ATHENS, OHIO.

MINER'S DRILL.

No. 816,563. Specification of Letters Patent. Patented April 3, 1906.

Application filed September 12, 1905. Serial No. 278,161.

To all whom it may concern:

Be it known that I, CLYDE C. CRANMER, 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 Miners' Drills, of which the following is a specification.

This invention embodies an improved miner's drill, and includes, primarily, peculiar operating mechanism for the drill in connection with a suitable support by which the drilling mechanism is ordinarily carried.

The essential feature of the operating mechanism employed resides in the provision of special means for reducing the feed of the drill-rod or drill proper, other detail parts being arranged and constructed in a manner advantageous and which will be more fully described hereinafter.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a side elevation of a miner's drill embodying the invention. Fig. 2 is a longitudinal sectional view through the drilling mechanism alone. Fig. 3 is a top plan view of the drilling mechanism. Fig. 4 is a detail perspective view of the bracket supporting the reducing-gears, by which the drill-rod bearing is rotated.

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.

In the drawings the numeral 1 designates the support which carries the drilling mechanism, and this support is preferably comprised of a post provided with movable points 2 at opposite ends, said points being adapted to engage the ceiling and floor of a cut or mine-passage to positively position the support 1 therein. The uppermost of the points 2 is preferably adjusted by means of a suitable pawl 3, while the lower point is adapted to be engaged by a cam-lever 4, engaging the upper end thereof. The support 1 carries a rest 5, adjustable vertically thereof by any conventional means commonly employed, and said rest is adapted to support the drilling mechanism on the upright or post 1. The drilling mechanism includes a suitable frame 6, embodying sides from which project lugs or extensions 7 at opposite ends of the frame, the said lugs being adapted to engage in hooks 8 at one side of the rest 5 on the support 1, whereby the frame 6 of the drilling mechanism is connected with the rest 5, though readily removable therefrom to change the position of the drilling mechanism as found necessary in the actual operation thereof.

As is customary in means of the class to which the invention relates, the drill-rod 9 is carried on the frame 6, the latter carrying a bearing in the form of a sleeve 10. The drill-rod 9 is mounted in the bearing 10, said bearing being internally threaded, so that the threads thereof will match threads on the rod 9, rotation of the rod 9 in this bearing 10 causing the rod to be advanced in a manner which will be readily apparent. The bearing or sleeve 10 is mounted in bearings 11 on the frame 6, and said sleeve is prevented from displacement from the bearings 11 by the provision of bearing-plates 12, suitably attached to the frame 6 and extending over the end portions of the sleeve. The bearing-plates 12 are held in place by screws 13 or similar fastenings, and under ordinary conditions of service the bearing 10 is immovably mounted on the frame 6. The drill-rod 9 is rotated by means of a bevel-gear 14, splined thereon, as shown at 14^a, said bevel-gear 14 being in mesh with spaced bevel-gears 15, carried by short shafts 16, arranged in suitable bearings in opposite sides of the frame 6. The outer ends of the shafts 16 are squared, as at 16^a, or otherwise formed so as to readily receive a crank-handle or similar operating device, and the provision of two of the shafts 16 admits of disposition of the crank-handle or operating device aforesaid (not shown) upon either side of the frame 6, as found most convenient under actual conditions of service. The drill-rod 9 is provided at opposite ends with drill-holders 17, whereby either end of the drill-rod may be advanced to the work, and these holders 17 are preferably provided with sockets adapted to fit a round shank-bit, being secured in any suitable way to attach the bit firm on the rod.

Under ordinary conditions the drill-rod 9 will be actuated by rotation of one of the gears 15, with which an operating device in the form of a crank-handle is connected. Under certain circumstances, however, it is desired to reduce the speed of the drill, and for this purpose mechanism is utilized whereby the bearing 10 of the rod 9 may be rotated

simultaneously therewith to vary the feed of the rod as it is actuated. For the above purpose the bearing 10 is provided with an integral gear 18 at a point between its ends, and this gear 18 meshes with a pinion 19, keyed to a shaft 20, the shaft 20 having a gear 21 in mesh with a gear 22, secured to the bevel-gear 14, before described. The shaft 20 is supported by bearing-brackets 23, which are adjustably attached to the frame 6 by means of set-screws 24 or the like. The brackets 23 are adjustable and may be readily positioned so that the gear 21 and pinion 19 may be in mesh with the gear 22 and the gear 18, and on rotation of the gear 14 the drill-rod 9 will not only be actuated, but the bearing 10, on which it is mounted, will also be rotated in the same direction. The size of the gear 21 and the pinion 19 is such that the speed of the bearing 10 will be less than that of the rod 9, so that the rod will be advanced to actuate the drill, but of course not at the same rate as would be given thereto were the bearing stationary. In other words, rotation of the sleeve 10 will reduce the feed of the drill, and the mechanism for operating the bearing 10 may be of such a nature as to reduce the feed to any desired extent found necessary under working conditions.

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

1. In a miner's drill, the combination of a supporting-frame, a drill-rod mounted thereon, a rotatable bearing for the drill-rod having threaded connection therewith, a main gear having spline connection with the drill-rod and adapted to rotate the same, means for actuating said main gear, adjustable bearing-brackets attached to the frame, and a train of gears mounted on said bearing-brackets and arranged to connect the main gear aforesaid with the rotatable bearing, whereby rotation may be imparted to said bearing, adjustment of the bearing-brackets above mentioned being adapted to connect or disconnect the main gear from the rotatable bearing as described.

2. In a miner's drill, the combination of a supporting-frame, a drill-rod mounted therein, a rotatable bearing carried by the frame and having threaded connection with the drill-rod to advance the same when it is rotated, a gear provided on said bearing, a main gear having spline connection with the gear-rod, means for actuating the main gear to impart rotation to the drill-rod, bearing-brackets projecting downwardly from the supporting-frame, and slotted at one end, fastenings passing through the slots of the bearing-brackets to adjustably secure the same to the supporting-frame, and a train of gears carried by the bearing-brackets aforesaid and adapted to connect the main gear with the gear on the rotatable bearing of the drill-rod to cause simultaneous rotation of the drill-rod and the bearing, the adjustable connection between the bearing-brackets and the supporting-frame admitting of disconnecting the train of gears from the main gear and the gear on the bearing-bracket, for the purpose specified.

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

CLYDE C. CRANMER. [L. S.]

Witnesses:
RALPH MCKINSTRY,
PERL DRAKE.