2 Sheets—Sheet 1.

T. J. MORGAN.

MINING-DRILL.

No. 190,239. Patented May 1, 1877.

Fig. 1.

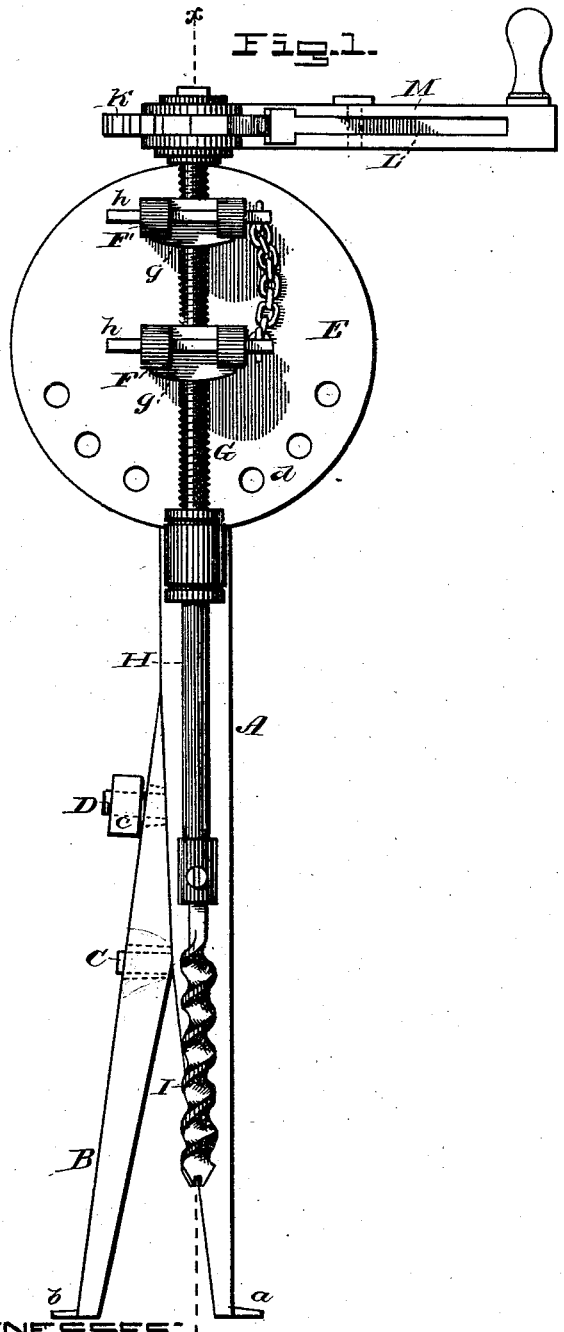
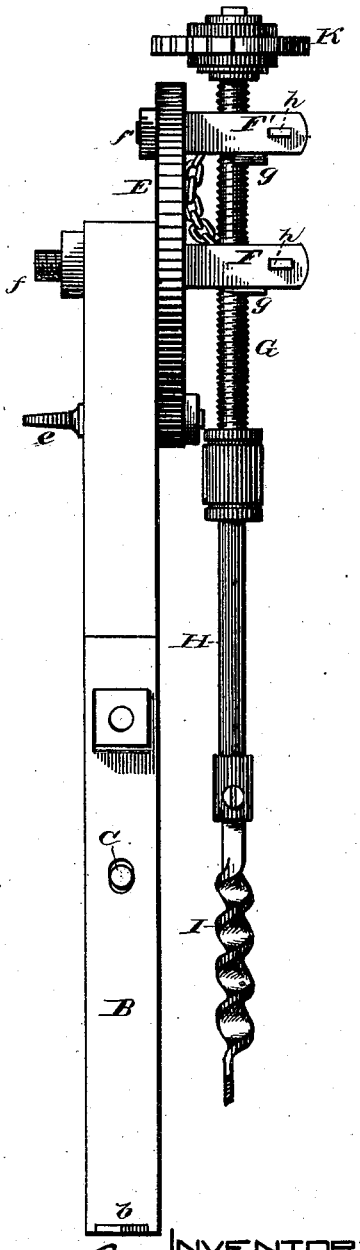


Fig. 2.



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2 Sheets—Sheet 2.

T. J. MORGAN.

MINING-DRILL.

No. 190,239. Patented May 1, 1877.

Fig. 3.

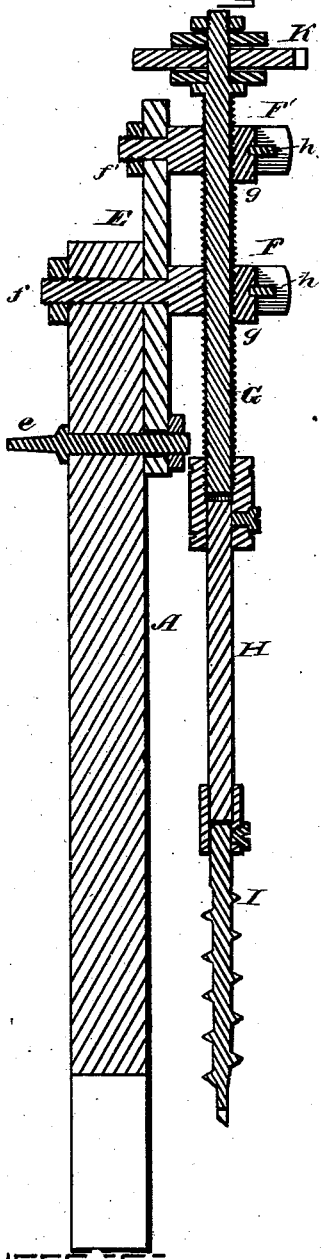


Fig. 4.

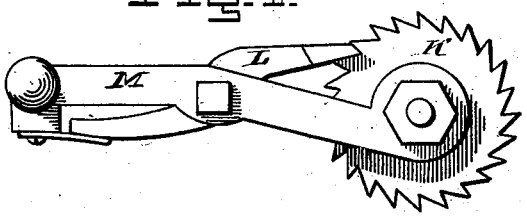
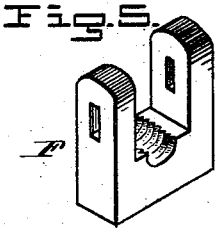
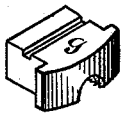


Fig. 5.





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UNITED STATES PATENT OFFICE.

THOMAS J. MORGAN, OF PLYMOUTH, PENNSYLVANIA.

IMPROVEMENT IN MINING-DRILLS.

Specification forming part of Letters Patent No. **190,239**, dated May 1, 1877; application filed April 10, 1877.

To all whom it may concern:

Be it known that I, THOS. J. MORGAN, of Plymouth, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Mining Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a hand-drill, for use principally in coal-mining; and the invention consists in an apparatus adapted to be secured in a hole in the coal-wall, and provided with a drill attached to a turn-table or rotary disk, so as to bore a number of holes at various angles to the longitudinal plane of the apparatus.

In the drawing illustrating my invention, Figure 1 is a plan view of my apparatus. Fig. 2 is a side elevation; Fig. 3, a longitudinal section on the line *x x*, Fig. 1; Fig. 4, a plan view of the pawl and ratchet for operating the drill; and Fig. 5, a perspective view of one of the two-part screw-threaded bearings for the feed-screw of the drill.

The letter A represents the stock of the apparatus, preferably of metal, and having a sharpened toe, *a*. This stock is adapted to receive a leg, B, upon one side, and tapers thence to its toe end. The leg B may be of a double wedge shape, as shown, so as to fit snugly against the stock at one end, and thus cause its other end to extend away from the stock. It (the leg B) is adjustably secured to the stock by means of a pin, C, projecting from the stock through a slot in the leg, and forming a fulcrum for it, and by a bolt, D, and nut *c*, arranged at the upper end of the leg. The object of this construction will hereinafter appear.

To the upper end of the stock A is secured, upon a pivot, a disk, E, having a number of holes, *d*, in it. This disk is capable of rotation upon its pivot, and is fixedly retained in any given position by a set-screw, *e*, or equivalent device, acting as a stop, the set-screw, in this instance, extending through the stock, and entering one of the holes in the disk. F F′ are forked lugs, the former F, if desired, having a shank, *f*, passing through the disk E and stock, and secured to the latter by a nut or otherwise, which shank constitutes the disk's pivot, and the latter, F′, having a shank, *f*′, whereby it is attached to the disk. These forked lugs are constructed with half-round beds, which are screw-threaded, and each has a removable bearing-piece, *g*, whose under portion is half-round and screw-threaded, so that when they are brought down upon the beds of the lugs, circular screw-threaded orifices are obtained. These bearing-pieces *g* are retained within the forked lugs by clinch-pin-like devices *h*, as shown, or equivalent means. The forked lugs, constructed substantially as I have just described, constitute bearing-nuts for a feed-screw, G. Upon the end of this feed-screw G is arranged a bit-stock, H, and in this stock is secured a suitable bit, I. Upon the upper end of the feed-screw a ratchet-wheel, K, is applied, and also a handle or operating-lever, M, which handle carries a spring-pawl, L, that engages with the ratchet as the handle is turned, whereby the screw is rotated or is moved progressively in its bearings.

The operation is as follows: The nut *c* is loosened, so as to permit the folding back of the arm B upon its fulcrum-pin *c* against the stock A, to admit of the arm and stock being inserted in a hole previously bored in a coal-wall or other place to be drilled, and when so inserted the nut *c* is tightened, thereby causing the lower end of the arm, which bears a sharpened toe, *b*, to project from the stock, as shown in Fig. 1, and forcing its toe, and that of the stock A, into the walls of the hole. The apparatus is then in position, and the drilling may be proceeded with. When the feed-screw has passed through its bearings to its limit, the drilling has to be stopped, a larger bit inserted, and the screw adjusted in its bearings. This adjustment is accomplished by loosening the bearing-pieces *g*, so that the screw may be moved longitudinally or otherwise, or be entirely removed.

A number of holes may be drilled while the apparatus is fixed in one place, by simply removing the set-screw *e* and adjusting the disk or turn-table E, so as to bring the bit to the required place, when the set-screw is again used to fix the disk in its new position.

It will be understood that the handle may

receive a continuous rotary motion or an intermittent rotary movement, according as the surroundings demand, the pawl-and-ratchet mechanism being provided in case the apparatus be so placed that rotating of the handle would be impossible, and a mere reciprocation or oscillation thereof all that was admissible.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the expansible stock A B, substantially as described, with a drill for coal-mining, and the like.

2. The expansible stock A B, provided with toes *a b* and a drilling mechanism, substantially as and for the purpose described.

3. The combination of an expansible stock, a rotary disk or turn-table, and a drilling mechanism, substantially as and for the purpose described.

4. The combination of the rotary disk or turn-table, the bearing-lugs F F′, bearing-pieces *g*, pin *h*, and feed-screw G, all arranged and operating substantially as described.

5. The combination of the expansible stock A B with a rotary table, E, having a series of holes *d*, lug F, having shank *f*, and set-screw *e*, substantially as shown and described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THOMAS JOHN MORGAN.

Witnesses:

RICHARD M. ROBERTS,

JOHN R. HOWELLS.