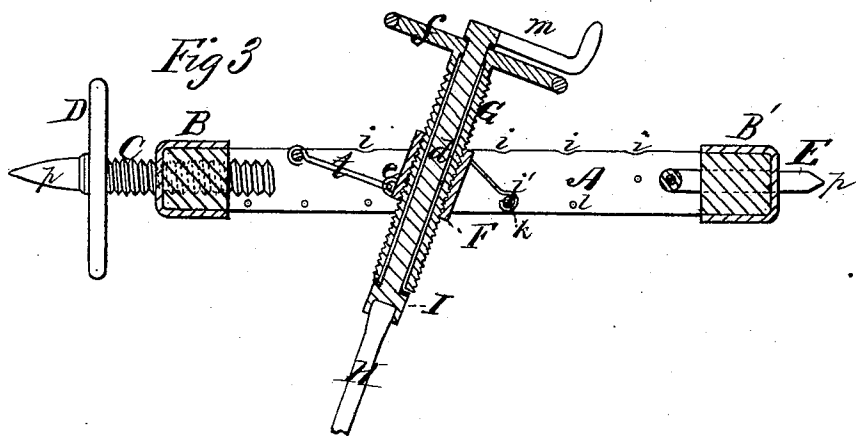
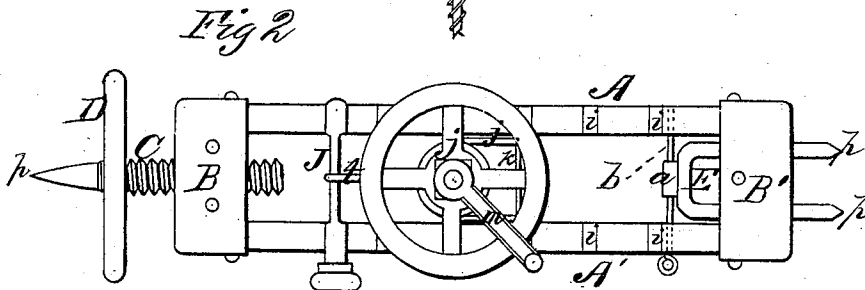
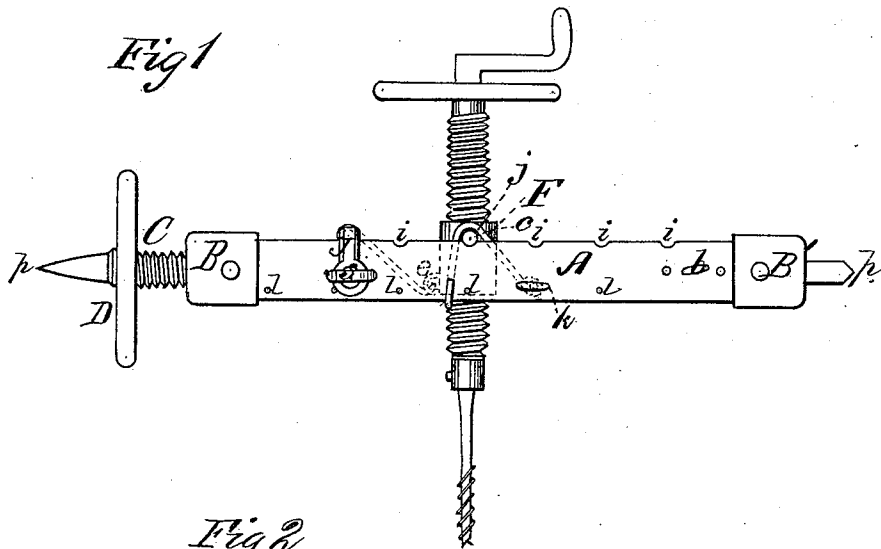


J. S. FLEMING.
MINING-DRILL.

No. 170,249.

Patented Nov. 23, 1875.



WITNESSES

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JACOB S. FLEMING, OF STEUBENVILLE, OHIO.

IMPROVEMENT IN MINING-DRILLS.

Specification forming part of Letters Patent No. **170,249**, dated November 23, 1875; application filed April 17, 1875.

To all whom it may concern:

Be it known that I, JACOB S. FLEMING, of Steubenville, in the county of Jefferson and State of Ohio, have invented a new and valuable Improvement in Mining-Drills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a side view of my drill, and Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal sectional view.

This invention has relation to improvements in drills for boring holes for blasting rock in tunnels, in making excavations, or in mines.

My invention consists in withdrawing the auger from the hole by means of an independent device, and without reversing the motion of the auger, whereby a direct withdrawal of the same will cause the hole to be emptied of chippings, and will be thus in proper condition for the blasting-charge. It also consists in the combination of an adjustable oscillating tubular socket, adjusting tubular screw, and a drilling-shaft; and it also consists in certain devices for supporting and retaining the adjustable and oscillating socket in a rigid position, as will be hereinafter more fully set forth.

In the annexed drawings, A A' designate wooden beams, which constitute the side rails of the supporting-frame of my improved drilling-machine, and which are socketed into and rigidly attached to strong metallic metal-covered end pieces B B'. These rails are preferably of wood, because of the superior lightness of this material; but I may, if I so elect, use metal in their construction. End piece B is provided with a female screw-threaded perforation, adapted to receive the correspondingly-threaded screw C, upon which is rigidly secured a hand-wheel, D, the lower end of the said screw projecting through the said wheel, and being suitably pointed, as shown in Fig. 1, and the upper end piece B' has through it vertical perforations, arranged at a suitable distance apart, and adapted to receive the legs of an U-shaped grappling device, E, the

ends of which project through the said end piece, and are each suitably pointed. Grapple or prong E is prevented from endwise displacement with reference to end piece B' by means of a metallic rod, b, which is passed through registering-perforations in rails A A' and an eye, a, upon the lower end of said grapple. These perforations, which are spaced, and are several in number, allow grapple E to be adjusted vertically, for increasing or lessening the length of the supporting-frame by removing rod b and placing it in the upper or lower holes, as the case may be. This frame, consisting of rails A A' and end pieces B B', is designed to be secured across or vertical to the length of a shaft, and this is done by arranging the frame in the desired position and operating hand-wheel D, such operation having the effect of forcing the points p of screw C and grapple E into the walls of the shaft, thus effectually holding it against vibration on its long axis, and against lateral or edge-wise displacement. F represents a preferably cylindrical socket, having trunnions c diametrically opposite each other, by means of which it is attached to the supporting-frame and a perforated lug, e, for a purpose hereinafter fully explained. Socket F is tubular, and is provided with a female screw-thread, cut in its bore, adapted to receive a correspondingly-threaded tubular adjusting-screw, G, having upon one end a hand-wheel, f, by means of which it is actuated. I represents a socket, in which a bit or boring-auger, H, is adapted to be secured in the usual well-known manner, the shank d of which socket extends through screw G, and is secured thereto by means of a crank-arm, m, applied upon its screw-threaded end projecting through the said screw, as shown in Fig. 3. The shank c' of socket I fits snugly within screw G, and rotates freely therein on its long axis independently thereof. Socket F is secured to rails A A' of the frame in the following manner, to wit: Its trunnions c are placed in semi-cylindrical grooves i, and metallic devices j of angular form are hooked over rails A A', are then passed around these trunnions, and are detachably secured to the same by means of a pin, k, passing through registering-perforations in the said rails, and through eyes i'

in the ends of attaching devices *j*, as shown in Fig. 1. By this means socket *F* is allowed to vibrate vertically on its frame, but is held from any other movement whatsoever. Rails *A A'* are provided with a number of spaced perforations, *l*, so that by detaching pin *k*, sliding bearing-rods *j* up or down, and then reapplying the said pin, the auger-socket and its attachments may be adjusted to bore a hole above or below one already bored, as the circumstances of the case may require, without unanchoring the drill-frame. Owing to the oscillatory movement which the drill device has in rods *j*, the point of the bit or auger may be directed up or down, as may be desired; and in order that the drill may be held in a horizontal or an inclined position selected, I have devised the following: A metallic clamp, *J*, of suitable dimensions, is detachably secured on rails *A A'* by means of a set-screw, *s*, the said clamp being connected to socket *I* by means of a rod, *t*, which is hooked into lug *e*, before described. The desired inclination of the auger having been secured, screw *s* is forcibly set up, locking the drill device in the chosen position, and if the auger be brought into contact with the stone by means of hand-wheel *f*, and the crank-arm *m* on the end of shank *c* of socket *I* be operated, the point of the auger will penetrate into the rock, such penetration being restored by giving a turn to hand-wheel *f* as the rock is cut away for

the purpose of again bringing the auger in contact therewith. The desired depth having been obtained, crank-arm *m* is abandoned, and hand-wheel *f* reversed, thus drawing the bit out without causing it to turn, and clearing the hole of clippings, leaving it in proper condition for the reception of a blasting charge.

What I claim as new, and desire to secure by Letters Patent, is—

1. The vertically-adjustable and oscillating tubular screw-threaded socket *F*, adjusting tubular screw *G*, socket *I*, shaft *d*, and crank-arm *m*, combined and arranged substantially as specified.

2. The combination of a detachable clamp, *J*, and connecting-rod *t*, with a vertically-adjustable and oscillating socket, *F*, and a frame supporting the same, substantially as specified.

3. In a drilling-machine, the threaded tubular adjusting-screw *G*, having upon one end the hand-wheel *f*, in combination with the screw-threaded socket *F* and boring auger-shaft *d*, operating substantially as herein described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JACOB SMITH FLEMING.

Witnesses:

W. S. JACKMAN,
BEATTY M. FARLAND.