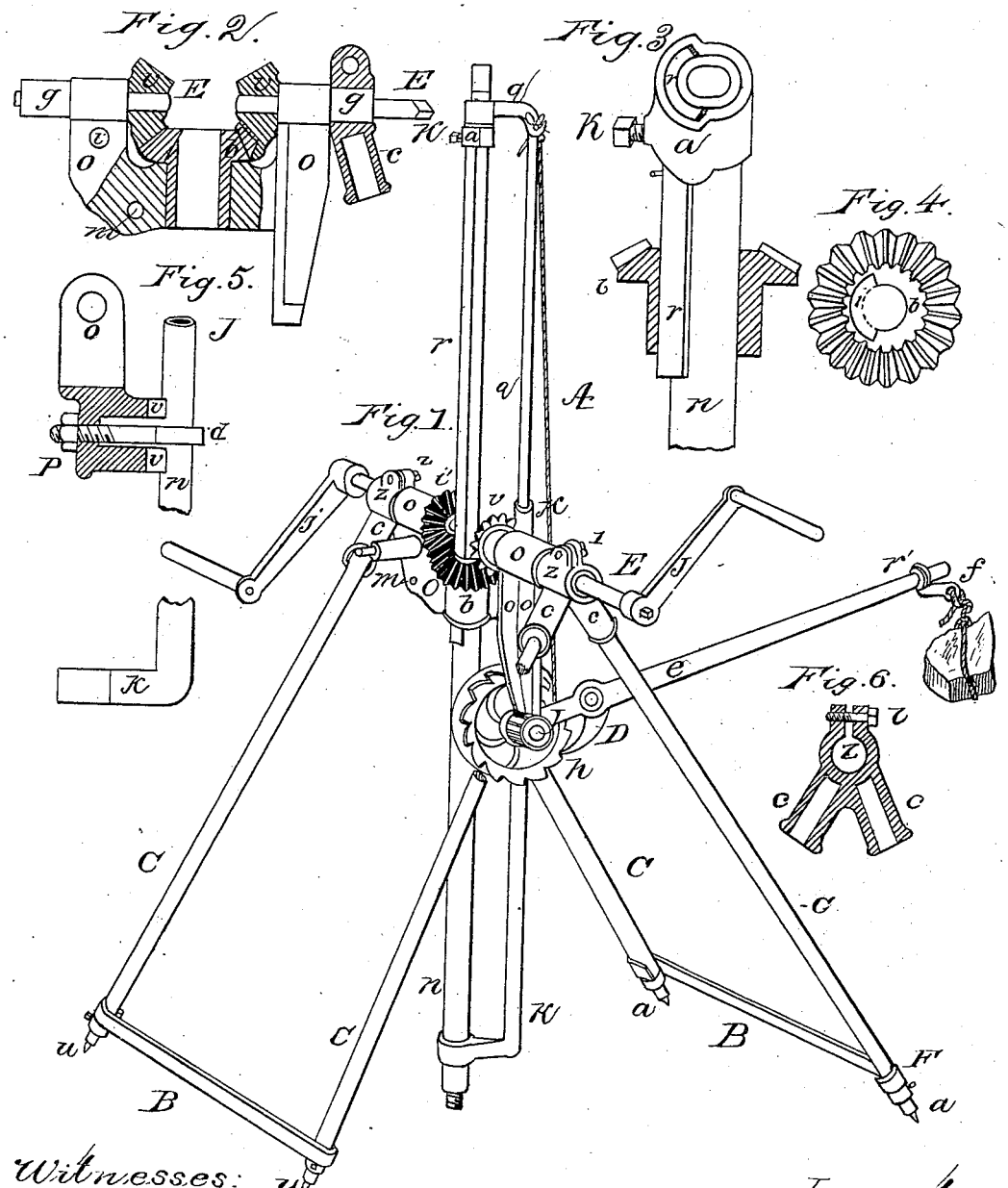
(No Model.)

W. HASENZAHL.

ROCK BORING MACHINE.

No. 266,140. Patented Oct. 17, 1882.



Witnesses:
J. W. Reynolds, Jr.
J. C. Turner

Inventor
Wm Hasenzahl
By his att'y
R. D. C. Smith

UNITED STATES PATENT OFFICE.

WILLIAM HASENZAHL, OF CINCINNATI, OHIO.

ROCK-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 266,140, dated October 17, 1882.

Application filed March 18, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HASENZAHL, of Cincinnati, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Rock-Boring Machinery, of which the following is a description, reference being had to the annexed figures, which form a part of the same.

My invention relates to an improved rock-boring machine, more especially designed for miners' and prospectors' use, to be operated by hand-power. It is so constructed as to possess the requisite of extreme lightness coupled with rapid execution of work, being easily carried to any point.

In reference to the accompanying figures, Figure 1 is a perspective view of the machine. Fig. 2 is a longitudinal section through the frame, showing the position of driving gear and shafts. Fig. 3 is an enlarged view of the boring-tube, and shows how the concave tube-clamp is attached. Fig. 4 is a face view of the drive-wheel with concave keyway. Fig. 5 shows how the guide-tube is attached to the frame. Fig. 6 is a section of the leg-support.

As my drill is designed for use largely in mountainous places, difficult of access, where it must often be carried by hand, I preferably construct the frame O of steel casting, thereby securing the desired strength with but little weight; but it may be made of cast-iron. This frame, having to support but few parts and requiring no very great strength, is made very light. Its ends *g g* (see Fig. 2) are cast round and turned to snugly fit the leg-supports *c c*, which pass over them. A cross-section of one of the leg-supports is shown in Fig. 2. The ends *g g* of the frame are also bored to admit the passage through them of the driving-shafts E E, for which they act as journals. Each of the two leg-supports C C is bored out near the top (see Fig. 7) to fit over the ends *g g* of the frame, and from thence slotted out, as shown, the two slotted sides being connected by the screws 11. The supports C C, passing over the parts *g g*, are made to clamp them firmly by means of the screws 11, thereby allowing the frame, when set up, to be turned and set at any angle, for a purpose that will hereinafter appear.

Momentum is imparted to the driving-wheel *b* from the cranks *j j* through the shafts E E and bevel-gear *i' i'*. Through the center of the driving-wheel *b* passes the boring tube *n*, and in it is a semicircular slot or keyway, *i*, (see Fig. 5,) through which passes the tube-clamp *r*.

The guide-tube *k* fits in bearings *v v*, cast on the frame O, and is firmly fastened to it by means of the ring-bolt *d* and nut P. (See Fig. 6.) This pipe extends nearly as low as the feet of the machine, and terminates in a ring-foot, through which passes the boring-tube *n*, as shown in Fig. 1. An arm of round iron, *q*, shaped as shown, (see Fig. 1,) and bent into a ring at its top end for the passage of the boring-tube *n*, rests its upper or ring part on the collar *a*, while its lower part plays up and down in the guide-tube *k*. The concave tube-clamp *r* is made fast to the boring-tube *n* by means of the collar *a* and screw K. (See Fig. 3.)

To an arm of the frame O (see Fig. 2) is attached a stud, J, and on this stud plays a common ratchet-wheel, *h*, having a pawl, D, and arm *e*, as shown in Fig. 1. Around the drum of the ratchet-wheel *h* is fastened one end of a small wire cable or chain, A, while the other end is attached to the upper part of the arm *q*, as seen in Fig. 1. A weight-holder, *f*, slides on the ratchet-lever *e*, and in its construction the ring part *r'* is made out of a line perpendicular to the part *f*, so that when weight is applied, as shown in Fig. 1, the ring *r'* grips the arm *e* and remains wherever placed.

Preferably the frame-legs C C are made of wrought-iron tubing, and they are either screwed into the supports *c c* or are held in these supports by set-screws. They are supported at their lower ends by the clamp-bars B B, as shown in Fig. 1, and terminate in steel or iron points *u u*, which are inserted in their lower extremities. These points are held in position by the set-screws F F, as shown in Fig. 1.

The boring-tube *n* is made in sections, preferably of lap-welded wrought-iron tubing, and the opposite ends of each section are provided the one with male, the other with female, screw-threads, so that the sections readily go together.

To the lower end of the tube *n* is attached

the drill-cutter for which Letters Patent were issued to me, bearing date February 17, 1880, No. 224,530. Claims for an improved cutter, also, will form the subject-matter of application for separate Letters Patent.

Now, since the clamp *r* is firmly fastened to the tube *n*, as described, and said clamp passes through the keyway *i* in the wheel *b*, which only admits its passage up and down, then so soon as motion is communicated to the wheel *b* by turning the cranks *j j* the boring-tube *n* is made to revolve; and since the upper part of the arm *q* rests on the collar *a* and upper part of the clamp *r*, both of which are made fast to the tube *n*, pressure brought to bear on the arm *q* through the ratchet-wheel *h* and cable A will force the tube *n* downward, thereby giving force to the boring-bit. A sufficient pressure is brought to bear on the tube *n* by the weight suspended on the arm *e*, which can be regulated as before described. The action of the ordinary ratchet-wheel and lever is well known. When the tube *n* has gone downward, so that the collar *a* comes near the frame, the screw K is loosened and the collar *a* and clamp *r* again raised up, as shown in Fig. 1.

As it is often necessary that the drill, instead of passing directly downward, should go in a different direction, the proper angle is obtained by loosening the clamp-screws 1 1 and turning the frame O until the tube *n* points in the desired course, when the screws are again made fast.

In the construction of the driving-wheel *b* a hole is usually cast through its center large enough to admit the tube *n*, and at the side of this hole is cast the slot or keyway *i*, of sufficient size to freely pass through it the concave clamp *r*; but as the clamp *r* is in shape simply a section of tube, the inner part of which fits on the tube *n*, the hole in the wheel *b* may be cast large enough to admit a tube corresponding in size to that of which the clamp *r* is a section, and that part of the hole not occupied by this clamp filled up with a section of tube fitted firmly to the wheel.

Although the machine is more especially designed for hand use, yet where it is desired to drill large holes, or for other reasons, as occasion requires, power may take the place of the cranks *j j*.

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

1. The frame O, provided with the tubular bearings *g g*, combined with the driving-shaft E, journaled within said bearings, and the leg-socket clamp *z*, immediately about said shaft E, so as to clamp to the frame O, as and for the purpose set forth.

2. The frame O, provided with the horizontal tubular bearings *g* for the driving-shaft E and vertical bearings for the gear-pinion *b*, combined with leg-sockets *c c* upon the clamp *z*, adapted to clamp the exterior surfaces of said bearings *g g*, pinions *i' i'*, and drill-rod *n*, as set forth.

3. The rotating drill-rod *n* and the mechanism whereby it is driven, combined with the frame O, provided with horizontal cylindrical tubular bearings *g* for the driving-shaft E, the leg-sockets *c c*, and cylindrical clamp *z*, arranged to clamp the exterior surface of said bearing, whereby the angular direction of said rod in a vertical plane may be adjusted at will.

4. The rotating drill-rod *n* and hollow driver *b*, whereby it is propelled, combined with the long feather *r*, whereby said rod is compelled to rotate with said driver, and the concave clamp *a*, whereby said feather is rigidly but adjustably secured to said drill-rod.

In testimony whereof witness my hand this the 15th day of March, 1882.

WILLIAM HASENZAHL.

Witnesses:
T. W. GRINTER,
CHARLES BLATTER.