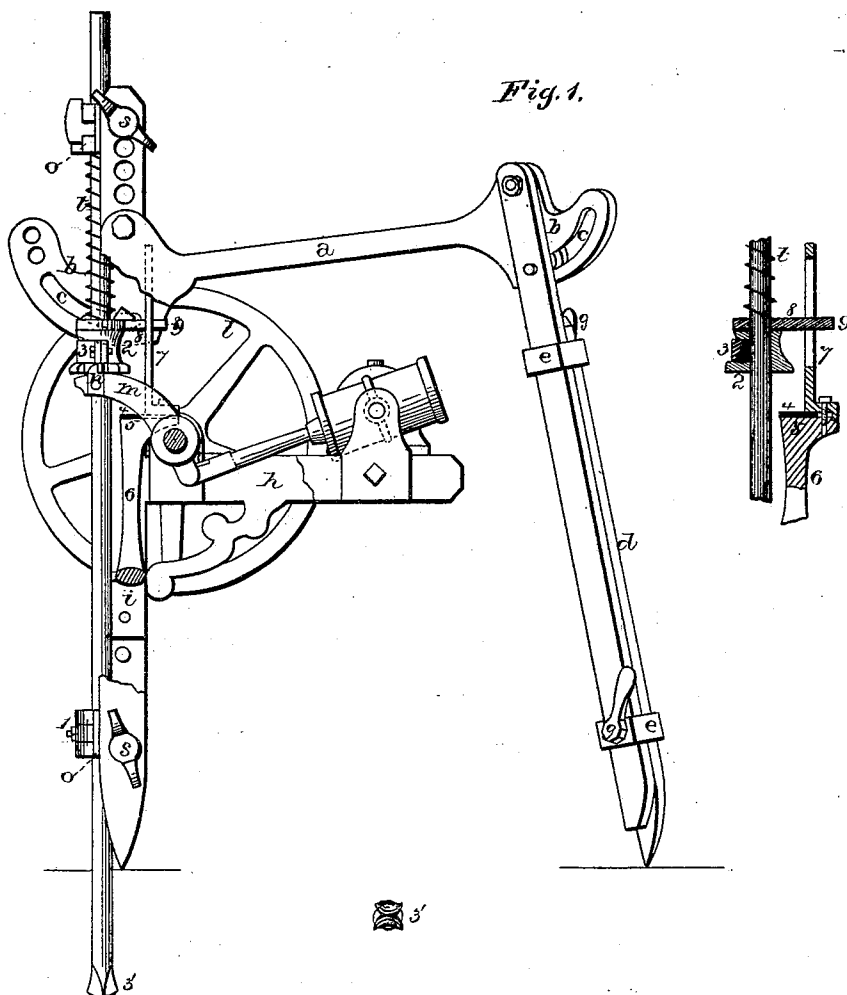


W. WEAVER.
Rock-Drills.

No. 142,824.

Patented September 16, 1873.



WITNESSES.

Wm. Johnson
W. L. Kendig.

By

INVENTOR

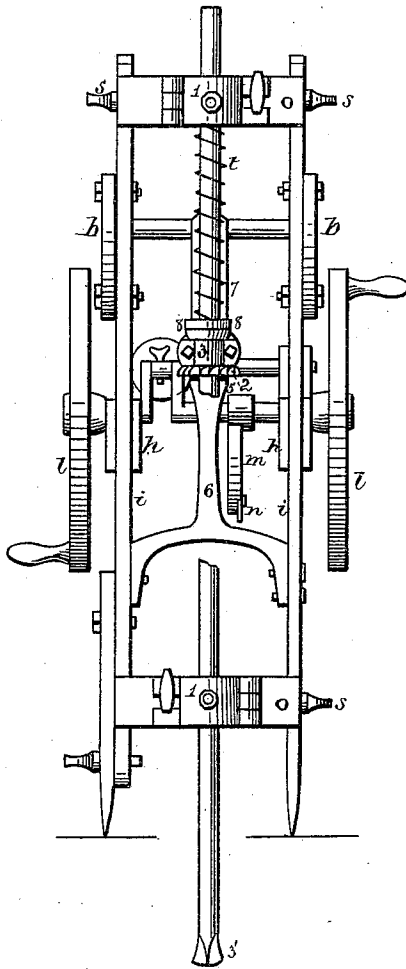
Wm. Weaver
per
F. A. Lehmann
Attorney

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Fig. 2.



WITNESSES

Wm. Johnson

W. G. Kendig.

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per F. A. Lehmann.

Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM WEAVER, OF PHOENIXVILLE, PENNSYLVANIA.

IMPROVEMENT IN ROCK-DRILLS.

Specification forming part of Letters Patent No. **142,824**, dated September 16, 1873; application filed August 22, 1873.

To all whom it may concern:

Be it known that I, WM. WEAVER, of Phoenixville, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Rock-Drills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

The nature of my invention relates to an improvement in rock-drills; and it consists in the construction, arrangement, and combination of parts, which will be more fully described hereafter, whereby its effectiveness in operation and the durability of the various parts are greatly increased.

The accompanying drawings represent my invention.

a represents a metallic frame, of any desired shape or construction, having a projection, *b*, formed upon each corner, through which is cut a circular slot, *c*, so that the pivoted legs upon which the frame is supported can be moved outward at any desired angle. The two rear legs are made extensible by means of the solid slides *d*, which can be moved downward to any desired distance, and securely clamped in position by the clamps *e* and screw-levers *g*.

The drill-rod is intended to be operated by either steam or hand power, according to the work to be performed. Where the cutting is heavy and deep, a suitable frame, *h*, is formed with or secured to the front legs *i*, upon which an oscillating cylinder is placed, which will communicate motion to the driving-shaft. Where the drilling is light, manual power may be used to operate the drill-rod through the driving-wheels *l*, one being placed upon each side of the frame.

Upon the driving-shaft is secured a single cam, *m*, when the machine is driven by steam, or a double one when driven by hand, which has a stud or projection, *n*, secured to one side out near the end, for engaging with the ratchet on the drill-rod. These studs are made removable, so that they can be changed in length according to the distance which it is desired to turn the drill-rod. In drilling hard stone a

short one will be used, which will turn the drill but slightly; but in soft stone a longer one will be substituted in its place, which will cause the rod to turn a quarter of a revolution, more or less. The drill-rod is held by the two cross-heads *o*, which have flanged ends, so as to embrace the sides and edges of the two front legs, and are held in position by the set-screws *s*, or other suitable clamping or holding devices. Through the upper ends of the legs there are a number of holes made, so that the upper head can be adjusted up and down, so as to regulate the tension of the spring *t* placed around the drill-rod. To the front of each of these cross-heads is hinged a clamp, *1*, which freely swings back, and allows the drill-rod to be taken in and out at pleasure. The drill-rod is turned, raised, and fed downward by the ratchet-nut *2*, which is slipped over the end of the rod from the top. This nut consists of a tubular body of any desired length, having ratchet-teeth formed upon its lower end, and an opening through its side, which is closed by the frictional clamp *3*. In between this clamp and the drill-rod is placed any suitable substance, which is held with sufficient frictional contact, by the clamping-screws, against the rod as to bind the nut to the rod, so that when the cam sweeps around and strikes against the under side of the nut to lift it upward the nut will lift the rod with it against the force of the spring. At the same time that the cam raises the nut and rod upward the projection *n* catches in one of the teeth of the ratchet and turns the rod partially around. As the cam passes from under the nut, after having raised it upward with the rod, the spring forces them back into position again with a quick throw, the bottom of the nut striking with full force upon a leather or other elastic material pad, *4*, placed upon the top of the square shoulder *5* of the stop *6*. As this nut strikes the shoulder, and is suddenly stopped in its downward movement, the frictional clamp lets the drill-rod slip through the nut the distance the bit on the end of the rod has cut, and thus the rod is raised, turned, and fed forward at each revolution of the cam. The stop *6* consists of a bifurcated bar secured between the two front legs of the machine, and which has a square shoulder, upon which

the nut rests. The pad 4 is clamped to its top by the slotted guide 7, or any other suitable device, and serves to prevent the nut from battering, which it otherwise would do. Slipped over the top of the drill-rod, and resting upon the top of the nut, is the plate 8, having an arm, 9, which catches in slot in the guide 7, so as to prevent it from turning around with the rod. Upon the top of this plate the lower end of the spring rests, and which is thus prevented from catching upon the rod and preventing its being turned around by the cam and ratchet. The end of the drill-rod has a double gouge-bit, 3', formed upon it, which will cut more rapidly and effectively than any other shape which can be used.

Having thus described my invention, I claim—

1. The ratchet-nut 2, provided with frictional clamp 3, secured to the drill-rod, for the purpose of raising, turning, and feeding it forward, substantially as set forth.

2. The cam *m*, having a removable projection or catch, *n*, or their equivalent, secured to it, so as to engage with the ratchet and turn the drill-rod, substantially as specified.

3. The plate 8 and arm 9, in combination with the guide 7, substantially as specified.

4. The combination of the cam *m n*, ratchet-nut 2 3, drill-rod, spring, and stop 5 6, arranged for operation substantially as shown and described.

5. The drill-rod having the double gouge-bit 3' formed upon its end, substantially as shown.

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of August, 1873.

WILLIAM WEAVER.

Witnesses:

P. G. CAREY,
WILLIAM MEYER, Sr.