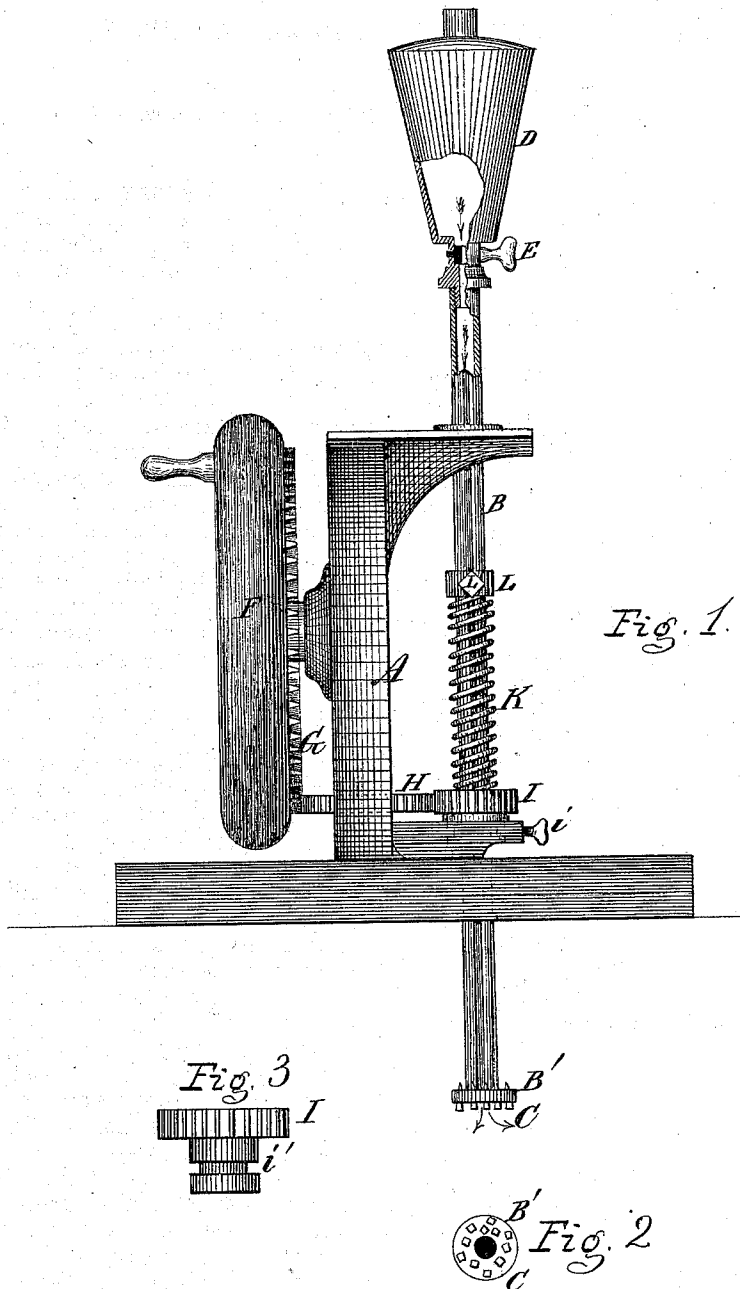


I. B. MILLNER.

Improvement in Portable Hand Rock Drills.

No. 124,845.

Patented March 19, 1872.



Attest
A. Ruppert.
J. Wm. Miller

Inventor
Isaac B. Millner
Edwin Brothers
Attorneys.

UNITED STATES PATENT OFFICE.

ISAAC B. MILLNER, OF WATKINS, NEW YORK.

IMPROVEMENT IN PORTABLE HAND ROCK-DRILLS.

Specification forming part of Letters Patent No. 124,845, dated March 19, 1872.

Specification describing certain Improvements in Rock-Drills, invented by ISAAC B. MILLNER, residing at Watkins, in the county of Schuyler and State of New York.

The first part of my invention consists in the combination, with a tubular drill-spindle, to the lower end of which the cutting-bits are secured, of a water-tank or reservoir, provided with a stop-cock below and an aperture above and mounted upon the top of the drill-spindle, to contain water to flow down through the tubular spindle to the bits and keep them cool. The second part of my invention consists in the employment of a helical spring, encircling the drill-spindle and adjustably secured thereto with one end by means of a collar and set-screw, while the other end is secured to some permanent or localized part of the machine, so that by adjusting the collar on the spindle the spring may be elongated or compressed, as the case may be, to aid, by its reaction, in feeding the spindle forward; but the main object of using this spring for feeding the drill-spindle, instead of a screw or gearing, is to permit the spindle to yield in case the bits come in contact with a very hard stratum of rock, so that such bits may not be broken.

Figure 1 is a sectional side elevation of my improved rock-drill. Fig. 2 is a plan view of the disk on the lower end of the drill-spindle to which the bits are secured. Fig. 3 is an elevation of the pinion on the drill-spindle.

The same letters of reference are used in all the figures in the designation of identical parts.

The operating parts of the drill are mounted upon a suitable frame-work, A, in the base and overhanging top-plate, of which bearings are formed for the drill-spindle B. The latter is tubular from end to end, and carries, at its lower end, a circular plate or disk, B', having a central aperture corresponding to that in the spindle. Around this central aperture suitable sockets or holes are formed in the disk for the reception and retention of the bits C, which may be simply short ends of tempered-steel bars, made slightly tapering, so as to wedge in the holes in the disk B'. A tank, D, of suitable capacity, is mounted upon the upper end of the tubular drill-spindle, which opens into it; a cock, E, being arranged in the nozzle of the tank to regulate or shut off com-

munication between the tank and the tubular drill-spindle. The tank is to contain water, which, flowing down through the spindle to the bits, keeps the latter cool and thus preserves their temper.

The drill-spindle is rotated by the gear G on the fly-wheel F, intermediate gear-wheel H, and pinion I on the spindle. In the hub of the pinion I, which is localized in the base-plate of the frame, by means of a set-screw, i, entering an annular recess, i', in its hub, a feather or key is secured, entering a corresponding vertical groove in the outer surface of the drill-spindle, so that, while the latter must always turn with the pinion I, it may slide endwise through the same. The drill-spindle when operated in a vertical or nearly vertical position will feed forward by its own weight, to a certain extent, but it always needs the aid of special means adapted for this purpose. I propose to employ a spiral spring, K, which is fastened at its lower end to the pinion I, and encircling the drill-spindle carries at its upper end a collar, L, snugly fitting said spindle. The collar is provided with a set-screw, L', and by means of it can be secured to the spindle at any point desired. Thus, in order to obtain aid from the spring for feeding the spindle, the collar is drawn upon the latter and the spring elongated, so that it will constantly pull upon the spindle until it has spent all its force, when the collar must be again shifted; and, upon the other hand, the spring may be used where very long spindles are necessary to take up a portion of the weight of the same simply by compressing it.

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

1. In a portable "rock-drill," the reservoir D, fixed to the top of the hollow drill-shaft B, provided with a stop-cock below and an aperture above, substantially as set forth.

2. The combination of the drill-spindle B, spring K, collar L with its set-screw L', pinion I, annular recess i', and set-screw i, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name this 15th day of February, 1872, in presence of two subscribing witnesses.

Witnesses:

I. B. MILLNER.

JOS. R. EDSON,
J. WM. MISTER.