(No Model.) 2 Sheets—Sheet 1.

# H. J. RICHARDS.

## MINING MACHINE.

No. 342,635. Patented May 25, 1886.

Fig. 1.

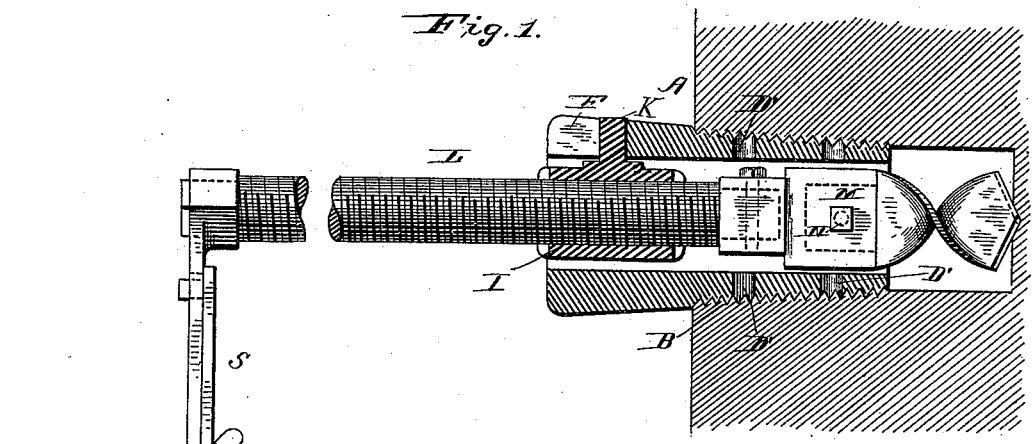



Fig. 2.

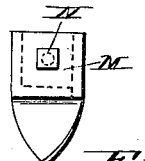



Fig. 3.

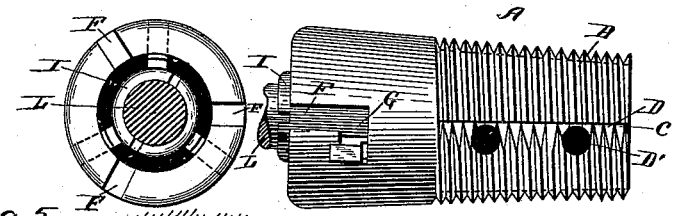



Fig. 5.

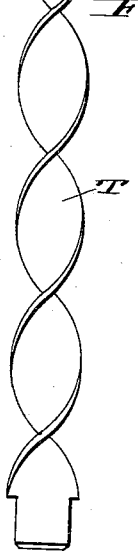



Fig. 4.

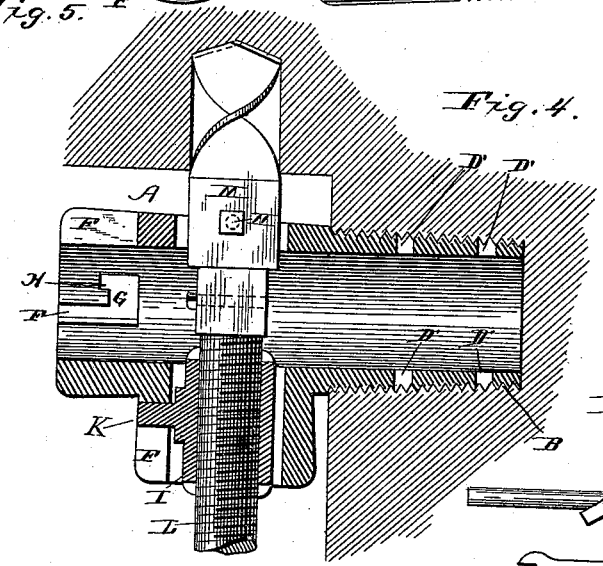
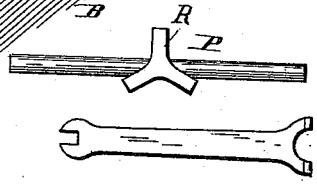



Fig. 6.

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(No Model.) 2 Sheets—Sheet 2.

# H. J. RICHARDS.

## MINING MACHINE.

No. 342,635. Patented May 25, 1886.

Fig. 7.

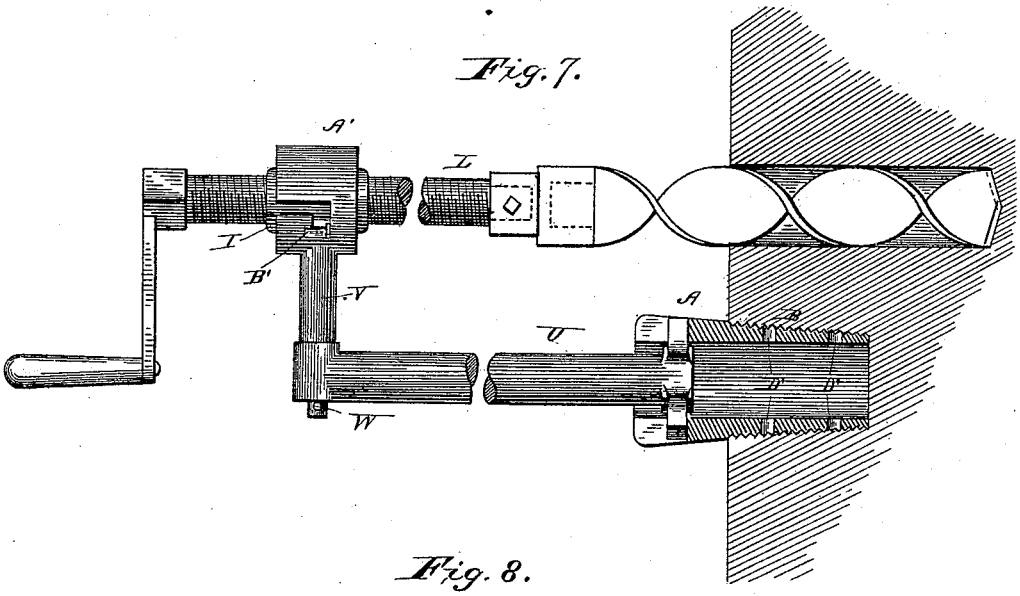
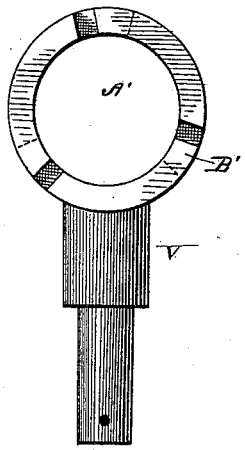



Fig. 8.




Witnesses
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# UNITED STATES PATENT OFFICE.

HENRY J. RICHARDS, OF WILKES-BARRÉ, PENNSYLVANIA.

## MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 342,635, dated May 25, 1886.

Application filed March 10, 1886. Serial No. 194,712. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY J. RICHARDS, a citizen of the United States, residing at Wilkes-Barré, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain improvements in miners' drills, and is especially designed for drilling coal.

It has for its objects to provide a cheap, compact, and durable device, the parts of which may be interchangeable and of such weight as to be easily carried and manipulated in the various positions required without unnecessary fatigue or undue exertion by a person of ordinary strength.

The invention also has for its objects to so construct the parts of the device that they may be used individually in connection with certain parts of the drills now in use or together as a whole. This enables certain parts of the device to be applied to the existent miners' tools by slightly altering the same, enabling the miner to secure an effective and virtually a new tool at small expense.

The invention still further has for its objects to so construct the parts that they will not be liable to injury from the flying coal when the blast takes place, thus enabling the miner to leave the parts in the immediate neighborhood of the blast, instead of taking the said parts to a place of safety, and thus avoid the trouble, labor, and loss of time consequent thereupon.

The above-mentioned objects I accomplish by the means illustrated in the accompanying drawings, in which—

Figure 1 represents a longitudinal sectional view of my device complete; Figs. 2 and 3, detached views of the fastener forming part of the device; Fig. 4, a sectional view of a modification of my improved drill; Fig. 5, a detached view of a drill extension to be used in connection with the device; Fig. 6, detached views of the levers for locking and unlocking the parts of the device; Fig. 7, a side elevation showing a modification of my invention with an extension-bar and connections for drilling at angles, and Fig. 8 a plan view of the extension-bar detached.

The letter A indicates a fastener, which is in the shape of a hollow frustum of a cone, having a series of screw-threads upon a portion of its periphery, as indicated by the letter B. The said fastener is also formed with a series of longitudinal grooves, C, extending throughout the threaded portions, forming knife or cutting edges D on the respective threads similar to those of a screw-tap, so that the fastener may be quickly and easily worked into the coal, threading the same and working into the thread so as to be securely held.

Through the walls of the device are formed apertures D′, which permit the dust cleared by the cutting of the coal to drop through and escape and not choke or pack the threads, which would prevent the fastener from securely taking hold in its seat. The larger end of the fastener is provided with radial slots F, which connect with the segmental slots G, being provided with recesses H for the purpose of locking the parts, in connection with the internally-screw-threaded sleeve I, and suitable locking devices or lugs, K, on the outside of the same. Through the said sleeve extends a screw, L, to which the detachable drill-holder M may be secured. The opposite ends of said screw are squared, and the drill-holder is socketed for the reception of the screw, which is held in place by means of a transverse screw-bolt, N. The drill-holder is also socketed for the reception of the shank of the drill, which is held by a similar transverse screw-bolt.

The letter P indicates a locking-lever provided with radial lugs R, adapted to be secured in the locking-recesses of the fastener, so that the same may be conveniently turned to secure the threaded cutter in the opening in the coal. The letter S indicates an extensible handle, which may be secured to the end of the screw opposite to that carrying the drill, by which the drill may be forced to its work.

In order to provide for the more effective working under certain circumstances a spiral extension, T, may be provided for the screw, which may be attached to one end, so as to

lengthen it, in order to permit the drill to be worked conveniently at various angles.

In the modification shown in Fig. 4 of the drawings the fastener is transversely bored through the larger portion, and on one side, opposite said bore, is provided with a boss having, locking-recesses precisely similar to those on the end of the fastener before mentioned.

In the modification shown in Figs. 7 and 8 the letter U indicates a horizontal extension-bar having locking-lugs at one end similar to those on the threaded sleeve before mentioned, which are adapted to be locked into the locking-recesses in the fastener. The said bar at the opposite end is socketed for the reception of one end of the vertical extension-bar V, which is secured thereto by means of a screw, W. The said bar is provided with a head, A′, which is provided with locking-recesses B′, in which the lugs on the threaded sleeve I, surrounding the screw L, are adapted to lock. The screw in this instance has an elongated spiral drill, as shown.

The operation of my invention will be readily understood from the above description, and is as follows: The lock-lever is inserted in the locking-recesses in the fastener, and the fastener is turned so as to cut into the coal, forming the threads therein and securing itself firmly. The apertures through the walls of the fastener permit the cut particles of the coal removed to escape, thus preventing their packing in the threaded portion which would interfere with the proper attachment of the fastener. When the fastener is properly secured, the lock-lever is withdrawn and the screw-threaded sleeve, with the drill-screw, is locked into the fastener, and the device is ready for work. Upon turning the screw in the proper direction, the drill is worked into the coal, rapidly drilling into the same. When driven to its limit, it may be further driven by reversing the screw, shifting the drill-point, and returning the screw and its sleeve to the fastener and commencing work again.

In the modification shown in Figs. 7 and 8 the horizontal extension-bar is locked in the fastener and the vertical extension-rod secured to the bar, as shown in Fig. 7. The threaded sleeve is then locked in the head at the upper end of said extension-bar, when the device is ready for work in various angular positions, in this case drilling outside of the opening formed by the fastener.

It will be evident from the above that the device is durable and simple in construction, efficient in operation, and so compact and light as to be easily handled and placed in position. It can also be made so cheaply as to bring it within the reach of many miners who cannot afford to buy the expensive machines in ordinary use.

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

1. The fastener for coal-drills, threaded and provided with cutters on the outside, and having apertures leading from the threaded portion to the interior to permit the coal-dust to escape and prevent its packing in the threads, as specified.

2. The combination, with the fastener constructed as described, and provided with radial and segmental slots at one end of the threaded sleeve, provided with lugs constructed to lock in the segmental slots, and the drill-screw constructed to work in the sleeve to operate the drill-tool, substantially as specified.

3. A fastener for coal-drills, provided at its rear end with radial and segmental slots for the reception of a locking-sleeve, and having at one side a boss having similar slots, the slots being for the reception of a detachable screw-threaded sleeve provided with lugs for the purpose, the said sleeve carrying the drill-tool, the whole being arranged in such manner as to permit the drill to be worked longitudinally or at right angles to the fastener, substantially as specified.

4. The combination, with the fastener, the drill-screw, and locking-sleeve, constructed as described, of the horizontal extension-bar, the vertical extension-bar, and their connections, the vertical extension-bar being provided with a head having slots similar to those of the fastener, so that the locking-sleeve may be fastened in either at will, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

his
HENRY J. × RICHARDS.
mark.

Witnesses:
CHAS. D. DAVIS,
W. D. ALEXANDER.