

(No Model.)

S. RAYBOULD.

COMBINED COAL CUTTING AND DRILLING MACHINE.

No. 573,237.

Patented Dec. 15, 1896.

Fig. 1.

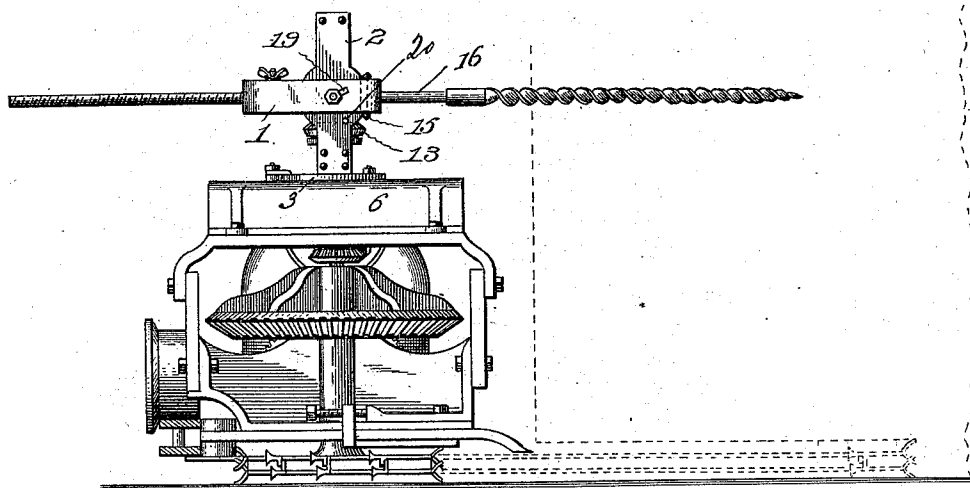


Fig. 2.

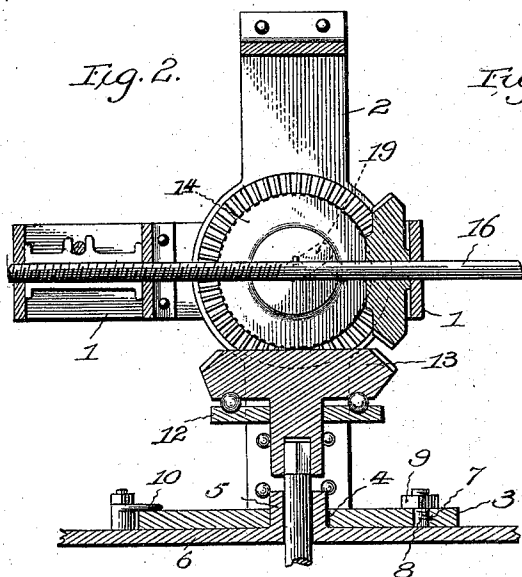
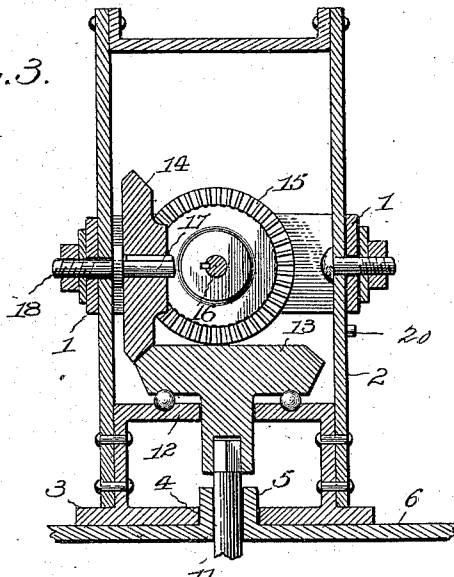


Fig. 3.



WITNESSES: 11

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UNITED STATES PATENT OFFICE,

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COMBINED COAL CUTTING AND DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 573,237, dated December 15, 1896.

Application filed February 24, 1896. Serial No. 580,346. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL RAYBOULD, a citizen of the United States, residing at Nelsonville, in the county of Athens and State of Ohio, have invented certain new and useful Improvements in a Combined Coal Cutting and Drilling Machine; 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 appertains to make and use the same.

The object of my invention is to provide a simple and inexpensive drilling-machine and means for adapting it to a coal-cutting machine, so that the motive power of the cutting-machine may be used for operating the drilling-machine, and thus save the expense of separate power mechanism for operating the drilling-machine.

It is also my aim to make the drilling-machine as light in weight as is consistent with strength, durability, and efficiency in operation, so as to save labor in handling it.

It is further my aim to construct a drill which may be adjusted or turned upon the cutting-machine to any desired position for drilling or cutting a hole.

My invention consists in the construction hereinafter described and claimed.

In the annexed drawings, Figure 1 is a side elevation. Fig. 2 is a vertical sectional view taken on a plane passing through the axis of the drill. Fig. 3 is a vertical sectional view taken on a plane at right angles to that on which Fig. 2 is taken.

In the embodiment of my invention shown the frame for the drill consists mainly of two parts, namely, the drill-frame 1 and the supporting-frame 2. Both frames are substantially rectangular in outline and the drill-frame pivoted to the middle of the sides of the supporting-frame, so as to rock in a vertical plane.

The base of the supporting-frame consists of a circular plate 3, having a central circular orifice 4, which fits over a cylindrical boss 5 on the cap-plate 6 of the motor of a cutting-machine. The base-plate of the supporting-frame is made with a slot 7 on an arc concentric with the center of the base-plate, through which slot passes a bolt 8, fast in the cap-plate, to receive a nut 9, by which the base

and the supporting-frame are secured to the cap-plate. The opposite side of the base-plate may also be held down by a bolt and nut or by a turn-button or clamp 10. The horizontal position of the drill may be varied by releasing the nut 9 and button 10 and turning the supporting-frame in the proper direction. The shaft 11 of the armature of the motor of the cutting-machine protrudes vertically through the boss 5.

Extending between and riveted to the side pieces of the supporting-frame 2 is a plate or bar 12, having a circular orifice directly over the end of the shaft of the armature. The boss of a miter-gear 13 extends through this orifice and has a square hole to fit upon the squared end of the armature-shaft, so that when the armature rotates the gear is rotated with it.

In order that the armature-shaft may be relieved of any downward pressure of the gear 13 and that the latter may run with as little friction as practicable, the gear is supported upon balls which run in a groove on the plate 12, as well as one on the under face of the gear, as shown.

Supported on a stud 17, projecting inwardly from the center of one side of the supporting-frame, is a beveled idler-gear 14, which engages the gear 13 and the beveled gear 15 on and concentric with the axis of the shank of the drill 16. The stud 17 is preferably a prolongation of the bolt 18, by which one side of the drill-frame is secured to the supporting-frame. The bolt 18 passes through inclined slots 19 in the side pieces of the drill and supporting frames, as shown, so that when the slots are aligned the idler-gear 14 may be moved away from and disengaged from the gear 13 and permit the operation of the cutting-machine without operating the drill. A small block placed in one or both of the slots will hold the bolt or stud either in or out of the position of engagement of the idler-gear with the gear or pinion 13.

20 is a stop on frame 2, to be engaged by the frame 1 to prevent the gear 15 from coming in contact with gear 13.

The means for feeding the drill upon the rotation of the gear 15 may be the same as is ordinarily employed in drills for this purpose, and no particular description is needed.

From the foregoing it will be seen that the drill may be swung in a vertical plane to any desirable angle, and as the supporting-frame permits ample adjustment of the drill in a horizontal direction just the proper and most advantageous point for drilling may be selected.

The support for the drill upon the cutting-machine is sufficiently stable without the aid of any appliances for securing the frame to the roof of the mine.

Where the cap-plate of the motor of the cutting-machine is differently constructed from that here shown, or where the armature of the motor is horizontal and not vertical, as here shown, the means for connecting the drill may be varied.

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

1. In combination with a coal-cutting machine, a drill-supporting frame comprising a horizontally-adjustable portion 2 carrying a vertically-arranged idler-gear 14 and a horizontally-arranged driving-gear 13 meshing with each other, the axis of gear 13 being at the axis of frame portion 2 and the said gear 13 adapted to engage and be driven by the power-shaft of the cutting-machine, and a drill-carrying-frame portion 1 pivoted to swing vertically on portion 2 and at the axis of gear 14 thereof and having gear 15 with its axis at right angles to the axis of said portion 1 and meshing with gear 14, substantially as shown and described.

2. In combination with a coal-cutting ma-

chine, a drill-supporting frame comprising a horizontally-adjustable portion 2 carrying a vertically-arranged idler-gear 14 and a horizontally-arranged driving-gear 13 meshing with each other, the axis of gear 13 being at the axis of said frame portion 2 and the said gear 13 adapted to engage and be driven by the power-shaft of the cutting-machine, a drill-carrying-frame portion 1 pivoted to swing vertically on portion 2 and at the axis of gear 14 thereof and having gear 15 with its axis at right angles to the axis of said portion 1 and meshing with gear 14, and a stop 20 on frame portion 2 to be engaged by portion 1 to prevent gear 15 coming in contact with gear 13, substantially as shown and described.

3. In combination with a coal-cutting machine, a drill-supporting frame comprising a horizontally-adjustable portion 2 carrying an idler-gear 14 and a driving-gear 13 adapted to be engaged and driven by the power-shaft of the cutting-machine, a drill-frame 1 pivoted to swing vertically on said frame 2 and having a gear 15 adapted to be driven by the idler-gear 14, said frame 1 having slot 19 to permit the idler-gear 14 to be disengaged from the driving-gear 13, substantially as and for the purpose described.

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

SAMUEL RAYBOULD.

Witnesses:

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JAS. S. RICKETTS.