

A. BLATCHLY.

Improvement in Gearings for Operating Drills.

No. 114,754.

Patented May 16, 1871.

Fig. 1.

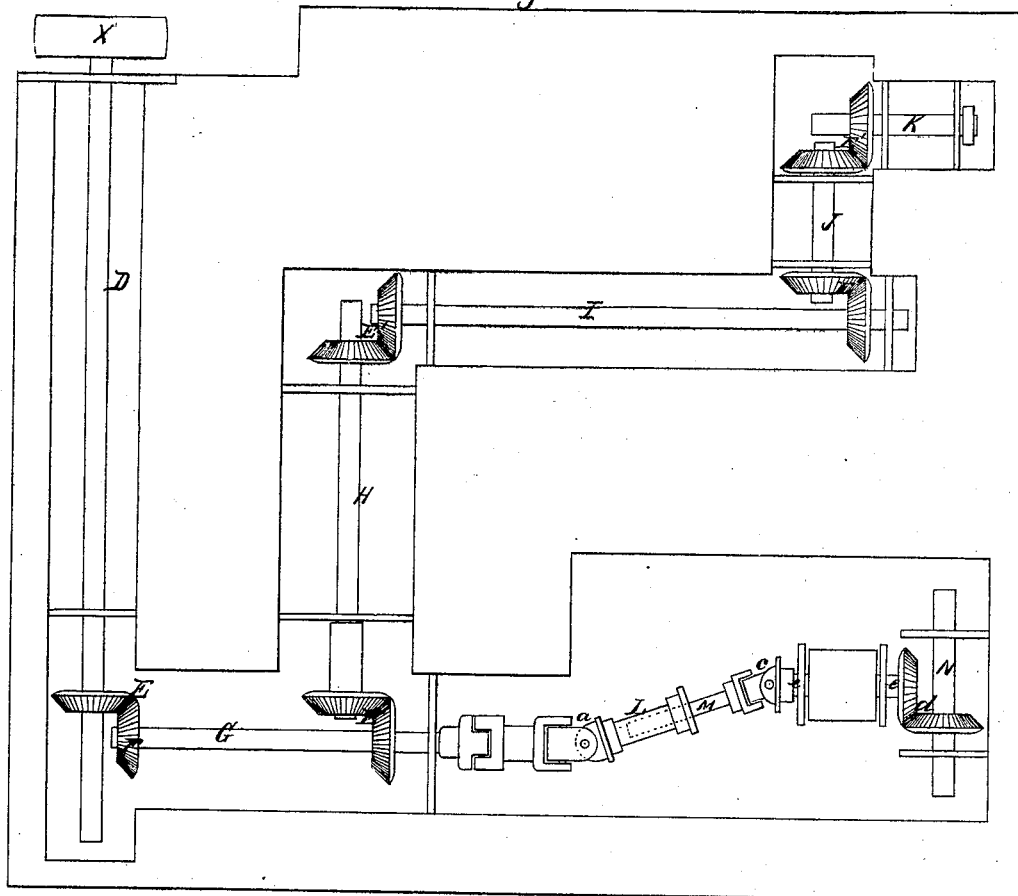
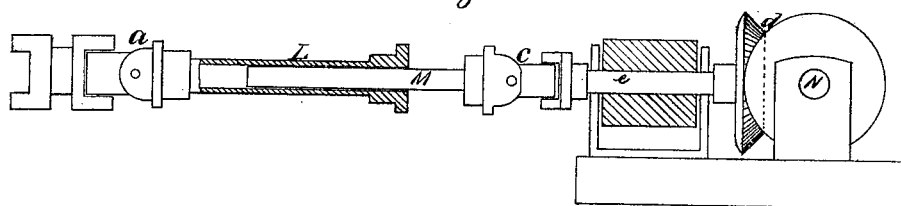


Fig. 2.



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Letters Patent No. 114,754, dated May 16, 1871.

IMPROVEMENT IN GEARING FOR OPERATING DRILLS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, AMBROSE BLATCHLY, of the city and county of San Francisco, State of California, have invented an Improvement in Rock-Drills; and I do hereby declare the following description and accompanying drawing are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

This invention relates to an improvement in devices for applying power to rock-drilling machines, whereby power at the surface (as the hoisting and pumping-engine of a mine) can be applied to operate any number of drills on any level or in any shaft or chamber in the mine.

Previous to my invention power-drills in mines or tunnels were operated by steam or compressed air applied to engines directly attached to the drilling-machines and forming a part of them.

These machines were very expensive and complicated, and could not be run at high rates of speed, owing to the jar and recoil of the drills, which, with the moisture of the mine and sand formed in drilling, soon rendered them inoperative.

Their large size and great weight precluded their use in a confined space like the gallery of an ordinary mine, while their multiplicity of parts and delicacy of construction required a skillful engineer to operate them and an experienced machinist to repair them.

Now, my invention remedies this difficulty by dispensing with the engine attached to the drilling-machine, enabling me to run my machine at a much higher rate of speed and to get the same force of blow with much less weight of drill; and the same penetration in the rock is effected with much less wear of the drill-point when moving rapidly than when moving more slowly.

This high speed enables me to construct the drilling-machines so small and simple that they can be operated in any gallery which a man can enter, and by a miner of ordinary skill.

The comparatively small number of parts which compose them renders them greatly less liable to get out of order, and the cost of repairing is reduced in the same ratio.

Also, in the peculiar construction of a set of sliding bars, operating in combination with pulleys, gears, shafts, and universal joints, to partially adjust the machine.

Also, in the construction of a cross-shaft operating with a similar combination to perfect the adjustment

so that the machine can be operated in all positions and at any angle.

Also, in the arrangement of shafts, gears, and pulleys, so that any required number of drills can be operated simultaneously in different parts of the same mine from one engine or source of power.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 represents a section of a mine with my invention ready for operation.

Figure 2 represents an enlarged view of the set of sliding bars, shafts, universal joints, cross-shaft, and gears.

Similar letters of reference represent corresponding parts.

X is a fast pulley, to which motion is imparted by any convenient power. If gear is preferred it may be used in lieu of this pulley.

D is a shaft that extends into the mine at any desired angle, and by couplings may be extended to any desired length.

By means of a bevel-gear power may be taken from this shaft at any point, as at E, transmitting power to the shaft G, which may be set at any required angle and extended to the desired distance.

Other shafts, as H I J K, may be similarly connected so as to operate any desired number of drilling-machines simultaneously.

Clutches may be arranged so that each drill may be disconnected at will.

In order to set the machine at any angle or to adjust it to any position, or to move it forward when in operation without disconnection, I construct the following devices:

At the end of the shaft G is a universal joint, *a*, which forms the connection between the shaft G and the socket-shaft or bar L.

Within this shaft (the mouth of the socket being of an angular form) slides the angular bar M, of any convenient length.

The bar and opening being of angular or other equivalent form, any rotary motion of the shaft G is transmitted to the bar M.

At the other end of the bar M is another universal joint, *C*, which connects with the driving-shaft *e* of the drilling-machine.

The drill may be one with an annular or one with a percussive movement.

By this combination the drill may be operated in a line with the shaft G or at any angle with it not greater than fifty degrees.

Coupling the bar M by the universal joint O to the cross-shaft N, (which is set at right angles or other convenient angle to the main or driving-shaft e,) the drill can be operated at any angle with the shaft G greater than forty-five degrees, and by these two operations the drill can be operated at any angle and in any position with perfect ease.

I claim—

The combination and arrangement of the pulley X, shaft D, gears E and F, shaft G, coupling and uni-

versal joint a, socket-shaft L, angular bar M, with universal joint c, shaft e, gear d, and cross-shaft N, the whole constructed to operate as described, for the purpose set forth.

In witness that the above-described invention is claimed by me I have hereunto set my hand and seal.

AMBROSE BLATCHLY. [L. s.]

Witnesses:

JNO. L. BOONE,

GEO. H. STRONG.