(No Model.) 2 Sheets—Sheet 1.

G. F. MYERS.

MINING MACHINE.

No. 564,758. Patented July 28, 1896.

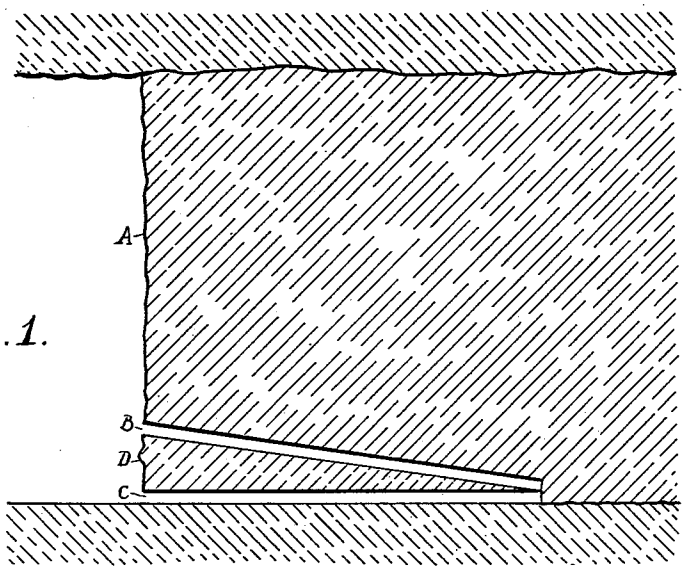

Fig. 1.

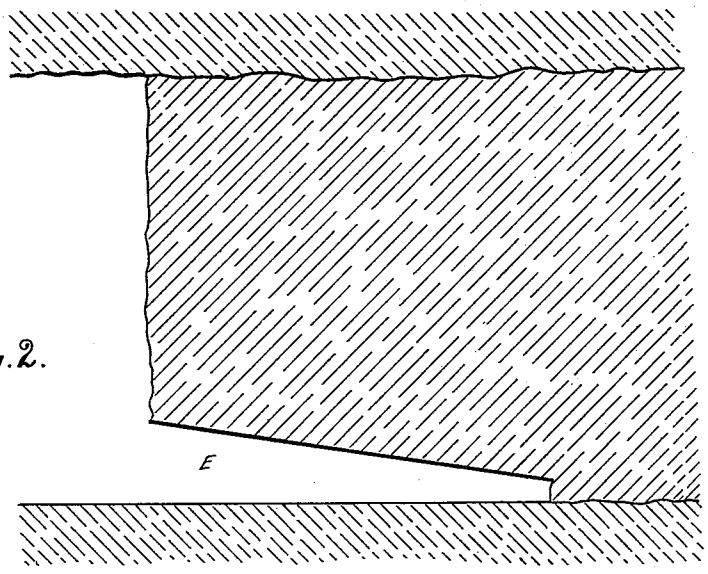

Fig. 2.

WITNESSES

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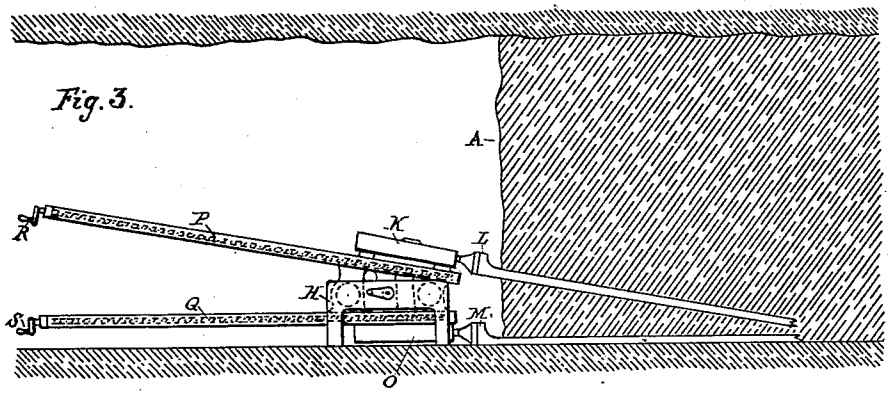
Fig. 3.



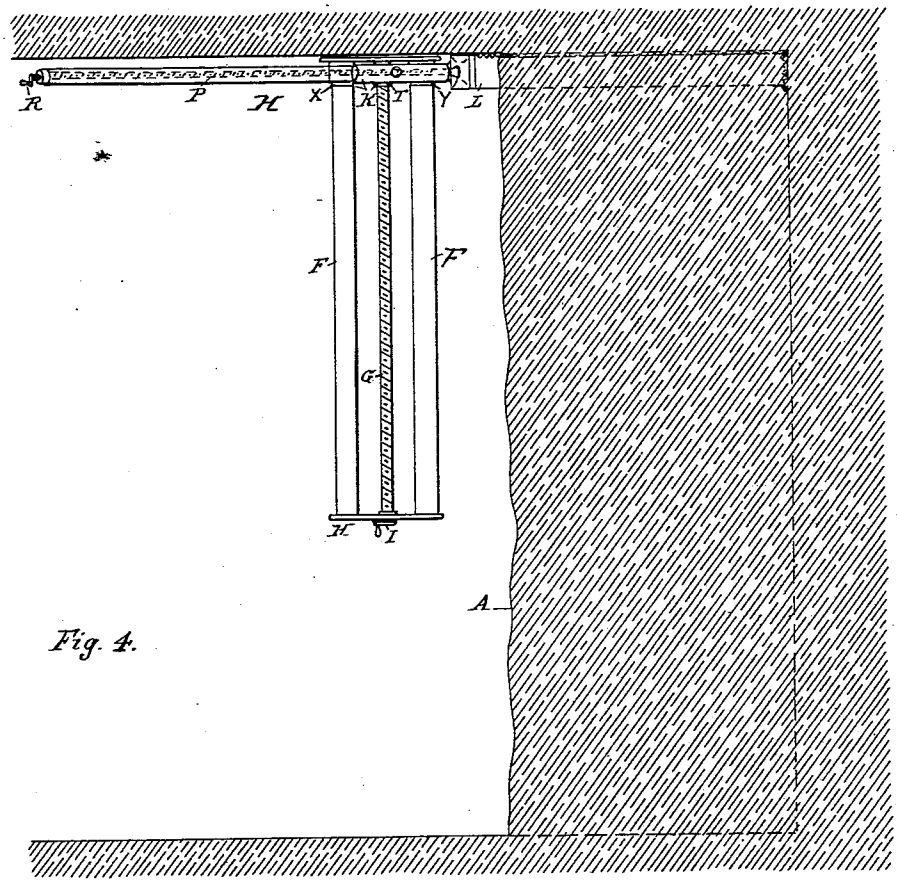


Fig. 4.

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UNITED STATES PATENT OFFICE.

GEORGE FRANCIS MYERS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE AMERICAN MINING MACHINE COMPANY, OF SAME PLACE.

MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 564,758, dated July 28, 1896.

Application filed March 13, 1896. Serial No. 583,117. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FRANCIS MYERS, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in the Mining of Minerals; 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.

My invention has for its object the mining of minerals, as, for instance, coal, its characteristic feature consisting in making, at the base of the drift and simultaneously, two cuts at an angle to each other, so as to permit the removal thereby of an angular or wedge-shaped core constituting the "undercut" essential to the breaking down of the main body portion of the drift above.

In the accompanying drawings, Figure 1 represents a sectional view of a drift of mineral, illustrating the cuts made in accordance with my invention. Fig. 2 represents a like view with the angular or wedge-shaped core removed. Fig. 3 represents a like view and in addition shows my preferred form of apparatus for effecting the desired result; and Fig. 4 represents a plan view of the said apparatus and drift, the apparatus being shown in its final position at the completion of its work.

Similar letters of reference indicate similar parts throughout the several views.

Referring to the drawings, A indicates the face of the drift of the mineral; B, the wedge-shaped or angular core to be removed in accordance with my invention; C, the lower cut, and D the upper cut required for the detachment of said core.

In order to make the two cuts B and C simultaneously in accordance with my invention, I may employ, as shown in Figs. 3 and 4, a machine of the well-known channeling type, wherein reciprocating tools L and M are moved across the room, so as to cut from one rib to the opposite one. As in the ordinary channeling-machine, H represents the end standards, within which are mounted the longitudinal ways or cross-bars F, upon which slide the collars X and Y, to which is fastened the motor framework, carrying two ordinary reciprocating motors O and K. To these motors are attached the cutter-bars L and M, which, as illustrated, may be ordinary channeling-bars provided with teeth on their sides and ends. The motors and bars are moved along the ways F by means of a screw G, operated by the crank I, and the feed perpendicularly to the face A is accomplished by means of the screws P and Q, operated by the cranks R and S, respectively. The crank I may be attached to the other end of the screw G when the frame is at the opposite rib at the commencement of the cutting operation.

The operation of the machine is essentially as follows: The frame of the machine is placed so that one of the end standards H is close against the rib at which the cut is to be started, and the crank I is attached to the opposite end of the screw G. The ends of the two cutter-bars L and M are placed against the face A and close to the rib, the motors K and O being adjusted along the screws P Q appropriately by means of the cranks R and S, respectively. Power being now applied, the channeling-tools L and M are reciprocated by the motors K and O, and are fed forward by means of the screws P and Q into the face A to a certain distance. The screw G is now turned and the motors are forced along the ways F and across the face of the drift, the cutters L and M making longitudinal incisions into the mineral to a distance equal to the extent of their feed by the screw G, *i. e.*, equal to the length of the frame. The motors and channeling-tools may now be brought back to the starting-place and the screws P and Q operated so as to force the channeling-tools into the face A to an additional depth, whereupon by operating the screw G the tools L and M can be, as before, carried along the face of the drift to the extent of the length of the frame, thereby making like longitudinal incisions, which are continuations or deepenings of those first made. This operation may be repeated until the tools reach the required depth, whereupon the whole frame may be moved toward the other rib and the operation repeated for the other half of the drift, resulting in the formation by

the "bearing in" operation of cuts B and C, made simultaneously at an angle to each other, and which, upon the removal of the core D, leave an undercut E, permitting the coal above to be broken down in any suitable manner.

I desire it to be understood that I do not limit myself to any particular kind of motor for operating the channeling-tools, nor to any particular channeling-tool in the general combination, as it will be apparent that equivalents may be substituted for those specifically shown and described without departing from the spirit of my invention.

Having thus described my invention, what I claim is—

1. The herein-described method of bearing in, which consists in cutting a plurality of slits simultaneously, the slits being at an angle one to the other, substantially as described.

2. The herein-described method of bearing in, which consists in cutting one slit on a level with the floor of the mine and one at an angle thereto, both slits being cut simultaneously, substantially as described.

3. The herein-described method of bearing in, which consists in cutting a horizontal slit in the coal or like substance, simultaneously cutting another slit inclined at an angle to said horizontal slit, allowing both slits to practically intersect each other and removing the core left between them; substantially as described.

4. In a mining-machine for undercutting coal or the like, the combination with a suitable frame or support, suitable driving mechanism for driving two sets of cutters arranged to cut at an angle one to the other, and feeding mechanism by which said cutters may be fed into the coal; substantially as described.

5. In a mining-machine for undercutting coal or the like, the combination with a suitable frame or support, of suitable driving mechanism giving reciprocating motion, two sets of channeling-tools placed at an angle one to the other and two sets of feeding mechanisms; substantially as described.

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

GEORGE FRANCIS MYERS.

Witnesses:

J. W. STUART,

I. M. BERRY.