Nov. 27, 1945. J. B. MAVOR 2,389,920

APPARATUS FOR MINING

Filed July 18, 1944 2 Sheets-Sheet 1

Fig. 1

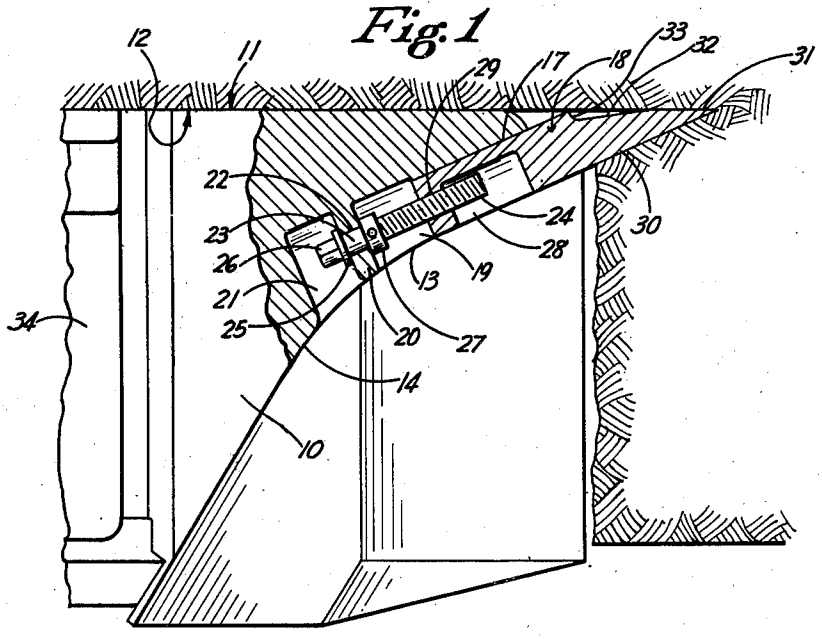
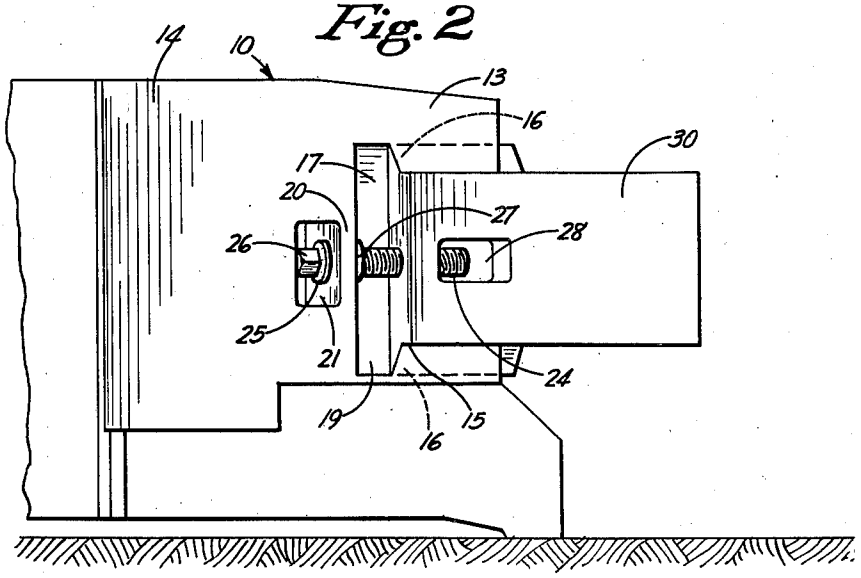


Fig. 2



Inventor

John Bridie Mavor

Harold W. Hawkins

By his Attorney

Nov. 27, 1945. J. B. MAVOR 2,389,920

APPARATUS FOR MINING

Filed July 18, 1944 2 Sheets-Sheet 2

Fig. 3

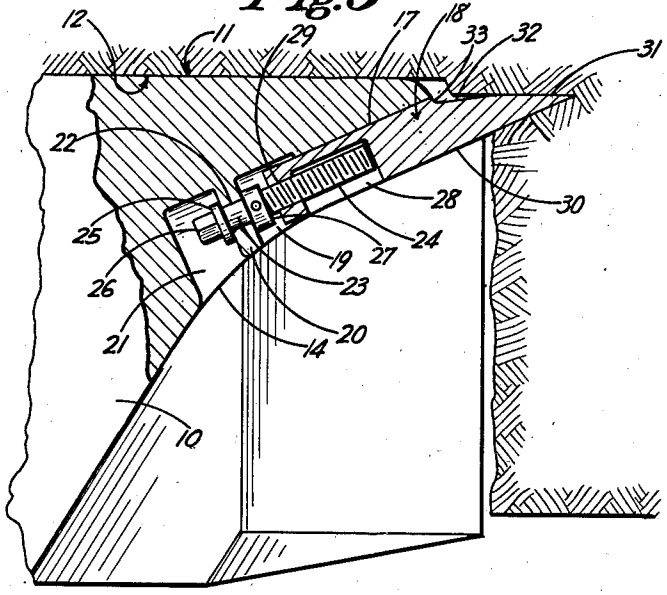


Fig. 4

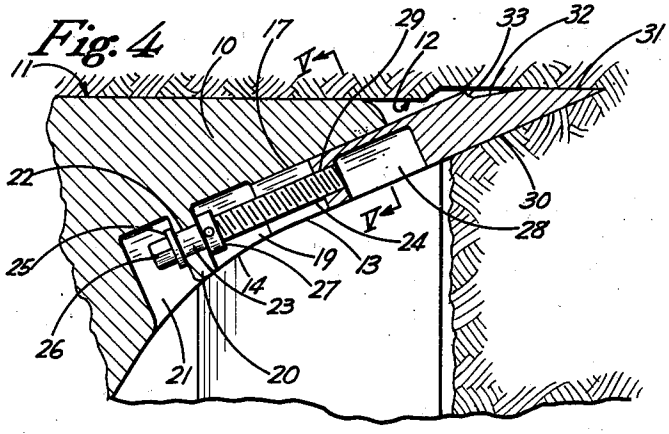
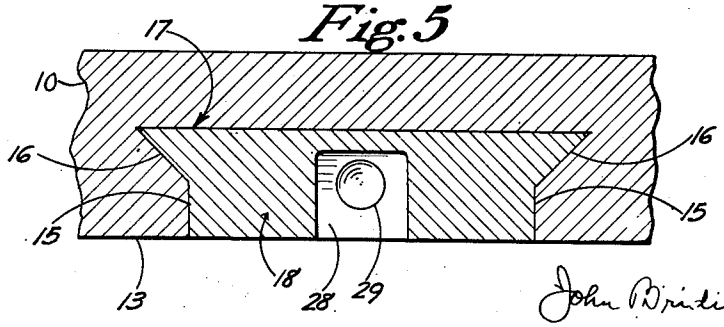


Fig. 5



Inventor

John Bridie Mavor

By Harold W. Hawkins

his Attorney

Patented Nov. 27, 1945 2,389,920

UNITED STATES PATENT OFFICE

2,389,920

APPARATUS FOR MINING

John Bridie Mavor, Glasgow, Scotland, assignor to Joy Manufacturing Company, Franklin, Pa.

Application July 18, 1944, Serial No. 545,431
In Great Britain March 18, 1943

3 Claims. (Cl. 262—8)

This invention relates to a long wall mining machine adapted to sever coal from the seam by direct thrust along the long wall of the seam, such thrust operating with a chiseling or a splitting action. More particularly the invention relates to a splitting head for such a machine.

In certain seams of coal it is difficult to maintain the proper line of cutting along the face of the seam. For instance, the internal structure of the coal may cause the splitting head to have a tendency, when thrust into the coal, to be deflected from the proper line which generally is parallel with the coal face.

An object of the present invention is to provide a splitting head so constructed as to counter such tendency to deflection, and thus to provide means for adjusting and controlling the line of cutting.

A second important object of the invention is to provide a cutting blade, carried by the head, movable in the head in a direction oblique to the normal line of shearing, the adjustment being such that the cutting blade may coincide with that line, project laterally across the line, or be withdrawn from said line.

With the above and other objects in view the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly claimed.

In the accompanying drawings, Fig. 1 is a plan view of the improved shearing head, the view being partly in section; Fig. 2 is a side elevation thereof; Fig. 3 is a view similar to Fig. 1 but with the cutting blade withdrawn from the normal line of operation; Fig. 4 is a view similar to Fig. 1 but with the cutting blade projecting over the normal line of operation; and Fig. 5 is an enlarged fragmentary section on the line V—V of Fig. 4.

In the embodiment of the invention as herein shown there is a cutting head 10 having a face 11 adapted to rest against the long wall or face of a seam 12. The head is tapered so that its opposite side 13 is substantially at an acute angle to the face 11 at its forward part, although rearwardly of this acute angle portion the head is curved outwardly as at 14 so that material passing over the face 13 will be moved laterally upon contact with the face portion 14. The purpose of this is to deliver the sheared off coal away from the face of the seam 12. In the face portion 13 of the head there is formed a slot having parallel upper and lower walls 15 (Figs. 2 and 5) connected by diverging walls 16 to the inner wall 17 which is parallel to the face 13. In this dove-tail slot is fitted a chisel-like cutter or tip indicated in general at 18 in Fig. 1. This cutter is shaped to fit in the slot so that it can slide horizontally therein. The rear end 19 of the slot is enlarged slightly, and behind it the head is provided with a recess 21 separated from the slot by a rib 20. This rib is provided with a bearing opening 22 wherein is journaled the cylindrical portion 23 of a screw 24. A polygonal head 26 is rigidly mounted on the rear end of the screw so that it can be turned, and the inner end of the head is provided with a flange 25 bearing against rib 20. At the forward side of the rib there is a collar 27 which is secured to the screw so that the screw can not move longitudinally.

The cutter 18 is recessed at 28, and the rear wall of this recess is provided with a screw threaded opening 29 which receives the screw 24. It will now be obvious that rotation of the screw will cause the front end of the cutter 18 to move in or out of the slot in the head. One face of the cutter 18 forms, as at 30, a continuation of the face 13 of the head. Meeting the face 30 at an acute angle at the forward end of the cutter is a face 31 which in all positions of the cutter is parallel to the face 11 of the head. Extending rearwardly from the rear end of the face 31 is a face 32 which forms an obtuse angle with face 31 and with the rear end of face 32 merging into a curved face 33. Thus, clearance is provided at the rear end of the chisel edge of the cutter.

In order to move the head and the cutter 18 forwardly, this head is mounted on a suitable mechanism including a hydraulic ram 34 which is here shown only fragmentarily since I have disclosed in copending applications, such as Serial Number 545,435, filed July 18, 1944, the use of such a ram for moving a wedging cutter head forwardly.

In Fig. 1 is shown the normal operational position of this apparatus wherein there is no tendency for the face 11 of the head to move away from or into the long wall of the coal seam 12. In other words the tendency with the arrangement of Fig. 1 is one in which the thrust on the front end of the cutter is such as to maintain equilibrium so far as regards any tendency of the cutting edge of the cutter to move inwardly or outwardly.

In the event that the head tends to cut too deeply into the coal the cutter 18 is withdrawn to the position shown in Fig. 3, or such other

position as will overcome this tendency, by turning screw 24. On the other hand, if the head tends to swing away from the face of the seam 12 the cutter is moved into some such position as shown in Fig. 4. In the position shown in Fig. 3 it will be observed that the thrust on the front end of the cutter will tend to move face 11 of the head away from wall 12 and thus counteract the digging-in tendency, while in Fig. 4 the thrust on the cutter will tend to swing the head into the wall.

I claim:

1. In a long wall mining machine having a wedge shaped head provided with a wall-engaging side face and a wedging face inclined to said side face, a cutter tip mounted on said inclined face, and means to adjust the tip along said inclined face longitudinally thereof to position its front end on either side of said side face.

2. In a long wall mining machine, a wedge shaped head having a wall-engaging side face and a face inclined to said side face and provided with a guide slot having a vertical rib at its rear end, a cutter tip slidable in the guide slot, and a threaded stem screwed into and extending rearwardly from said tip through said rib, and held against longitudinal movement in the rib, said tip having its forward edge bevelled to form a cutting edge movable by said stem to positions on either side of said side face.

3. In a long wall mining machine, a wedge shaped head movable in a straight line and having one side adapted to bear flat against the long wall of a mine drift with its other side extending at an acute angle rearwardly from the first-mentioned side, a slot formed in the last-mentioned side and extending rearwardly from the front end thereof, a cutter tip slidably mounted in said slot for adjustment longitudinally thereof and having its front end provided with sides normally disposed in the planes of said sides of the head, and means to adjust said cutter longitudinally of said slot so that said side of the cutter in the plane of said one side of the head may be moved out of said plane and into a position on either side thereof, whereby to keep said head moving parallel to said long wall.

JOHN BRIDIE MAVOR.