Jan. 1, 1952 J. B. MAVOR 2,580.569

MINING MACHINE

Filed May 8, 1945 2 SHEETS—SHEET 1

Fig. 6

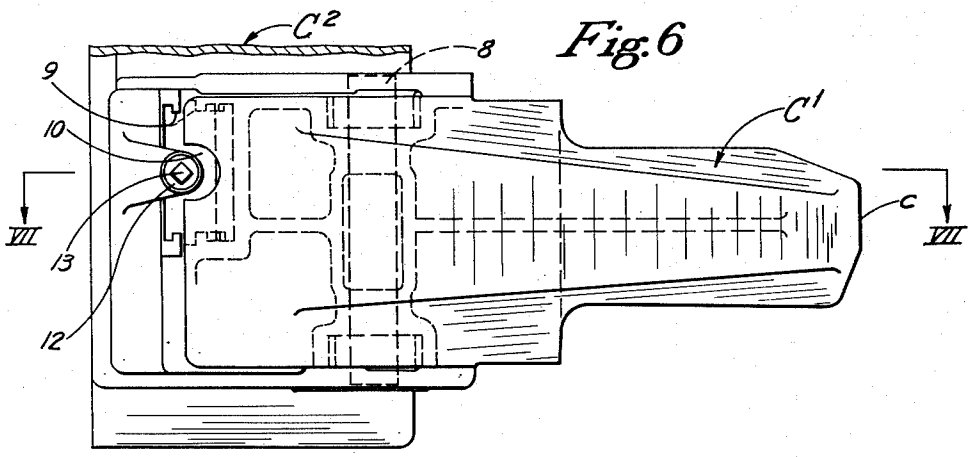


Fig. 7

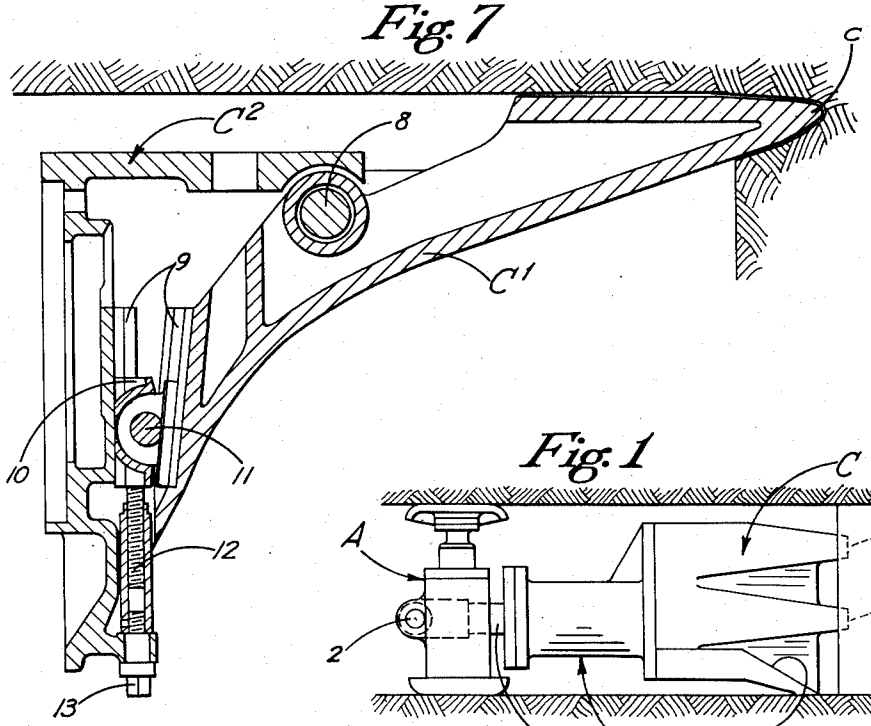


Fig. 1

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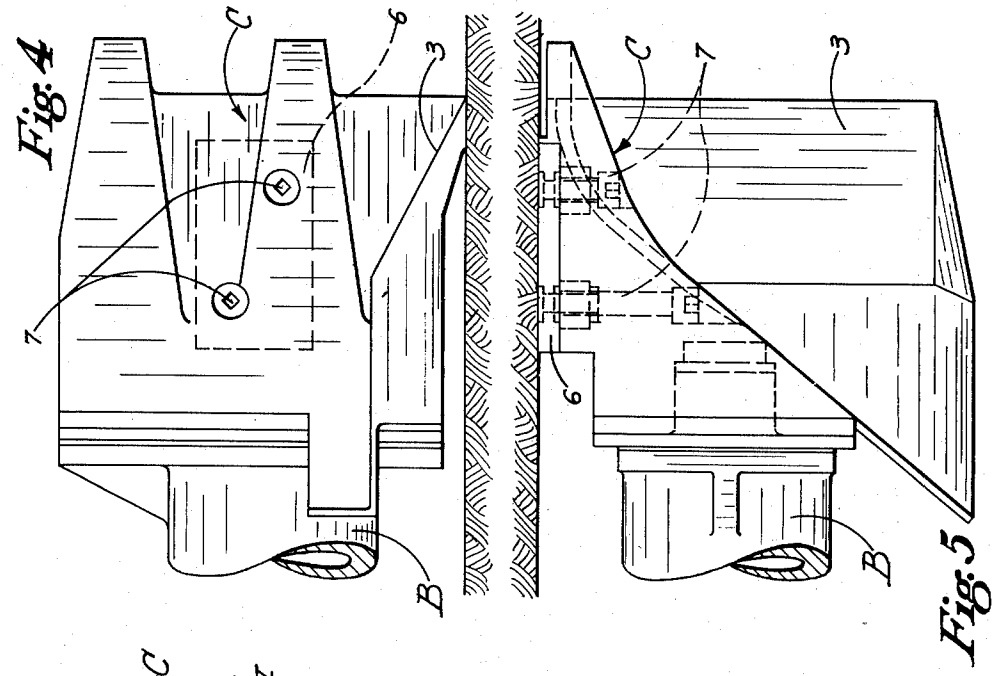


Fig. 4

Fig. 5

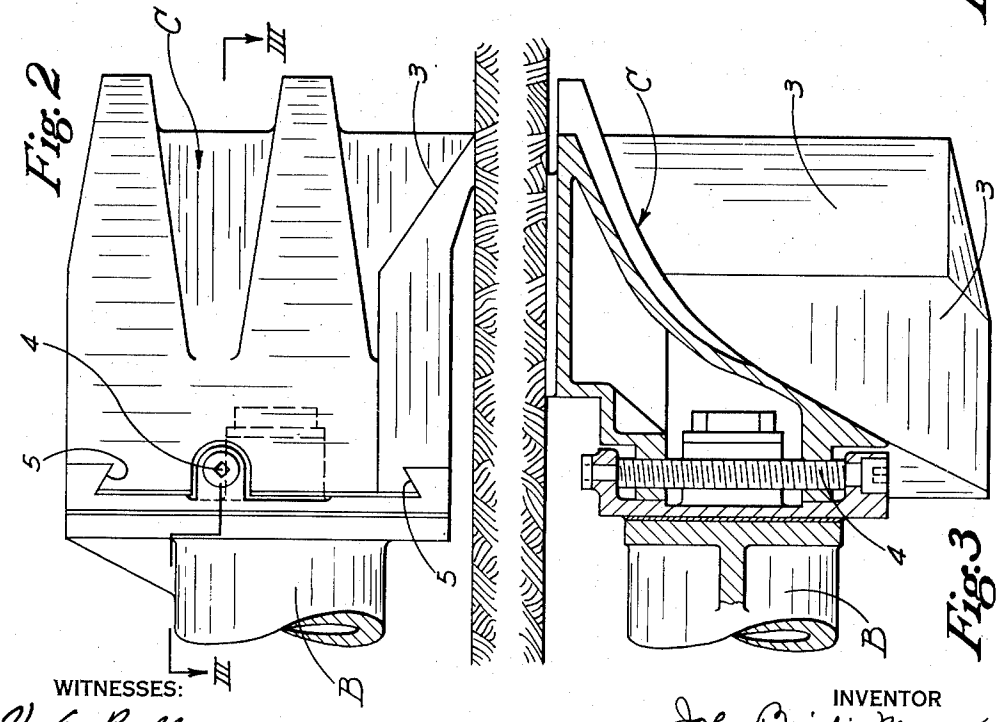


Fig. 2

Fig. 3

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Patented Jan. 1, 1952 2,580,569

UNITED STATES PATENT OFFICE

2,580,569

MINING MACHINE

John Bridie Mavor, Glasgow, Scotland, assignor, by mesne assignments, to Mavor and Coulson, Limited, Glasgow, Scotland, a British corporation

Application May 8, 1945, Serial No. 592,557
In Great Britain November 20, 1943

1 Claim. (Cl. 262—8)

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A machine has been proposed for mining coal such that cutting of the coal at the coal face is effected by a direct shearing action, the machine comprising one or more power operated rams with a shearing head or heads of wedge-like form adapted to be thrust by the ram directly into the coal to shear it away. A modification of this mining machine comprises, in association with the wedge-like head or heads, a cutter of cutter-chain or cutter disc type which moves bodily with the head or heads but in advance thereof so as to make a more or less vertical longitudinal incision in the coal into which incision the head enters and splits the coal from the seam, see the specification of my co-pending application for United States Patent Serial No. 545,432, now matured into Patent No. 2,420,755, granted May 20, 1947.

The present invention refers to mining machines having a wedge-like head (or heads) as above described.

Assuming it to be desired that the machine should cut in a straight line, there may be a tendency for the cut to deviate from the desired line, especially as a result of the internal formation of the coal in the seam, and it is desirable to make provision for counter-acting said tendency.

According to this invention, a mining machine having a wedge-like head (or heads) is characterised by its having provision for varying the position or attitude of the head, or part of the head, relative to the ram.

In carrying the invention into practice, the head as a whole may be made capable of adjustment laterally relative to the ram.

In another construction, the head as a whole is made capable of adjustment angularly about a normally vertical or approximately vertical axis relative to the ram.

In still another construction, the head has a part which is adjustable laterally relative to the rest of the head so as to vary the action of the head with respect to the coal.

Some examples of construction will now be described with reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic side view illustrating a mining machine in accordance with the invention,

Figure 2 is a side elevation and Figure 3 is a sectional plan view of the head taken on the line III—III of Fig. 2 illustrating the head of the machine according to a first example of construction,

Figure 4 is a side view and Figure 5 is a plan

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view illustrating the head according to another example of construction, and

Figure 6 is a side elevation and Figure 7 is a sectional plan view of the head taken on the line VII—VII of Fig. 6 and illustrating the head according to still another example of construction.

The machine illustrated in Figure 1 is of the general form illustrated in the United States Patent application Serial No. 545,432 above referred to, but somewhat simplified. It comprises a jack element A, a main body B, and a head C. The body B incorporates a hydraulic cylinder from which the piston rod 1 extends rearwardly, being connected by a pivot pin 2 to the jack element A. The head C rests on the floor and moves with the main body B. It has two prongs and a scoop or shovel 3. Its apex edge is at *c*. In operation the jack element A is jammed between the roof and the floor, the jack element being hydraulic. Initially the ram is in its retracted position, i. e. with the body B close in front of the jack element. Pressure is admitted to the cylinder of the ram and this drives forward the body B, and the head C which splits off the coal. When the ram has reached the limit of its stroke, the jack element is released and pressure is admitted to the other end of the cylinder. The weight of the body B and head C hold these stationary and the jack element is drawn forward until it is close behind the body B. The jack is then jammed in position again and a further stroke made, and so on, all as explained in application Ser. No. 545,432.

Referring to Figures 2 and 3, these show the head as a whole made capable of adjustment laterally relative to body B. For this purpose the head is carried on the body B in dovetail guides 5, see Figure 2, with a horizontal screw- threaded spindle 4 journalled in lugs on the body and in screw engagement with the head. By turning the spindle 4 the lateral position of the head is adjusted bodily. The spindle 4 has one end formed to receive a spanner for turning the spindle.

Referring to Figures 4 and 5, in this case the head C has a face piece 6, this face piece 6 being in the form of a rectangular plate which is secured to the main portion of the head by means of two screw-threaded spindles 7, each of which is made to receive a spanner or the like at one end. By turning the spindles the face piece 6 can be moved towards or away from the side of the main portion of the head. The face piece bears on the solid coal at the side of the machine as the machine advances.

Referring now to Figures 6 and 7, the head in this case is made up of two parts C^1 and C^2, the part C^2 being rigidly fixed to the body B and the part C^1 being pivoted to the part C^2 by means of a vertical pivot pin 8. For varying the angularity of the two parts C^1 and C^2, there are two inclined guides 9, one on the part C^1 and the other on the part C^2. A slide 10 engages with these guides 9, the slide comprising two parts pivoted together by a vertical pivot pin 11. A screw spindle 12, carried by the part C^2 is screwed into the slide 10 and has a head 13 whereby it can be rotated. The slide 10 is thus moved transversely in the guides 9 and causes angular movement of the part C^1 relative to the part C^2.

It will be evident that in contrast with adjustments of plow edges or cutters which are primarily longitudinal of the face, i. e., analogous to the adjustments of the bits of wood planes, in the embodiments of the present invention the apex edges of the members C and C' are movable in directions at least substantially normal to the face to vary the lateral location of such apex edges, thereby to vary the lateral splitting action of such members with respect to the coal.

I claim:

In a mining machine movable over the floor of a mine in a direction substantially parallel to the face of a coal seam, a first member, a wedge-like member pivotally mounted on said first member on a substantially vertical axis and having a forward wedge portion adapted to engage and bear against the coal face and having its

penetrating edge substantially vertical and located at the face side of the machine and engaging the solid coal in advance of the face for splitting the solid coal along substantially vertical lines of substantial vertical extent and in the direction of machine-movement, means for feeding said first member forward to force said penetrating edge into the coal, and adjusting means co-acting with said second member at a point on the latter at the opposite side, with respect to said pivot, from said edge, for swinging said second member in a substantially horizontal direction on its pivot to adjust said face-engaging wedge portion and said penetrating edge laterally while said penetrating edge remains substantially vertical to vary the lateral splitting action with respect to the coal.

JOHN BRIDIE MAVOR.

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