

[54] MINERAL MINING INSTALLATIONS

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[56] **References Cited**

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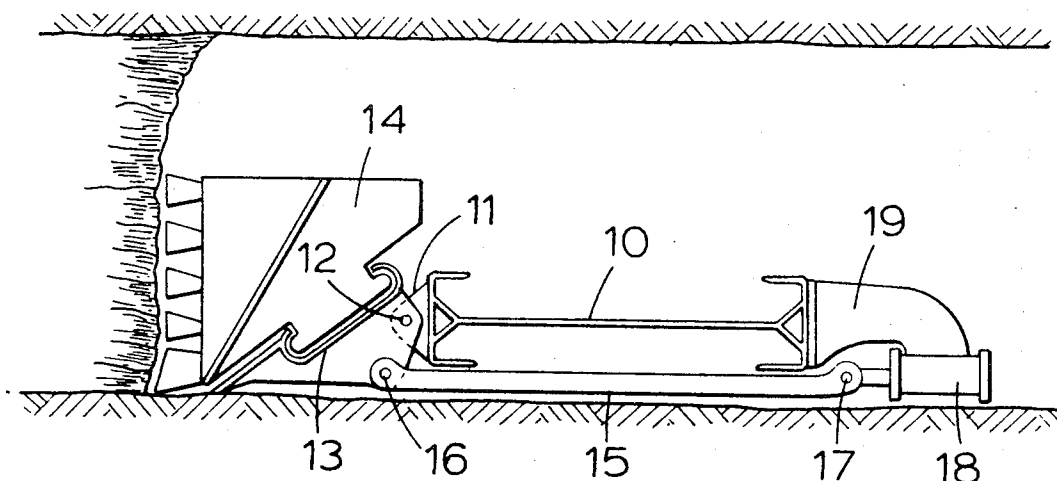
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[57] **ABSTRACT**

A mining installation is composed of a longwall con-

veyor having a plough guide member pivotably attached to its mineral face side by way of plates or the like. A floor rail or a series of control beams is disposed beneath the conveyor and is used to pivot the guide member about an axis extending parallel to the longitudinal axis of the conveyor in order to control the position of the plough moved along the guide member. A piston and cylinder unit disposed at the goaf side of the conveyor can be used to move each control beam relative to the conveyor. Alternatively a shifting ram normally used to advance the conveyor can be used to move each control beam, and in this case L-shaped rails can be attached to the goaf side of the conveyor. Each rail has a bore alignable with one of a series of bores in the associated control beam. A push-in bolt can lock the rail to the beam so that the normal advancement of the conveyor can take place by operation of the shifting ram. In another construction the floor rail is attached to the cylinder of a piston and cylinder unit and the piston rod of the unit is connected to the goaf side of the conveyor. A telescopic prop is used to clamp the cylinder of the unit so that pivoting of the guide member can be effected through lateral movement of the conveyor.

8 Claims, 3 Drawing Figures



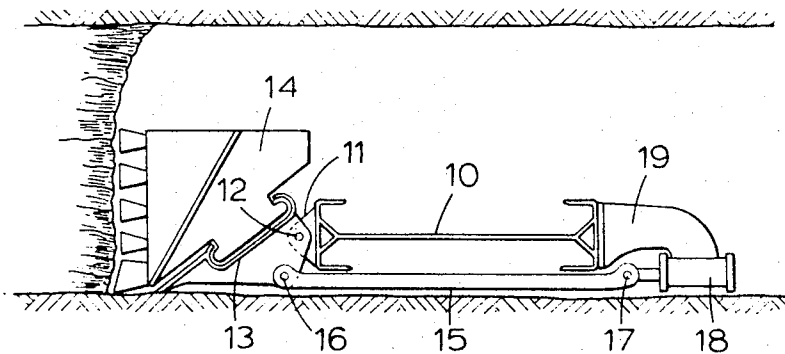


Fig. 1

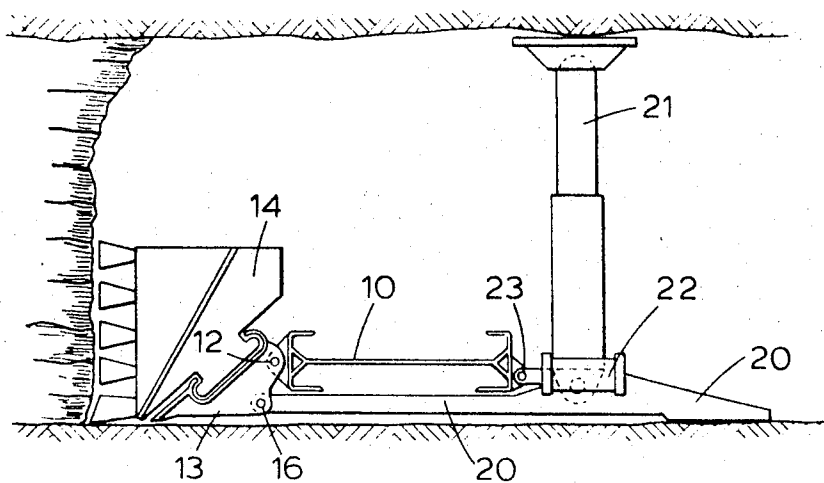


Fig. 2

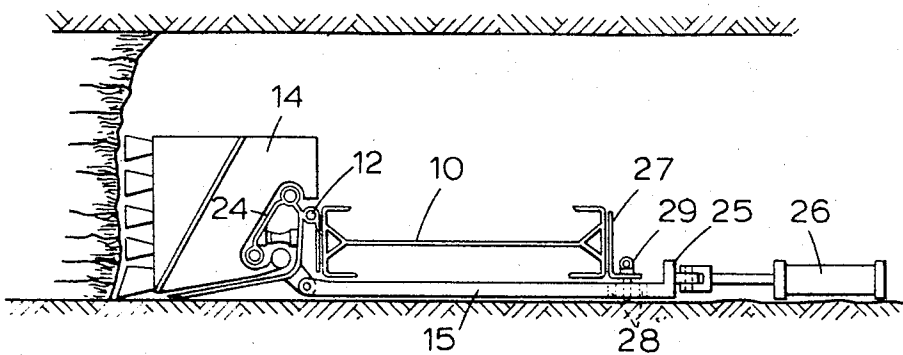


Fig. 3

MINERAL MINING INSTALLATIONS

BACKGROUND TO THE INVENTION

The present invention relates to mineral mining installations.

Installations are known in which a plough is attached to a sword plate extending under a conveyor and a shifting ram is disposed on the goaf side of the conveyor. In order to control the position of the plough, the conveyor is raised or lowered to a certain degree.

In the winning of mineral, more particularly coal, in steep ground a conveyor is usually not used. In these circumstances it is known to move a plough guide member by means of two separate piston and cylinder units. The units are arranged so that the position of the plough can be controlled by tilting the guide member by conveying the appropriate amounts of pressure fluid to the units.

With regard to the foregoing, a general object of this invention is to provide an improved mining installation.

SUMMARY OF THE INVENTION

According to the invention there is provided a mineral mining installation comprising a conveyor and a guide member for guiding a plough along the conveyor, the guide member being connected to the conveyor so as to be pivotable about an axis extending substantially parallel to the longitudinal axis of the conveyor.

Preferably the guide member can be fixed into various pivotable positions in relation to the conveyor.

Further according to the invention there is provided at least one control beam extending transversely beneath the conveyor. This beam can be articulated to the plough guide member and adjustable transversely of the conveyor from the goaf side by appropriate moving means. This moving means can be a piston and cylinder unit, a shifting ram or a threaded spindle.

In one construction a piston and cylinder unit has its piston rod pivotably connected to the beam and its cylinder rigidly connected to the conveyor.

In another construction a shifting ram has its piston rod articulated to the beam at the goaf side and there is further provided means for selectively securing the beam to the conveyor so that the shifting ram can move both the conveyor and the beam.

If the securing means is removed, the plough guide member can be pivoted in relation to the conveyor by charging the ram in its pushing or pulling direction. When the desired position of the plough guide member is reached, the securing means is replaced so that the control beam is made fast again in relation to the conveyor. If the shifting ram is then actuated, this results in advancement of the conveyor, and the plough guide member retains its setting in relation to the conveyor.

The control beam can be provided with a row of bores staggered in relation to one another. A rail with a bore can be arranged on the goaf side of the conveyor, then this bore can be brought into coincidence with one of the bores in the control beam and this setting can be secured by insertion of a push-in bolt constituting the securing means. Each bore in a control beam can thus correspond to one specific position of the plough guide member.

The securing means can also be formed in any other way without departing from the scope of the invention.

In an alternative construction a floor rail extends beneath the conveyor, and is pivotably connected to the

guide member, there being further provided means for moving the conveyor relative to the floor rail to pivot the guide member.

The moving means can be a piston and cylinder unit and there can be further provided a telescopic prop for clamping the floor rail in position. The unit can have its piston rod linked to the conveyor and its cylinder connected to the floor rail and the prop. In this case when the rail is clamped the pivoting of the guide member is accomplished by the piston and cylinder unit acting on the conveyor, which is free to move laterally.

The invention may be understood more readily and various other features of the invention may become more apparent from consideration of the following description.

BRIEF DESCRIPTION OF DRAWINGS

Embodiments of the invention will now be described, by way of examples only, with reference to the accompanying drawings, wherein:

FIG. 1 is a diagrammatic cross-sectional view of a mineral mining installation made in accordance with the invention;

FIG. 2 is a diagrammatic cross-sectional view of another mineral mining installation made in accordance with the invention; and

FIG. 3 is a diagrammatic cross-sectional view of a further mineral mining installation made in accordance with the invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring initially to FIG. 1 there is shown a mining installation with a longwall conveyor 10. On the mineral face side of the conveyor 10 apertured plates 11 are attached to the side of the conveyor 10. A guide member 13 is pivotably connected to the plates 11 by means of pins 12 which extend parallel to the longitudinal axis of the conveyor and which are received in aligned apertures in the plates 11 and the member 13. The guide member 13 slidably supports a plough 14 moved back and forth along the member 13 to win mineral from the face in known manner. The plough 14 has a projection which is received in a shaped-locked fashion in a corresponding shaped recess in the member 13. The plough 14 can be brought into different operating positions by tilting the guide member 13 about the axes of the pins 12.

The position of the plough 14 is controlled by means of beams 15 which are pivotably connected to the guide member 13 with the aid of pins 16 located in aligned apertures in the ends of the beams 15 and in the guide member 13. The beams 15 extend beneath the conveyor 10 and each beam 15 has its goaf-side end pivotably connected to the piston rod of a piston and cylinder unit 18 by an articulated joint 17. The units 18 have their cylinders rigidly affixed to the goaf-side of the conveyor 10 with the aid of shaped retaining elements 19. By controlling the hydraulic fluid supplied to the units 18 the guide member 13 can be tilted to a certain extent to determine the operating position of the plough 14.

In the embodiment depicted in FIG. 2, like reference numerals are used to denote like parts to those of the construction shown in FIG. 1. In the FIG. 2 construction the guide member 13 for the plough 14 is again pivotably connected to the plates 11 by way of pins 12. The member 13 is pivotably connected to at least one

floor rail 20 by means of a pin 16. The rail 20 has its goaf-side end resting on the floor of the working, and a hydraulically operated telescopic prop 21 is used to hold the rail 20 rigidly in position when desired. A piston and cylinder unit 22 has its cylinder affixed to the rail 20 and its piston rod articulated to the goaf side of the conveyor 10 through a joint 23. In contrast to the FIG. 1 construction, by setting the prop 21 and controlling the hydraulic fluid supplied to the unit 22 the conveyor 10 can act on the guide member 13 to tilt the latter about the axis of the pin 16 and thereby control the position of the plough 14.

Again in the embodiment represented in FIG. 3, like reference numerals denote like parts to those shown in FIGS. 1 and 2. In the FIG. 3 embodiment the plough 14 is slidably supported on a guide member 24 of somewhat different form. In contrast to FIGS. 1 and 2, the plough 14 has a shaped recess which receives the main part of the member 24 in shape locked fashion. The member 24 is connected to the mineral face side of the conveyor 10 by means of a joint pin 12 extending parallel to the longitudinal axis of the conveyor 10 and engaging one or more plates secured to the conveyor. The member 24 has an extension which inclines towards the mineral face and which can rest upon the floor as shown in the drawings.

The member 24 is, as in the FIG. 1 construction, connected to the beams 15 extending beneath the conveyor 10 by means of pivotable linkages. The goaf side end of each beam 15 has an upright portion 25 to which the piston rod of a shifting ram 26 is connected. L-shaped rails 27 are clamped to the goaf-side of the conveyor 10. Each rail 27 has a row of bores in its horizontal limb extending longitudinally of the conveyor 10. The beams 15 are each provided with a series of corresponding bores 28 extending laterally of the conveyor 10. One of the bores 28 in each beam 15 can be brought into coincidence with one of the bores in the associated rail 27 and a retention bolt 29 inserted therethrough. When the rails 27 are secured to the beams 15, the operation of the rams 26 will shift the conveyor 10, the guide member 24 and the plough 14 whenever advancement is required. To alter the position of the plough 14 the bolts 29 are withdrawn. Now operation of the ram 26 will not affect the conveyor 10, and instead the beams 15 will tilt the plough guide member 24. When the desired position for the plough has been reached, the bolts 29 are replaced into fresh bores in the beams 15 and the rails 27.

We claim

1. A mineral mining installation comprising:
 - a. a conveyor;
 - b. a guide member disposed alongside the conveyor and pivoted thereto;
 - c. a plough guided for movement along the guide member;
 - d. at least one beam pivoted to the guide member, said beam extending beneath the conveyor; and
 - e. a first means operatively connected to said beam

for adjusting the position thereof and thereby the angular position of said guide member relative to said conveyor.

2. A mineral mining installation according to claim 1 including means for connecting said beam to said conveyor whereby operation of said first means result in displacement of said conveyor and guide member with the angular relationship between the two said parts maintained constant.

3. A mineral mining installation according to claim 1, wherein said first means comprises a piston and cylinder.

4. A mineral mining installation according to claim 3 wherein the cylinder of said piston and cylinder means is connected to said conveyor and the piston to said beam.

5. A mineral mining installation according to claim 3 wherein the cylinder of said piston and cylinder means is connected to said beam and the piston said conveyor.

6. A mineral mining installation according to claim 5, wherein said means for interconnecting said conveyor and beam are adapted to secure said guide member in a plurality of angular positions relative to said conveyor.

7. A mineral mining installation comprising:

- a. a conveyor;
- b. a guide member disposed alongside the conveyor;
- c. means connecting said guide members to said conveyor for pivoted adjustment of the former relative to the latter about an axis extending longitudinally of the conveyor;
- d. at least one beam extending rearwardly from said guide member;
- e. a single piston and cylinder means connected to said beam for displacing the same in the forward and rearward directions;
- f. and means releasably interconnecting said conveyor and beam.

8. A mineral mining installation comprising:

- a. a conveyor;
- b. a guide member for a plough pivoted to the face side of said conveyor;
- c. a beam extending beneath said conveyor and being pivoted to the guide member;
- d. a part secured to the goaf side of said conveyor and having therein a hole for reception of a retention member, said beam having therein a plurality of holes each of which is alignable with the hole in the said part in a particular angular position of said guide member relative to said conveyor, and means for advancing said beam, whereby when said means is actuated with said retention member securing said beam and conveyor together, said conveyor and guide member are caused to advance, and when said means is actuated with said retention member removed, said guide member is adjusted angularly relative to said conveyor.

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