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Rassmann et al.

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[54] PLOUGH DRIVE UNIT FOR LONGWALL MINING

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[52] **U.S. Cl.** **299/34**

[51] **Int. Cl.** **E21c 27/35**

[58] **Field of Search** 299/32, 34, 43

[56] **References Cited**

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[57] **ABSTRACT**

A mineral mining installation with a scraper chain conveyor guiding a plough alongside a mineral face. The conveyor has a drive station at one end having a frame with side wall members accommodating a drive drum for the chains of the conveyor. The side wall members are received between apertured vertical webs forming part of a further frame supporting the plough drive means. The side wall members and the webs are detachably interconnected with bolts. The further frame is generally L-shaped with a vertical wall adjoining the webs and a horizontal wall bearing the plough drive means and being slidably guided on a bracing beam.

5 Claims, 2 Drawing Figures

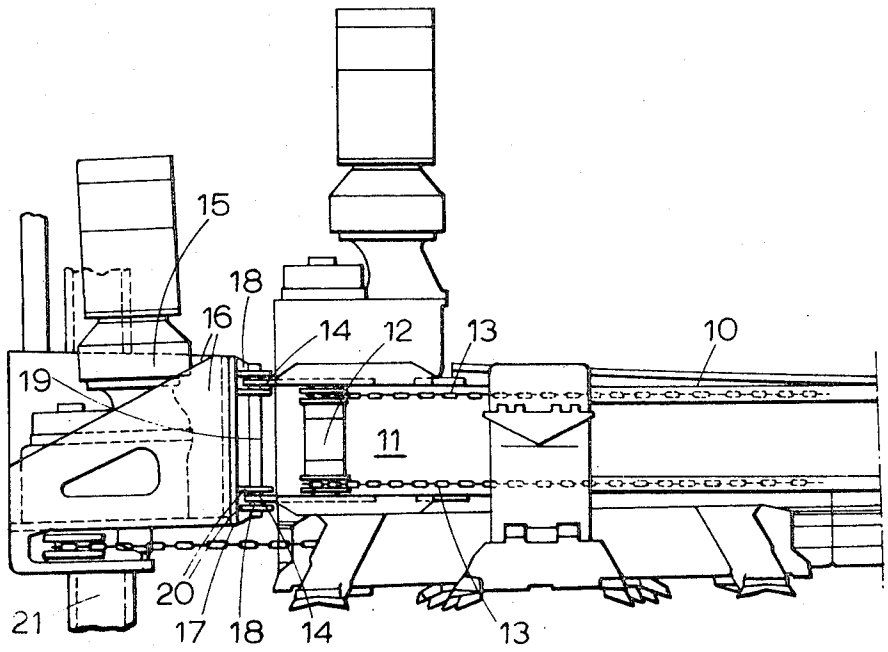


FIG. 1.

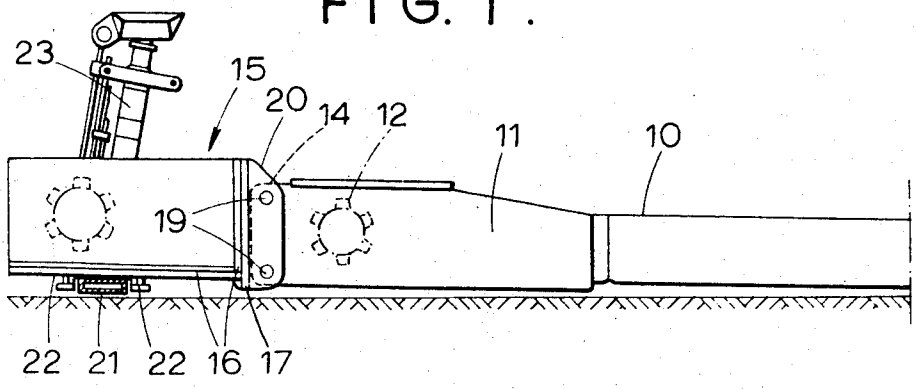
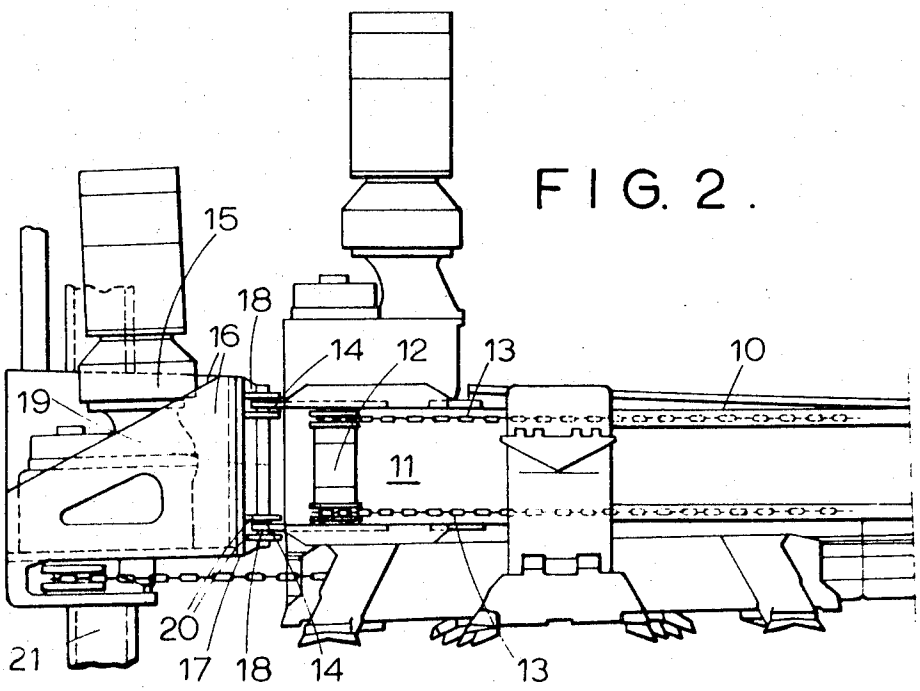


FIG. 2.



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PLOUGH DRIVE UNIT FOR LONGWALL MINING

BACKGROUND TO THE INVENTION

The present invention relates to a mineral mining installation, and more particularly to a coal mining installation.

Mining installations for the automatic winning of coal are known which consist of a conveyor lying alongside the coal face to be won and a plough guided on the conveyor. The conveyor is provided at one or both ends with drive stations with drums which drive the circulating scraper chain or chains. The or each drive station has a motor with associated gearing to drive the drum and is usually sited at the side of one of the conveyor side walls. The plough drive is usually completely separate from the conveyor drive and as a rule is also disposed laterally of the conveyor. The plough drive has a final chain sprocket for circulating the plough chain along the mineral face side of the conveyor.

This arrangement is relatively bulky and necessitates a relatively long plough stall. Also in cases where the plough is to be removed the plough drive has to remain in the installation.

Various other constructions for the drive stations have been proposed but none of these constructions has been wholly successful in mitigating these disadvantages.

A general object of the present invention is to provide an improved mining installation.

SUMMARY OF THE INVENTION

According to the present invention there is provided a mineral mining installation comprising a scraper-chain conveyor disposed alongside a mineral face, a plough adapted to move along the mineral face side of the conveyor, drive means for driving the plough along the conveyor, a first frame accommodating a drum around which the chain or chains of the conveyor are entrained; and a further frame affixed to the plough drive means, the first and the further frame being detachably secured to one another with the plough drive means disposed outwardly beyond the first frame relative to the conveyor.

The plough drive means can be arranged sufficiently far from the conveyor drive drum to enable the mineral to fall between these parts.

It is especially advantageous to construct the further frame as an L-shaped frame with an upwardly extending portion carrying coupling pieces for connection to the first frame by means of bolts extending transversally of the conveyor.

The further frame can have a horizontal portion which supports the plough drive means, said horizontal portion being guided on a bracing beam extending substantially perpendicularly to said conveyor.

A preferred embodiment of the invention provides an especially advantageous construction as will be described hereinafter.

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 DRAWING.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawing, wherein:

FIG. 1 is a diagrammatic side elevation of an installation made in accordance with the invention; and

FIG. 2 is a plan view of the installation depicted in FIG. 1.

DESCRIPTION OF PREFERRED EMBODIMENT

As shown in the drawing, a mineral mining installation has a double-chain scraper conveyor **10** disposed alongside the mineral face to be won. A plough (not shown) is guided for movement along the conveyor **10** to detach mineral from the face in the known manner. At one end of the conveyor **10**, where a heading or roadway adjoins the mine gallery, there is provided a conveyor drive station composed of a frame **11** having side members **14** adjoining the conveyor side walls. The side members **14** accommodate a drum **12** therebetween and the chains **13** of the conveyor **10** are entrained around the drum **12**. The side members **14** project outwardly from the direction of the conveyor **10** and a plough drive means **15** is attached to these members **14** in a manner which will now be described.

More particularly, the plough drive means **15** is supported by an L-shaped frame **16** affixed there to. The frame **16** has an upwardly extending portion and a horizontal portion. The upwardly extending portion of the frame **16** is reinforced with a vertical plate **17**. The plate **17** is in turn attached to two pairs of vertical apertured webs **20**. Each pair of webs **20** form a coupling piece **18** receiving the end part of one of the side members **14** therebetween. The end parts of the side members **14** accommodated in the coupling pieces **18** are similarly apertured so that these components can be interconnected by means of transverse bolts **19**. The frame **16** is thus detachably secured to the frame **11** and the construction set forth provides an exceptionally rigid connection.

As shown in FIG. 2, the frame **16** also serves to mount the drive means **15** and the frame **11** on a bracing beam **21** extending substantially perpendicularly of the conveyor **10**. The horizontal portion of the frame **16** carries guide elements **22** which are slidably guided on the beam **21** at both sides thereof. The beam **21** can be braced in known manner by the setting of hydraulic props **23** between the floor and the roof of the roadway.

If conditions dictate that the plough be removed, as for example where a different form of winning machine is to be used, then the plough drive **15** and its frame **16** can be readily removed from the installation by unfastening the bolts **19**. Where the plough is used, however, the plough can be moved at least right up to the conveyor drum **12**. Consequently the plough stall can be substantially shorter than is otherwise necessary.

We claim:

1. In a mineral mining installation comprising a scraper-chain conveyor disposed alongside a mineral face, a plough guided for movement along the mineral face side of the conveyor, means for driving the plough, and a drive station for the conveyor with a frame with two side wall members; the improvement comprising a

further frame affixed to the plough drive means, the further frame being detachably secured to the side wall members of the first frame and disposed outwardly relative to the conveyor therefrom.

2. An installation according to claim 1, wherein the further frame is generally L-shaped with an upwardly extending portion carrying coupling pieces for connection to the first frame by means of bolts extending transversally of the conveyor.

3. An installation according to claim 2, wherein the further frame has a horizontal portion which supports the plough drive means, said horizontal portion being guided on a bracing beam extending substantially perpendicularly to said conveyor.

4. An installation according to claim 1, wherein the further frame is generally L-shaped with a horizontal portion supporting the plough drive means and an upstanding portion reinforced by a vertical plate, the vertical plate carrying pairs of apertured webs, each pair of webs forming a coupling piece for receiving the ends of the side wall members of the first frame therebetween, said ends being similarly apertured so that said ends and the coupling pieces can be connected together with bolts extending substantially perpendicularly to the conveyor.

5. An installation according to claim 4, wherein the horizontal portion of the further frame has guide elements which serve to slidably guide said further frame on a bracing beam extending substantially perpendicular to the conveyor.

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