

[54] MINING APPARATUS

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[57] ABSTRACT

Mining apparatus usable with a conveyor and composed of a beam accommodating a conveyor drive unit and housings operably connected to each end of the beam.

Each housing either supports, or is connected to, a telescopic prop which enables the housing to be clamped in a fixed position. Each housing contains a piston and cylinder unit having its cylinder connected to a slide member guided for movement between two resilient guide rails. Two end plates connect to the beam, possible via articulated joints, and extend through recesses in the housings. Each end plate is connected to the slide member in the associated housing so that the conveyor can be tensioned by extending the piston and cylinder units to displace the beam when the housings are clamped.

9 Claims, 5 Drawing Figures

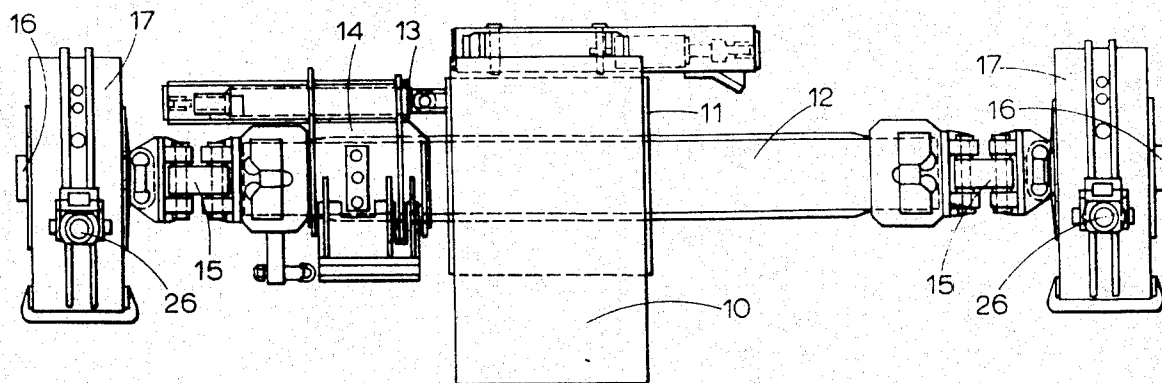
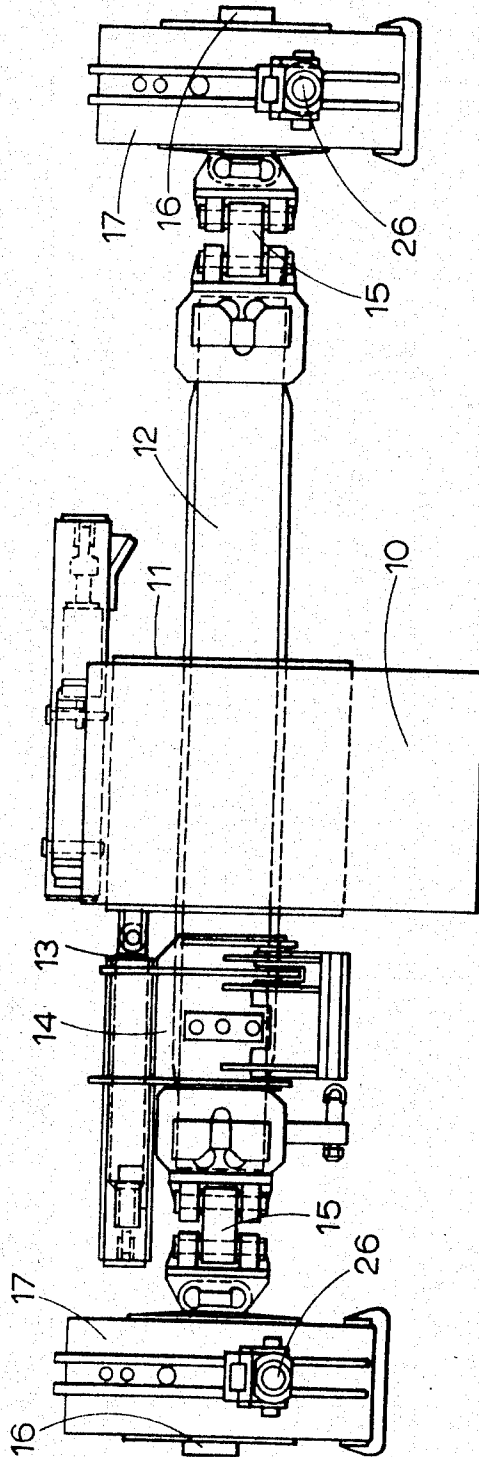


FIG. 1.



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FIG. 2.

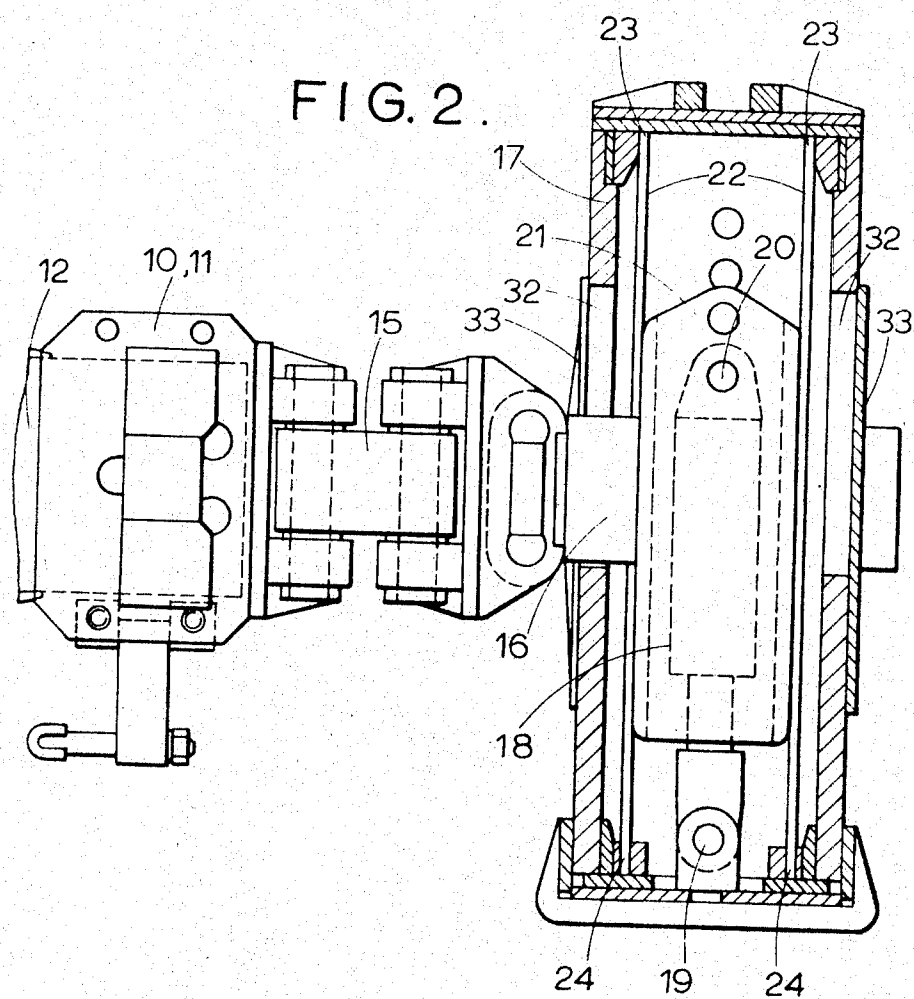
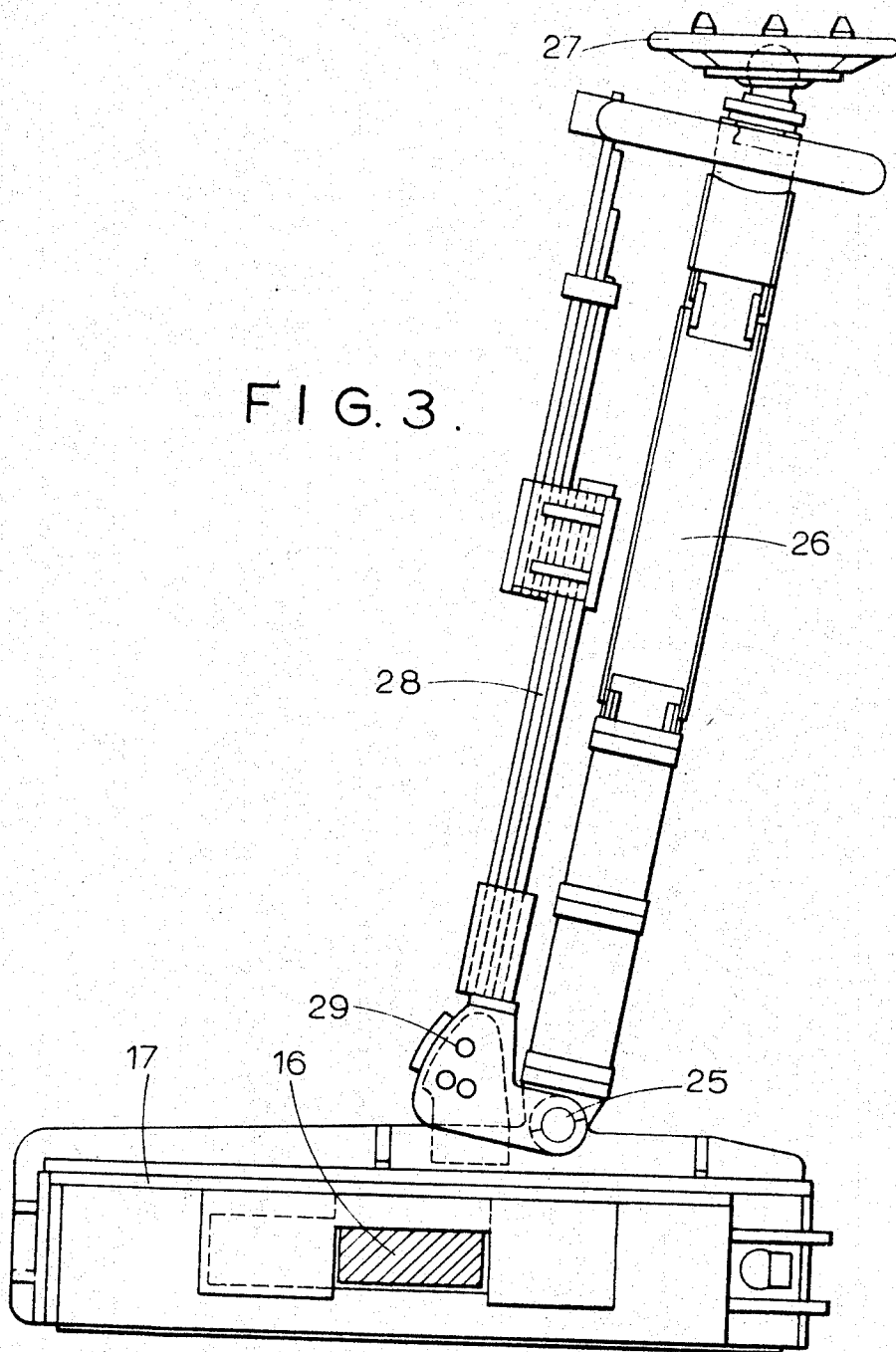
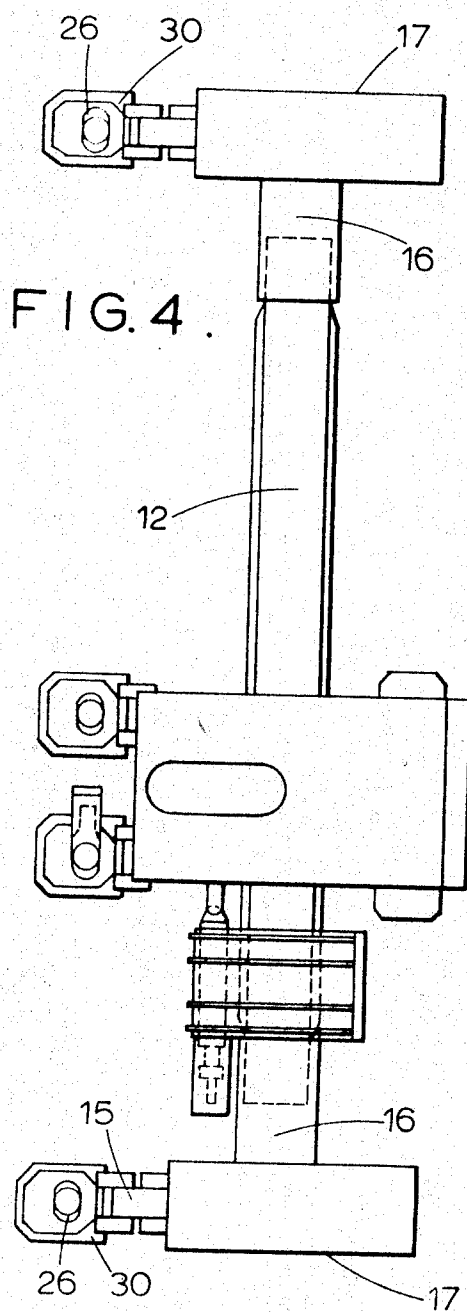
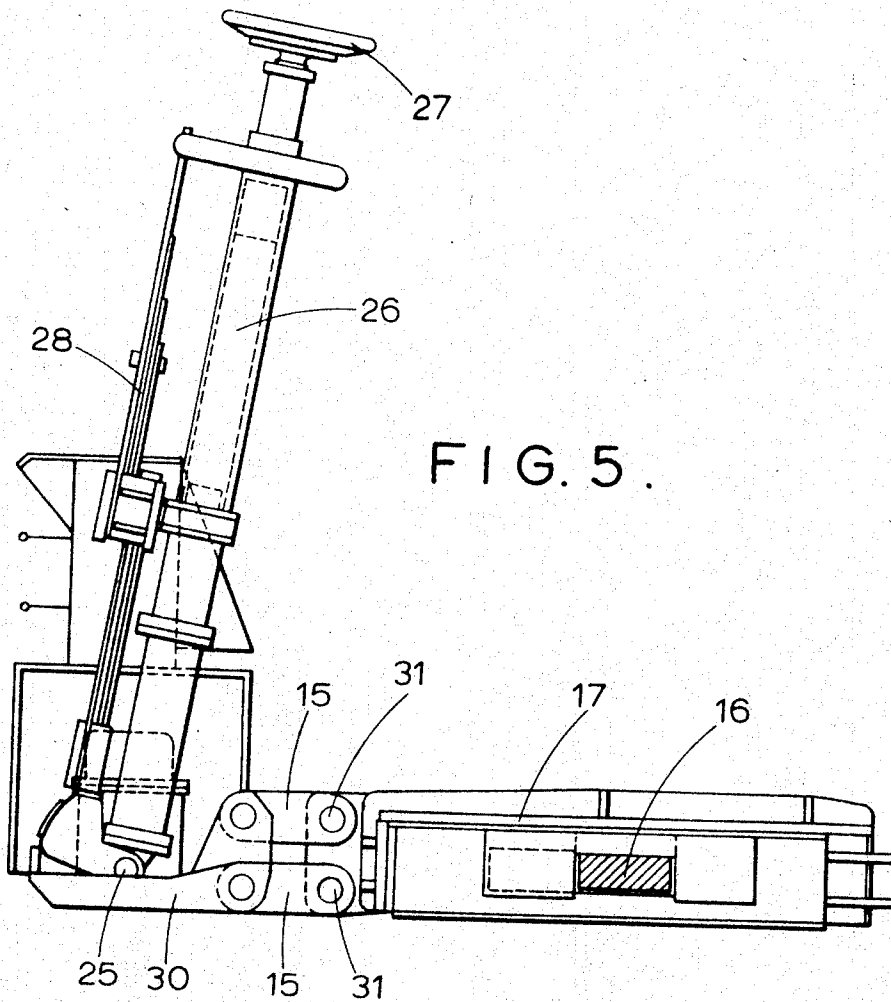


FIG. 3.







MINING APPARATUS

BACKGROUND TO THE INVENTION

In the field of mining there is a need for an apparatus which will reliably guide a shiftable conveyor in a variety of operating conditions. A general object of this invention is to provide such an apparatus.

SUMMARY OF THE INVENTION

According to the present invention there is provided a mining apparatus comprising a beam for supporting a drive unit of a conveyor, a clamping assembly operably connected to one end of said beam, said assembly having a housing which is adapted to adopt a fixed position and means within said housing for displacing said beam in relation to said housing. By displacing the beam the conveyor can be subjected to tension.

Preferably the aforesaid clamping assembly is connected to each end of the beam and a prop is supported by the housing of each clamping assembly. The prop enables the housing to adopt a fixed position. This arrangement provides a particularly compact apparatus.

The means for displacing the beam is preferably in the form of a piston and cylinder unit. In an exemplary embodiment the cylinder of the unit is connected to a slide member guided between two resilient guide rails in the housing. The beam is connected indirectly to the slide member and the resilience of the guide rails tends to maintain the correct positional relationship between the beam and the housing.

Instead of having the prop supported on the housing in another construction the prop is supported on a base plate itself connected to the housing via an articulated joint.

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

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

FIG. 1 is a plan view of one form of mining apparatus made in accordance with the invention;

FIG. 2 is an enlarged part-sectional plan view of part of the apparatus shown in FIG. 1;

FIG. 3 is an end view of part of the apparatus shown in FIG. 1;

FIG. 4 is a plan view of a further form of mining apparatus made in accordance with the invention; and

FIG. 5 is an end view of part of the apparatus shown in FIG. 4.

DESCRIPTION OF PREFERRED EMBODIMENTS

As shown in FIGS. 1 to 3, a main drive unit 10 for a coal-face conveyor is supported on a support member 11 slidably guided on a beam 12. The conveyor extends generally perpendicularly to the beam 12. The unit 10, in conjunction with the member 11, can be moved along the beam 12 by operating a hydraulic piston and cylinder unit 13.

The cylinder of the unit 13 is connected to an abutment member 14 which can be locked in position relative to the beam 12. The abutment member 14 is slidably guided on the beam 12 for adjustment purposes

and can be moved along the beam 12 when the associated locking mechanism is released.

At each end of the beam 12 there is an end plate 16 attached to the beam 12 by way of an articulated joint 15. Each plate 16 is operably associated with a clamping assembly having a housing 17 in which is disposed a hydraulic piston and cylinder unit 18 (FIG. 2). The plate 16 extends through a pair of recesses 32 provided in the longitudinal side walls of the housing 17. The recesses 32 are partly closed by closure members 33 which fit around the plates 16 and are arranged to move with the plates 16. The members 33 are designed to close the interior of the housings 17 regardless of the particular position of the plates 16. The piston rod of each unit 18 is connected via a vertical pin 19 to the associated housing 17. The cylinder of each unit 18 is connected via a pin 20 to a slide member 21 slidably guided between two resilient guide rails 22. The member 21 is connected to the associated plate 16. One end 24 of each rail 22 is rigidly connected to the associated housing 17 whereas the other end 23 of each rail 22 is movable in relation to the housing 17.

At the upper side of each clamping assembly a stay prop is hinged to the upper face of the housing 17 by means of a horizontal pin 25. Each prop 26 has an upper part 27 which can be extended to engage the roof of a mine working to cause the housing 17 connected thereto to be fixed in position. Each prop 26 is forced to assume an inclined disposition by means of a spring arrangement 28 and the position is rendered adjustable by the provision of an adjustment device 29. The apparatus as described is intended primarily for use at a lower level of a mine working. The operation of the apparatus is as follows:

When the props 26 are braced against the roof of the working the housing 17 of the clamping assemblies are fixed in position. The forces which occur during operation of the conveyor are possibly by the coal winning machine guided on the conveyor are transmitted from the member 11 to the beam 12. From the beam 12 these forces are in turn transmitted to the housings 17 which are held firm by the props 26. When it is desired to tension the conveyor in its longitudinal direction the piston and cylinder units 18 are extended so as to displace the beam 12 uniformly relative to the housings 17. It is however also possible to operate only one of the units 18 so that the beam 12 performs a pivoting movement. The resilience of the rails 22 tends to maintain the positional relationship between the plates 16 and the housings 17. From time to time the conveyor is moved up towards the coal face and eventually the member 11 will reach one end of the beam 12 and the latter must also be shifted longitudinally. The props 26 are then retracted and the shifting operation effected.

An alternative construction is shown in FIGS. 4 and 5 where like reference numerals are used to denote like parts. In the embodiment depicted in FIGS. 4 and 5, the props 26 are each supported on a base plate 30 engaging directly on the floor of the working. Each base plate 30 is connected to the housing 17 of the associated clamping assembly via articulated connection links 15 having pivot pins 31.

The beam 12 is directly connected to the end bars 16 in contrast to the construction shown in FIGS. 1 to 3. The constructions shown in FIGS. 4 and 5 is intended primarily as an auxiliary drive at an upper level of a mine working.

We claim:

1. Mining apparatus comprising:

- a. a beam for supporting a drive unit of a conveyor;
- b. a housing disposed at each end of said beam;
- c. means for connecting each housing to said beam;
- d. means for clamping each housing in a fixed position;
- e. a piston and cylinder unit disposed within each said housing for displacing said beam in relation to said housing, and
- f. resilient guide rails within each housing for guiding the associated piston and cylinder unit when the beam is displaced.

2. Apparatus according to claim 1, wherein each said connecting means at least includes an articulated joint.

3. Apparatus according to claim 1, where each said clamping means is in the form of a telescopic prop supported by said housing.

4. Apparatus according to claim 1, wherein each said clamping means is in the form of a telescopic prop supported on a base plate, said base plate being connected to the associated housing via an articulated joint.

5. Apparatus according to claim 3 and further comprising a spring arrangement for causing said prop to set in an inclined position.

6. Apparatus according to claim 4 and further comprising a spring arrangement for causing said prop to set in an inclined position.

7. Apparatus according to claim 1, wherein each housing has recessed walls and a plate extends through said recessed walls, the plate being connected to the beam for movement therewith and wherein said recesses are substantially closed by closure members movable with said plate.

8. Apparatus according to claim 7, wherein the cylinder of each piston and cylinder unit is connected to a slide member which is slidably guided between said rails and which is connected to the plate extending through the associated housing.

9. Apparatus according to claim 1, wherein the cylinder of each piston and cylinder unit is connected to a slide member which is slidably guided between said rails.

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