June 17, 1947. M. S. MOORE 2,422,645

MINING MACHINE

Filed July 15, 1943

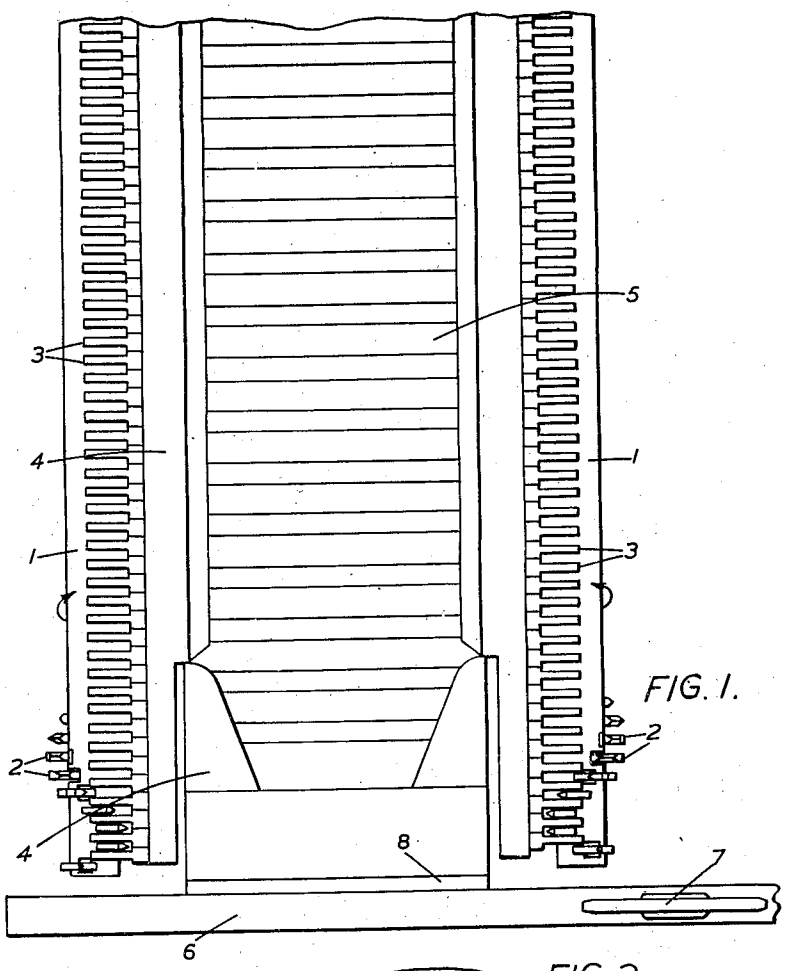


FIG. 1.

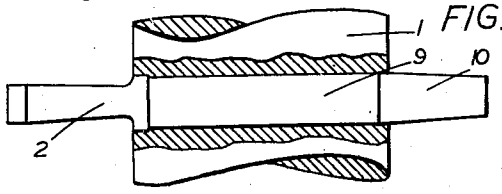


FIG. 2.

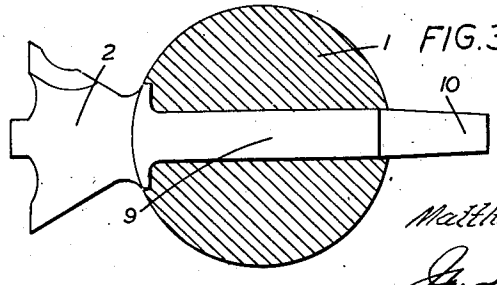


FIG. 3.

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MINING MACHINE

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3 Claims. (Cl. 262—30)

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In the extraction of coal from a coal seam a method is practised, termed simultaneous cutting and loading. This may involve a combined cutting and loading machine, with bar or comb on each side of a transverse conveyor as exemplified in Moore's British Patent No. 441,413. In this combination, the machine consists of two main parts, the cutter, making a horizontal cut, and the loader. The cutter may be provided with a cutting element for taking a vertical cut, termed the shearing jib, as shown in Moore and another's British Patent No. 478,070. In some cases more than one horizontal cut may be made. Operating with such an assembly means that the coal is extracted without the use of explosive, hydraulic or wedging means.

In other cases it is necessary only to undercut at pavement level, and to shear at the inner end of the undercut for the coal to collapse, and be loaded out.

Whatever the machine assembly may be, the undercutting is done by or from the cutter portion.

By means of the present invention it becomes possible to dispense with the undercutting means on the cutter portion, the loader bars, with this object in view, being arranged to combine the function of loader and cutter bar.

In some known early types of bar cutting machines the bar carrying the cutter picks not only rotated but reciprocated also in order to break down the ribs of coal which would normally be left between the grooves cut by the picks without reciprocation.

In the preferred forms of the present invention the cutter picks are combined with a loader comb between the teeth of which they pass as the cutter bar rotates, the coal as it is cut being thus fed back by the comb onto the transverse conveyor. As there is a tendency (greater in the case of some coals) for the picks to leave ribs of coal between them, the bar is also preferably furnished with breaking or bursting means which follow in the tracks of the picks, but are shaped to engage the sides or corners of the ribs to break them down.

Other parts of the invention are embodied in a typical form illustrated by the accompanying drawings. The parts for which a monopoly is desired are those set out in the claims.

In the drawings:

Fig. 1 is a plan view showing the jib of a combined cutting and loading machine,

Fig. 2 shows to an enlarged scale a short length

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of bar sectioned to show a preferred form of pick, and

Fig. 3 is a cross section of the same.

The jib illustrated in Fig. 1 is designed for cutting and loading in either direction and will be carried by and derive the drive of the bars from a body part in the normal way. The bars 1 have picks 2 which pass between the teeth 3 of the comb portions by which material picked up by the teeth is delivered by suitably shelving parts 4 on to the transverse conveyor 5 which carries it back on to the face conveyor in the conventional manner. A conventional shearing jib indicated at 6 with one of its cutter chain sprockets 7, is mounted on a plate or bracket 8 at the end of the jib. The picks 2 are shown with shanks 9 inserted into holes drilled through the bar 1 at right angles to the axis. The shanks extend through and project on the other side of the bar, these projections 10 being preferably of conical formation; the extension is less in height than the pick head, but wider at the base than the width of the cutter track. Its action is to burst and break down the ribs of coal left between the gouged tracks of the cutters. While shown in one piece with the cutters, it is obvious that the bursting members could be separate. As can be seen from Fig. 1, the picks are spaced along the length of the bar in one or more series of helical formations to help gather the coal onto the conveyor.

Ribs left between the cutter tracks will thus be burst or broken by the wide conical shank ends; but since the extension of the projections 10 is less than the height of the pick points beyond the bar, low ribs of coal will remain on the floor. To remove these, the second bar has the picks positioned between the forward bar picks, so that the rear picks attack the ribs.

It will be understood that by reversing the shearing jib and suitably engaging the drive of the bars the jib can be used in either direction, and can be used for cutting and loading either by moving it along the face or as the jib of a holing machine moved about a fixed centre. The forward bar, which performs the cutting may in some cases only perform a partial loading, as when used on a face of less friable coal than is suited to the combined operation. In such a case the loading can be completed by moving the jib back in the other direction, the second bar which will then be acting as the forward bar serving simply as a loader bar. The jib can then be used for cutting and partial loading in whichever direction conditions dictate.

I claim:

1. In a mining machine, the combination of a transverse conveyor, a transverse rotatable bar on each side of the conveyor, cutter picks and bursting members carried by the bar on the forward side of the conveyor, a loader comb cooperating with the said picks to load back material as it is cut by the picks on to the conveyor, and members carried by the bar on the rear side of the conveyor and positioned between the positions occupied by the picks and bursting members on the forward side of the conveyor.

2. In a combined cutting and loading device for mining, a cutting and loading bar adapted to cooperate with a loading comb and having cutting picks and shorter but wider bursting members which will follow one another between the teeth of the comb when the bar is rotated.

3. In a combined cutting and loading device for mining, a transverse jib, a shearing jib mounted at the end of the transverse jib, a transverse conveyor running along the transverse jib,

a rotatable transverse cutter bar in advance of the conveyor, cutting picks being mounted on the bar, relatively wider bursting member mounted on the bar in rear of the cutting picks and a loader comb having teeth between which the picks will pass as the cutter bar rotates and cooperating with the picks to feed back the material as it is cut on to the conveyor.

MATTHEW SMITH MOORE.

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