April 15, 1952 A. ANDERSON 2,592,996

MINING MACHINE

Filed June 22, 1949 6 Sheets-Sheet 1

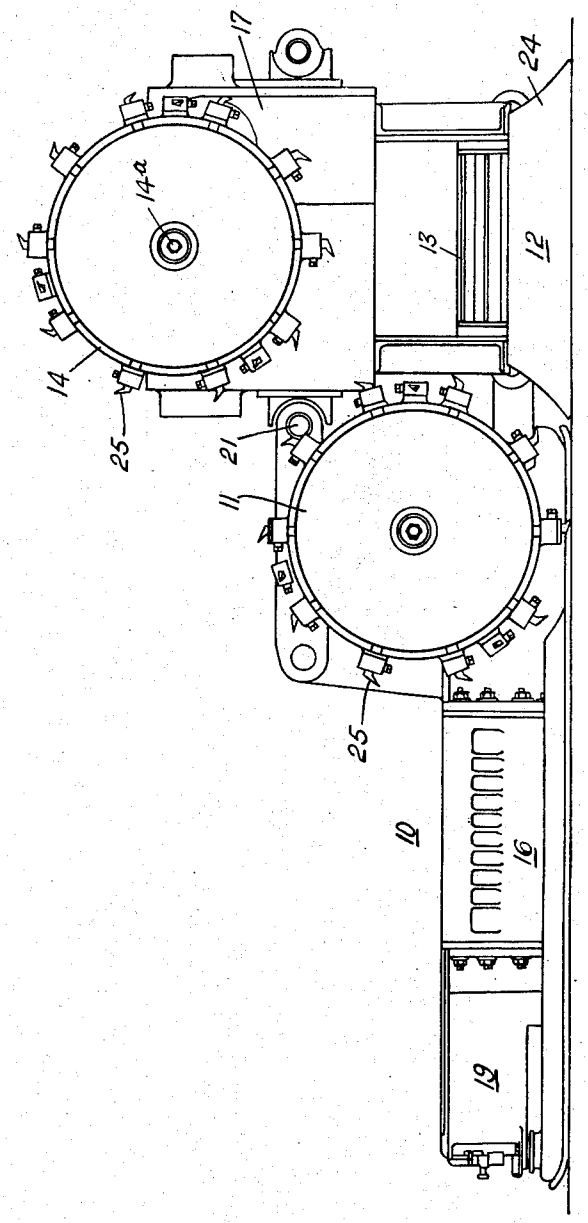


FIG. 1

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MINING MACHINE

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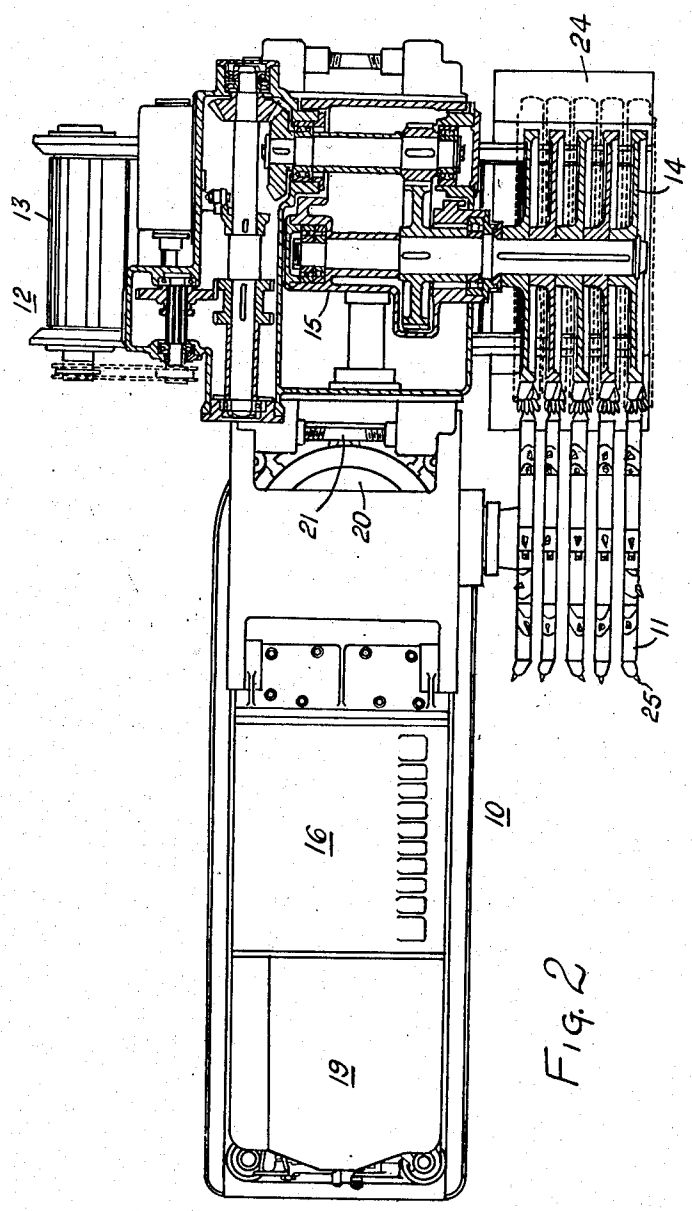


FIG. 2

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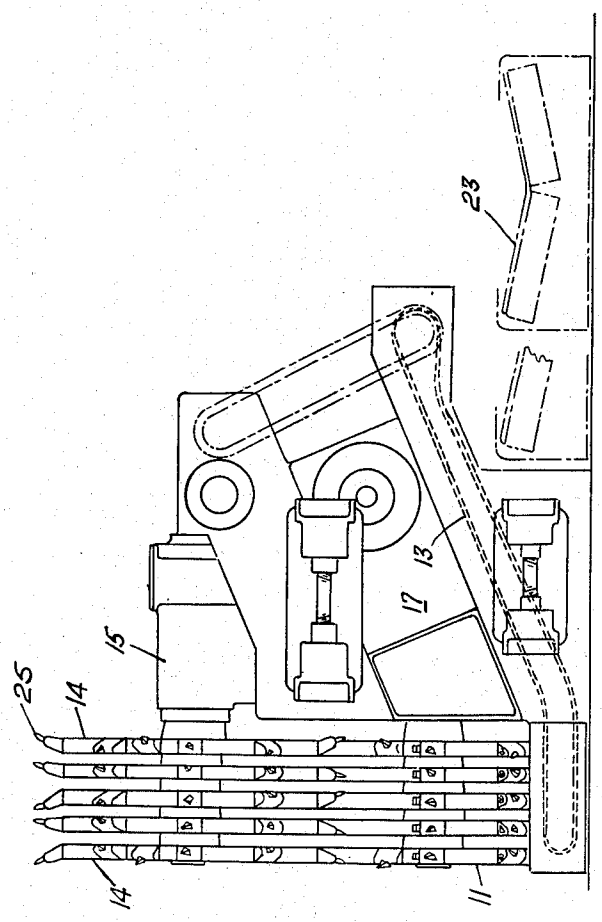


FIG. 3

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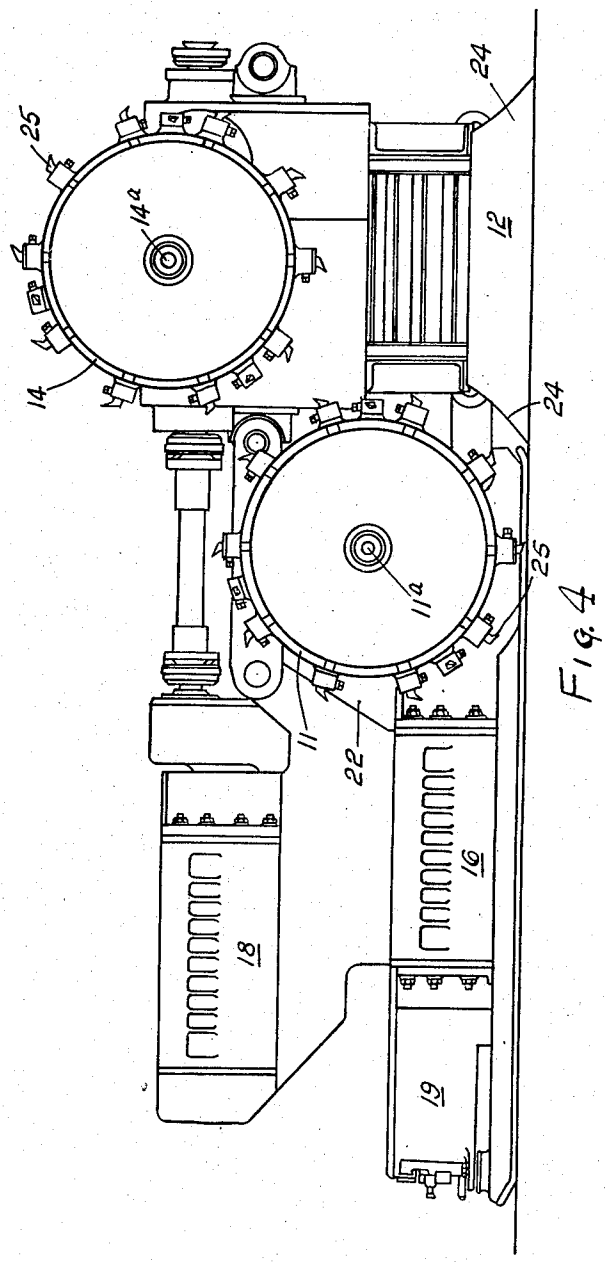


FIG. 4

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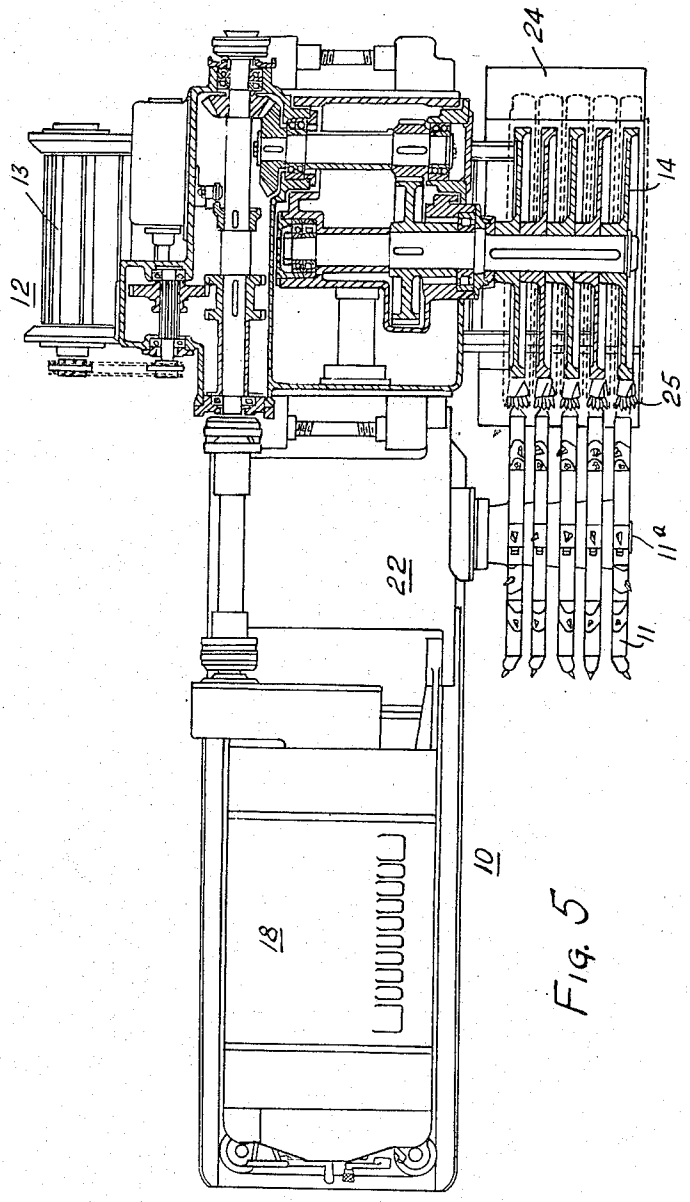


FIG. 5

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Filed June 22, 1949 6 Sheets-Sheet 6

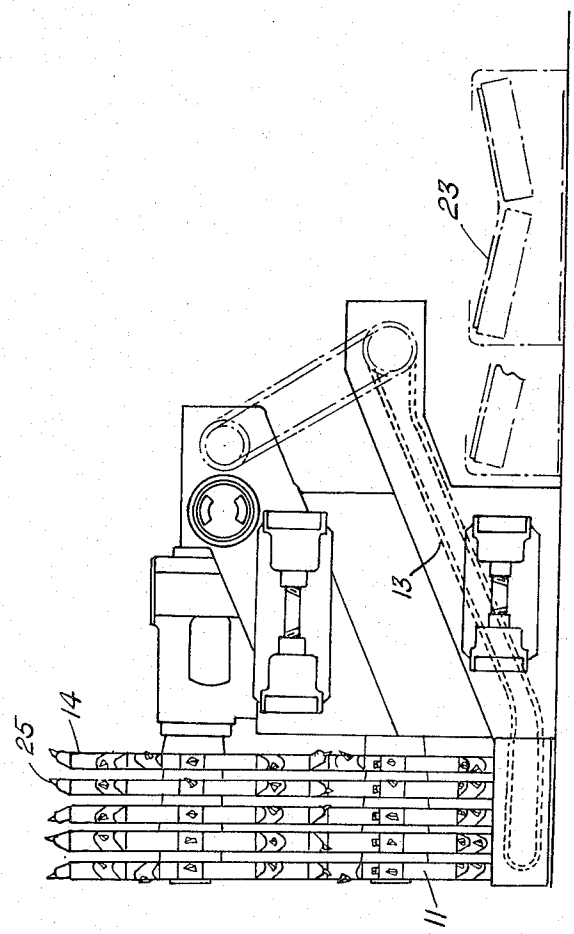


FIG. 6

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Patented Apr. 15, 1952 2,592,996

UNITED STATES PATENT OFFICE

2,592,996

MINING MACHINE

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Application June 22, 1949, Serial No. 100,680
In Great Britain January 28, 1949

5 Claims. (Cl. 262—9)

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This invention relates to improvements in mining machines adapted more particularly for the longwall working of minerals such as salts, shales, and possibly also certain lines of coal.

A mining machine according to the invention includes a main traveling unit provided with a main rotary cutting wheel, and a loader unit articulated to the rear end of the main unit and provided with a transversely-operating loader conveyor and with a supplementary rotary cutting wheel.

The cutting wheels extend uni-laterally with respect to the main traveling and loader units, are mounted for rotation about substantially horizontal parallel axes, and are arranged to cut the lower portion and the upper portion, respectively, of a seam, the upper cutting wheel, i. e., the cutting wheel of the loader unit, being vertically adjustable.

The main unit may include a haulage gear section, the driving motor section, and a gear-head section, forming the forward, intermediate, and rear sections, respectively, of the main unit, the gear-head containing transmission gearing for driving the main cutting wheel.

The invention is illustrated in the accompanying diagrammatic drawings in which Figs. 1–3 are a side elevation, a plan view, and an end elevation, respectively, of one embodiment of mining machine according to the invention. Figs. 4–6 are views corresponding to Figs. 1–3, respectively, showing a modification.

Referring to Figs. 1–3 of the drawings, the mining machine shown includes a main traveling unit 10 provided with a main rotary cutting wheel 11, and a loader unit 12 articulated to the rear end of the main unit 10 close to said main wheel 11 to receive cuttings discharged by said main wheel 11 and provided with a transversely-operating loader conveyor 13 and with a supplementary rotary cutting wheel 14 at a higher level than the main wheel 11.

The cutting wheels 11, 14 extend uni-laterally with respect to the main and loader units, are mounted for rotation about substantially horizontal axes 11^a, 14^a, respectively, and are arranged to cut the lower portion and the upper portion, respectively, of a seam. The upper cutting wheel, i. e., the cutting wheel 14 of the loader unit, is vertically adjustable. This vertical adjustment of the cutting wheel 14 may be conveniently attained by mounting the horizontal shaft which carries this wheel 14 in an angularly adjustable swing arm 15 pivotally mounted on the superstructure of the loader unit.

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Looking transversely of the line of travel of the machine, towards the mineral face, preferably the cutting wheel 11 rotates counter-clockwise, and the cutting wheel 14 rotates clockwise, as shown in Fig. 1.

The main unit 10 and the loader unit 12 may have separate driving motors incorporated at 16, 17, respectively, in the respective units. Alternatively, the loader unit may be driven from a motor mounted at 18 on the main unit above, (Figs. 4–6) or in side-by-side relation with, the motor 16 of the main unit.

The main unit 10 includes a haulage gear section 19, the driving motor section 16, and a gear-head section 20, forming the forward, intermediate, and rear sections, respectively, of the main unit, the gear-head 20 containing the necessary transmission gearing for driving the main cutting wheel 11.

As shown in Figs. 1–3 the loader unit 12 is articulated at 21 to the gear-head structure. Alternatively, and as shown in Figs. 4–6, the loader unit may be articulated by means of an extension coupling bracket 22 to the intermediate section 16 of the main unit, the coupling means on the loader unit being duplicated so that the machine may be operated right-hand or left-hand as may be required.

The loader conveyor 13 may consist of a belt, worm, flight, scraper chain, or other type of conveyor, depending on circumstances.

Mineral cut by the cutting elements of the main cutting wheel 11 is pushed by the moving cutting elements on to the adjacent lower end of the loader conveyor 13, and mineral cut by the supplementary cutting wheel 14 drops downwardly on to the loader conveyor 13.

Provision may be made for extending the loader conveyor 13 in the direction towards the usual face conveyor indicated at 23, it being understood that the machine may be required to perform two or more traverses of the face without transverse shift of the face conveyor.

Plough means indicated at 24 may be provided on the loader unit for effecting removal of any ridges of mineral left on the mine floor in the wake of the main cutting wheel 11.

Each cutting wheel consists of a plurality of discs strung in axially spaced relation on a driving shaft and armed peripherally with pick or like cutting elements such as 25.

What is claimed is:

1. A longwall mining machine including a main traveling unit, a main rotary cutting wheel comprising a plurality of discs armed peripherally

with cutting elements, said main cutting wheel being mounted on said main unit, and being rotatable about a substantially horizontal axis, a loader unit articulated to the rear end of said main unit close to said main wheel to receive cuttings discharged by said main wheel, and a supplementary rotary cutting wheel journaled in and vertically adjustable relatively to said loader unit at a higher level than said main cutting wheel and rotatable about a substantially horizontal axis parallel to said first mentioned axis, said supplementary cutting wheel comprising a plurality of discs armed peripherally with cutting elements and adapted to discharge its cuttings on to said loader unit.

2. A longwall mining machine as claimed in claim 1, in which separate driving motors are incorporated in the main traveling unit.

3. A longwall mining machine as claimed in claim 1, in which a motor mounted on the main traveling unit serves to drive the loader unit.

4. A longwall mining machine as claimed in claim 1, in which the main traveling unit includes a haulage gear section, a driving motor section, and a gear-head section, forming the forward, intermediate, and rear sections, respectively, of said main unit, and transmission gearing contained in the gear-head serving to drive the main cutting wheel.

5. A longwall mining machine as claimed in claim 1, including plough means for effecting removal of any ridges of mineral left on the mine floor in the wake of the main cutting wheel.

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