No. 607,170. Patented July 12, 1898.

W. G. HALBERT.

MINING MACHINE.

(Application filed Sept. 16, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

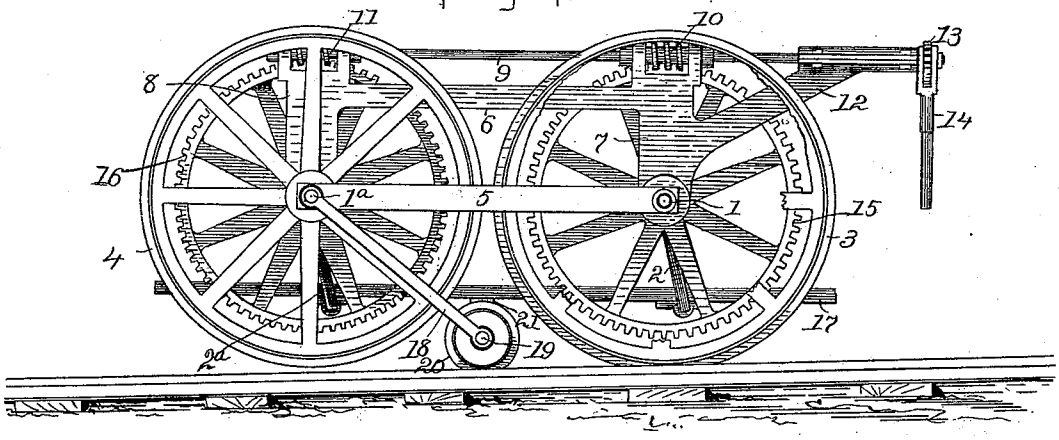


Fig. 2.

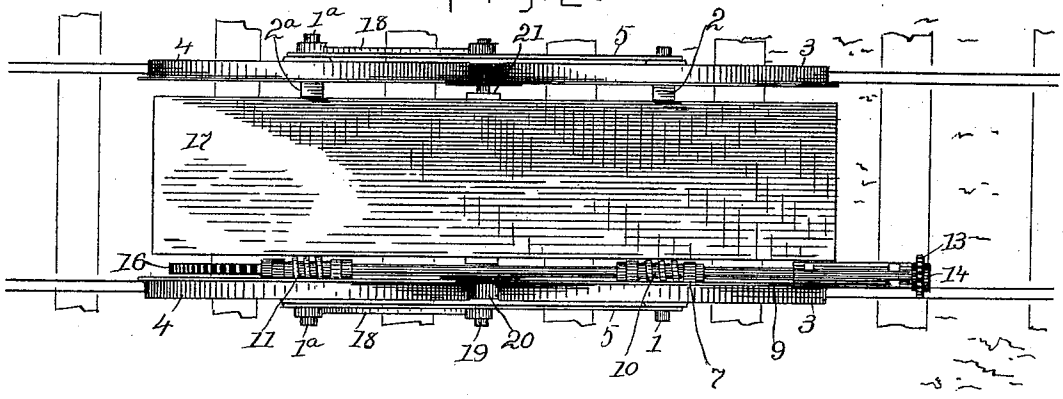
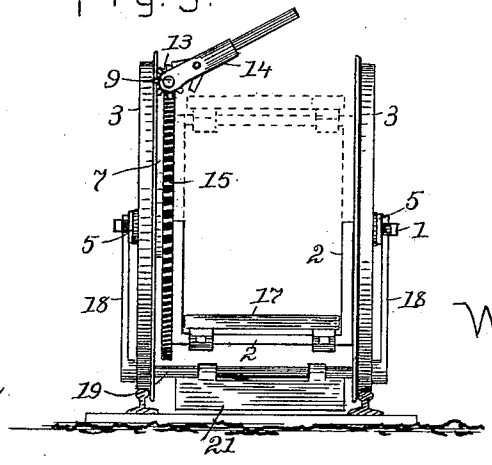


Fig. 3.



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Fig. 4.

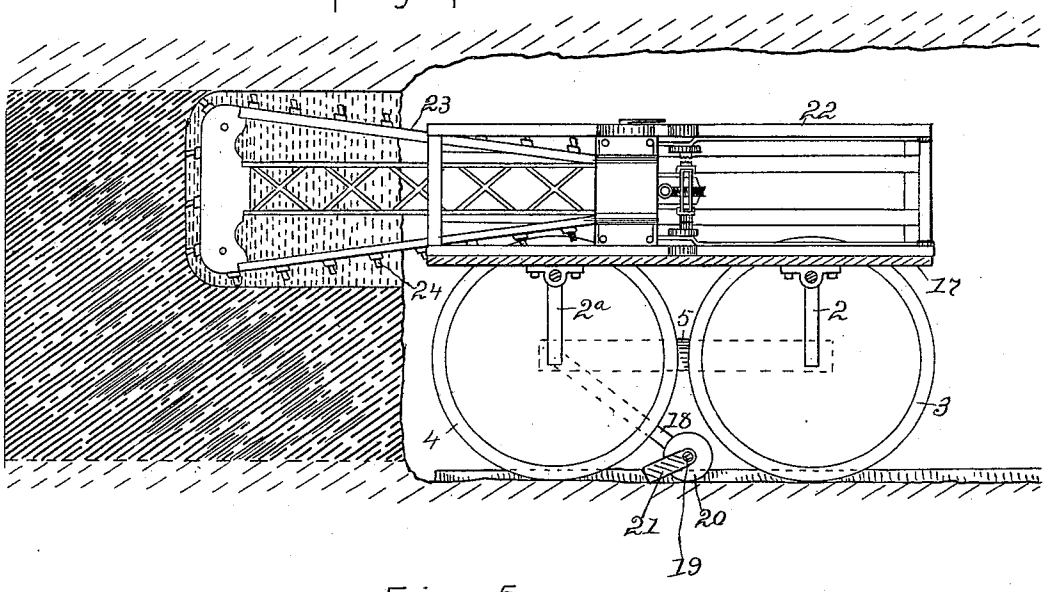
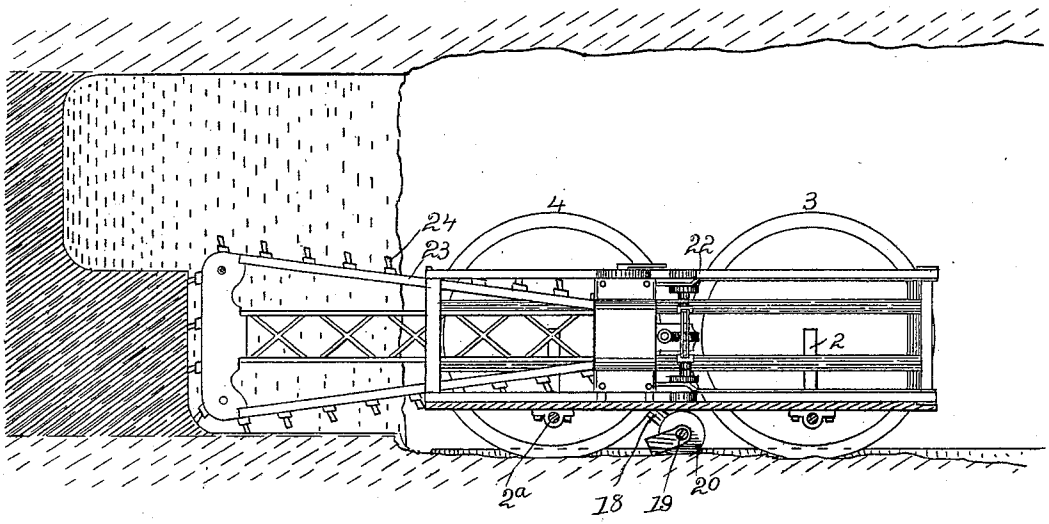


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM G. HALBERT, OF WESTVILLE, ILLINOIS.

MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 607,170, dated July 12, 1898.

Application filed September 16, 1897. Serial No. 651,910. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. HALBERT, of Westville, in the county of Vermilion and State of Illinois, have invented certain new and useful Improvements in Mining-Machines, of which the following is a specification.

This invention is designed to facilitate the mining of veins of coal in which separation is more easily effected on vertical lines than on horizontal lines. It is adapted to make vertical cuts through the vein from top to bottom thereof and thereby prepare for sidewise "shooting." It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of specific mechanism for raising and lowering the machine and for conveying it from one place to another, parts being broken away to expose more essential features. Fig. 2 is a plan of the mechanism shown in Fig. 1. Fig. 3 is an end view of the same. Fig. 4 is a vertical section through the machine-carrying truck, illustrating the machine at work in the upper portion of the vein of coal. Fig. 5 is a similar section showing the machine at work in the lower portion of the vein, completing the vertical cut that was begun by the machine while in the raised position shown in Fig. 4.

The truck that constitutes the means preferably employed to raise and lower the machine comprises a pair of rear wheels 3 and a pair of front wheels 4. The rear wheels are journaled on the spindles 1 of a crank-axle 2, and the front wheels are journaled on the spindles 1^a of a crank-axle 2^a. The cranked portions of the axles extend in the same direction from their spindles, and they carry a platform 17, with which they are pivotally connected and on which the mining-machine is mounted. Immediately inside the carrying-wheels, on one side of the truck, a stiff vertical frame 6, 7, and 8 is mounted loosely on the spindles of the crank-shafts. Its vertical members 7 and 8 provide bearings in their upper ends for a horizontal shaft 9, and on such shaft is fastened a pair of worms 10 and 11, one over the axis of each pair of carrying-wheels. The longitudinal bar 6 connects the vertical members 7 and 8, and a bracket 12 extends obliquely rearward from member 7 and forms a support for a rearward extension of shaft 9. Inside the frame that carries shaft 9 worm-wheels 15 and 16 are fastened rigidly on the spindles of the crank-shafts and each meshes with a worm on shaft 9. A ratchet-wheel 13 is fixed on the end of the rearward extension of shaft 9, and a ratchet-wrench 14 is mounted on the shaft in position to engage the ratchet-wheel. The front wheels are connected with the rear wheels by means of stay-bars 5, which fit over the ends of the spindles of the crank-axles, and such bars aid in stiffening the truck.

So far as the raising and lowering of the mining-machine is concerned the mechanism hereinbefore described is sufficient for the purpose and its operation is as follows: The mining-machine, which may be constructed in any desirable manner, is mounted on the platform 17 in position to make a vertical cut, and the ratchet-wrench is manipulated in a manner to impart rotary motion to the crank-shafts through the shaft, the worms, and the worm-wheels and raise or lower the platform to the required height. In beginning a cut the machine is raised so that the upper run of its cutting-chain is in line with the upper surface of the vein of coal, as suggested in Fig. 4, and the operatively-movable member of the machine is made to operate in the usual or any desirable manner and is fed into the vein to the full extent of its operative movement. When this is accomplished, the movement of the movable member of the machine is reversed and the cutter-head is withdrawn from the cut. The ratchet-wrench is then used to lower the machine to the relative position shown in Fig. 5 and the vertical cut is completed from top to bottom of the vein, as suggested in said figure. This provides vertical clearance for the coal adjacent to the cut, and when charges are properly inserted and exploded the coal will, if its cleavage lines are more nearly vertical than horizontal, separate from the mass more freely, uniformly, and in altogether better condition than if undercut horizontally in the customary manner.

In this instance the mining-machine is represented somewhat conventionally, the stationary frame being shown at 22, the longitudinally-movable frame at 23, and the cutter-

chain at 24. The details of the construction of the machine have nothing to do with my invention, however, and they are fully understood by persons skilled in the art of machine-mining.

In order to get practical results from the mining-machine, it must be capable of transportation from one room to another—a matter that the large carrying-wheels and stiff frame make difficult, particularly around short curves—and to provide for this I have introduced a supplementary truck which runs between the front wheels 4 and the rear wheels 3. The axle 19 of the supplementary truck is straight and is connected with the spindles of the front crank-axle by means of stiff links 18, which are mounted pivotally on the two axles. The wheels 20 are journaled on the ends of axle 19, and a block 21 is swung on the straight axle, between the ends thereof. The block is pivoted on the axle 19, and while the machine is in operation it hangs inoperative, as shown in Figs. 4 and 5. When it is desired to move the machine from one room to another, the block is turned upward, as shown in Figs. 1 and 2, and the platform is lowered until the front end of the machine is supported on wheels 20 and the front wheels 4 are raised entirely clear of the rails. When this is done, the distance between the points of support is so small that it is easy to turn the shortest curve that is met with in the tracks of a coal-mine.

What I claim as new, and desire to secure by Letters Patent, is—

1. A truck for mining-machines comprising a pair of axles cranked at their ends, spindles on the ends of the cranks of the axles and a platform mounted loosely on the axles between the cranked portions thereof, substantially as set forth.

2. A truck for mining-machines comprising a pair of axles cranked at their ends, spindles on the ends of the cranks of the axles, a platform mounted loosely on the axles between the cranked portions thereof, a worm-wheel on a spindle of each of the axles and a shaft having worms in mesh with the worm-wheels substantially as set forth.

3. A truck for mining-machines comprising a pair of axles cranked at their ends, spindles on the ends of the cranks of the axles, stay-bars connecting the spindles of one axle with those of the other, a platform mounted loosely on the axles between the cranked portions thereof, a worm-wheel on a spindle of each of the axles and a shaft having worms in mesh with the worm-wheels, substantially as set forth.

4. In a truck for mining-machines, the combination of a pair of crank-axles, carrying-wheels journaled on the spindles of the crank-axles, a platform mounted loosely on the crank-axles and a supplementary truck between the crank-axles adapted to carry an end of the main truck, substantially as set forth.

5. In a truck for mining-machines, the combination of a pair of crank-axles, carrying-wheels journaled on the spindles of the crank-axles, a platform mounted loosely on the crank-axles, a supplementary truck between the crank-axles and a swingable block on the supplementary truck adapted to sustain an end of the main truck when the block is raised to a vertical position and the platform is lowered.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

WILLIAM G. HALBERT.

Attest:
H. M. STEELY,
LOTA VAN GUNDY.