(No Model.) 2 Sheets—Sheet 1.

J. J. LYTLE, W. F. EVANS & C. KIMBER.

MINING MACHINE.

No. 455,513. Patented July 7, 1891.

Fig. 1

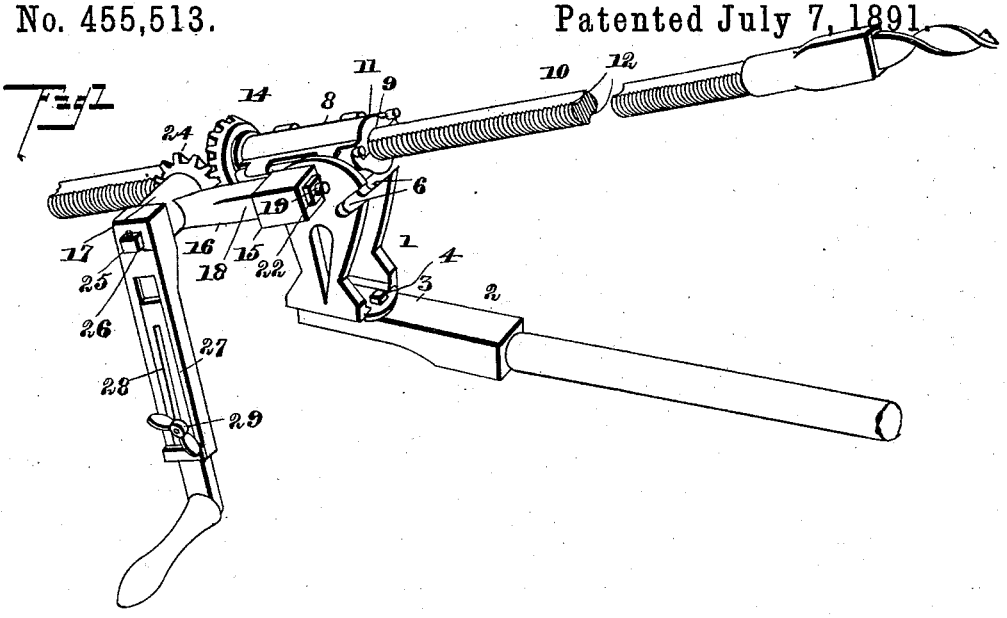


Fig. 3

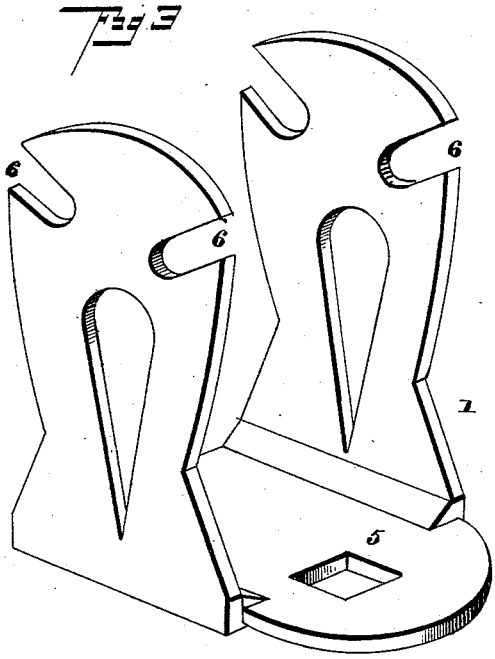
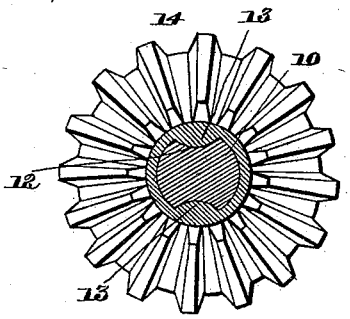


Fig. 5



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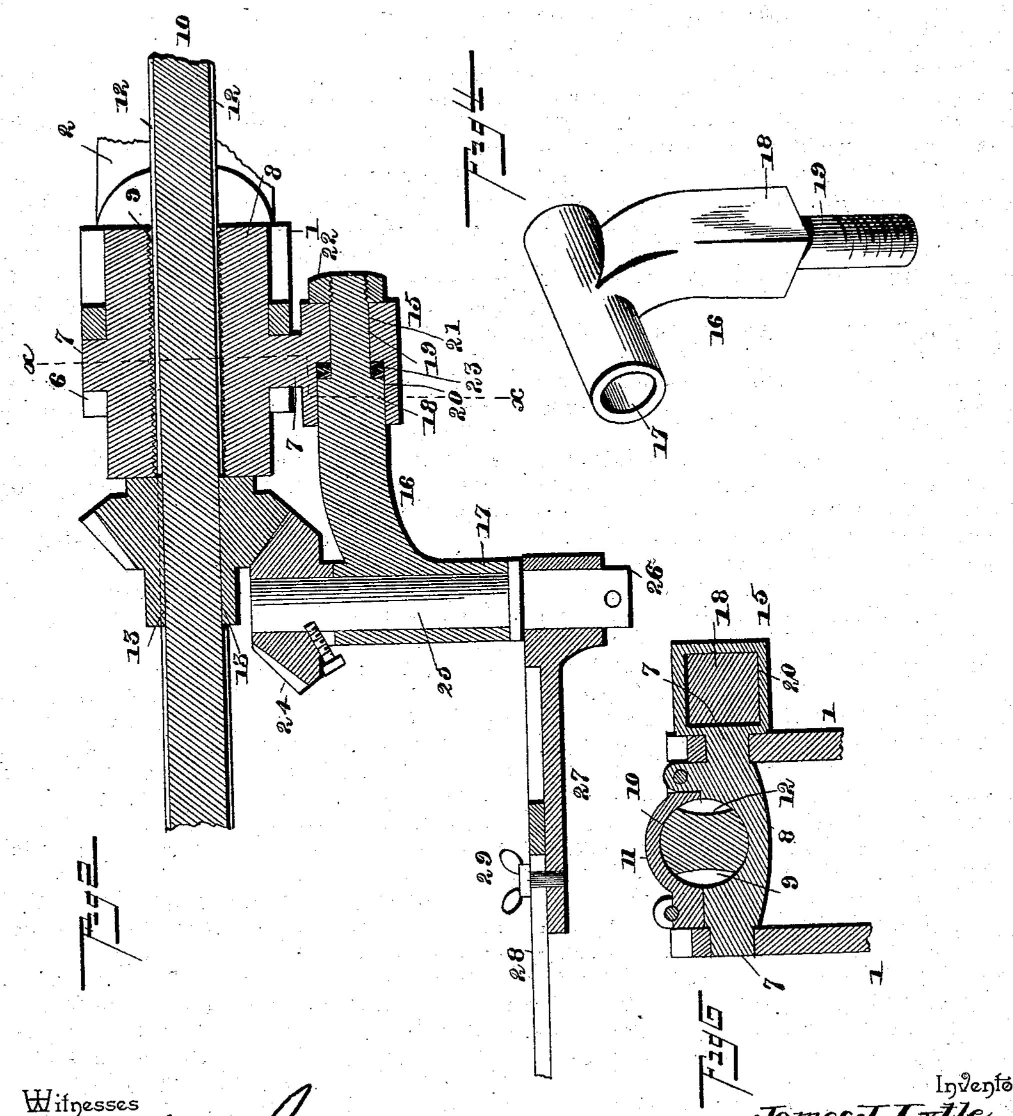

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UNITED STATES PATENT OFFICE.

JAMES J. LYTLE, WILLIAM F. EVANS, AND CHARLES KIMBER, OF WHAT CHEER, IOWA.

MINING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 455,513, dated July 7, 1891.

Application filed January 28, 1890. Renewed June 11, 1891. Serial No. 395,912. (No model.)

To all whom it may concern:

Be it known that we, JAMES J. LYTLE, WILLIAM F. EVANS, and CHARLES KIMBER, citizens of the United States, residing at What Cheer, in the county of Keokuk and State of Iowa, have invented a new and useful Mining-Machine, of which the following is a specification.

The invention relates to improvements in mining-machines.

The object of the present invention is to provide a mining-machine of simple and economic construction in which the master-wheel that slides upon and operates the threaded bar that carries the drill will have an increased bearing-surface and not be liable to become loose and destroy the threads of said bar; and, furthermore, the object of the invention is to render the arm that carries the bearing for the crank-shaft adjustable, whereby the pinion that meshes with the master-wheel can be continually adjusted to the wear of the machine to enable the master-wheel and pinion to completely mesh at all times and to prevent the breakage of the teeth.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a mining-machine constructed in accordance with this invention. Fig. 2 is a horizontal longitudinal sectional view. Fig. 3 is a detail view of the bracket. Fig. 4 is a similar view of the arm that carries the bearing for the crank-shaft. Fig. 5 is a detail sectional view of the master-wheel and the threaded drill-bar. Fig. 6 is a transverse section on the line *x x* of Fig. 2.

Referring to the accompanying drawings, 1 designates a bracket which is swiveled upon a grip-bar 2, whose end 3 is perforated and adapted for the reception of a bolt 4, that passes through a squared opening 5 in the bottom of the bracket 1, and the said opening 5 is preferably arranged beyond the center in order that the point of the drill may be slightly adjusted by turning the bracket upon its pivot-bolt 4, whereby when the machine has been operated until the first or short auger is in, and upon placing the second auger in position it is found by the operator to be slightly too long, it will not be necessary to take the entire machine apart to adjust it to the longer auger. The bracket 1 is provided near its upper end with inclined bearing-slots 6, that are arranged upon each side of the bracket in order to readily adapt the bracket to receive the journals 7 of the box 8. The box 8 is provided with a central bore 9, that is threaded to receive the threaded bar 10, that carries the drill, whereby when the bar is rotated the drill will be fed forward and the machine operated. The box 8 is provided with a hinged section 11, that is locked in its closed position by a pin and is adapted to be open to enable the threaded bar to be readily removed from the machine. The threaded bar 10 is provided with oppositely-disposed longitudinal concave faces 12, that are adapted to receive the curved or convexed blocks 13, which securely retain a master-wheel 14 to the bar and prevents the former revolving upon the latter. By constructing the faces curved in cross-section the bearing-surface for the master-wheel is greatly increased and the parts are much less liable to become worn and injure the threads of the bar than would be the case were two of the sides squared or provided with rectangular slots, and the said wheel 14 is enabled to slide longitudinally more freely.

One of the journals 7 is provided with an integral socket 15, that receives an adjustable arm 16, that carries a bearing 17, formed integral therewith. The other end of the arm or that which is secured in the socket 15 is provided with a squared portion 18 and a rounded portion 19, and the opening of the socket has a squared portion 20 and a rounded portion 21, which conform to the configuration of the end of the adjustable arm 16. The extreme end of the adjustable arm is threaded and provided with a nut 22, that bears against the end of the socket and retains the arm therein, and the squared portion of the socket is provided with a series of washers 23, which engage the shoulder formed by the squared portion of the adjustable arm, and when the box has become worn by the master-wheel and the latter begins to slip

away from the pinion 24 the washers can be successively removed to enable the pinion to be drawn closer to the socket and to be adjusted so that it can completely mesh with the master-wheel and prevent the teeth breaking, as is the case when the teeth engage only at their edges. The bearing 17 of the adjustable arm has arranged within it a crank-shaft 25, that has secured to one of its ends the pinion 24, that meshes with the master-wheel, and its other end 26 is squared and provided with an adjustable handle 27, that is secured thereon by a pin or the like, and is provided with a longitudinally-slotted section 28, that slides in a recess and is adapted to be retained in any desired position by a set-screw 29 to regulate the length of the crank.

It will thus be seen that the machine is simple and inexpensive in its construction and is capable of having its parts readily adjusted to take up the wear and thereby prevent injury to them.

Having thus described our invention, what we claim is—

1. In a mining-machine, the combination of the bracket, the box journaled in the bracket and provided with a socket 15, and the adjustable bar secured in the socket and provided with a bearing to receive the crank-shaft, substantially as described.

2. In a mining-machine, the combination of the socket 15, provided with an opening having the squared portion 20 and the rounded portion 21, the adjustable arm provided at one end with a bearing to receive the crank-shaft and having its other end provided with a squared portion 18 and a rounded portion 19, and a series of washers 23, arranged in the squared portion of the socket and adapted to engage the shoulder formed by the squared portion of the adjustable arm, whereby the crank-shaft is adapted to be adjusted, substantially as and for the purpose described.

3. In a mining-machine, the combination of the bracket 1, the box 8, provided with journals, one of said journals having an integral socket 15, the threaded bar 10, arranged in the box, the master-wheel 14, adapted to actuate the bar, the adjustable arm 16, secured in said socket and provided with the integral bearing 17, and the crank-shaft 25, arranged in the bearing and provided with the pinion 24, meshing with the master-wheel, substantially as described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

JAMES J. LYTLE.
WILLIAM F. EVANS.
CHARLES KIMBER.

Witnesses:
D. T. STOCKMAN,
JOHN DAVIS.