S. HOMER.

LOADING MACHINE.

APPLICATION FILED MAY 4, 1916.

1,259,626.

Patented Mar. 19, 1918.

3 SHEETS—SHEET 1.

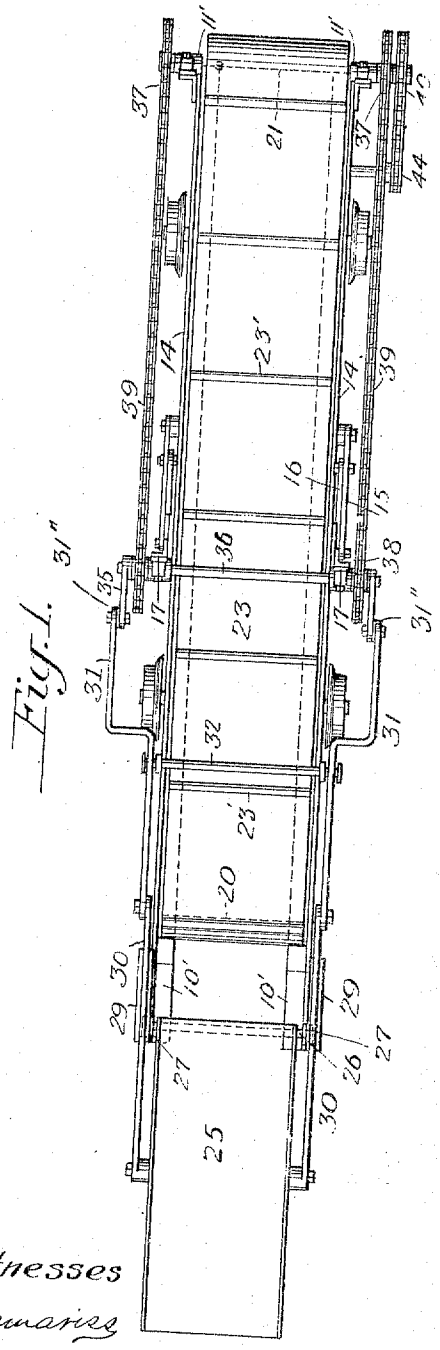


Fig. 1.

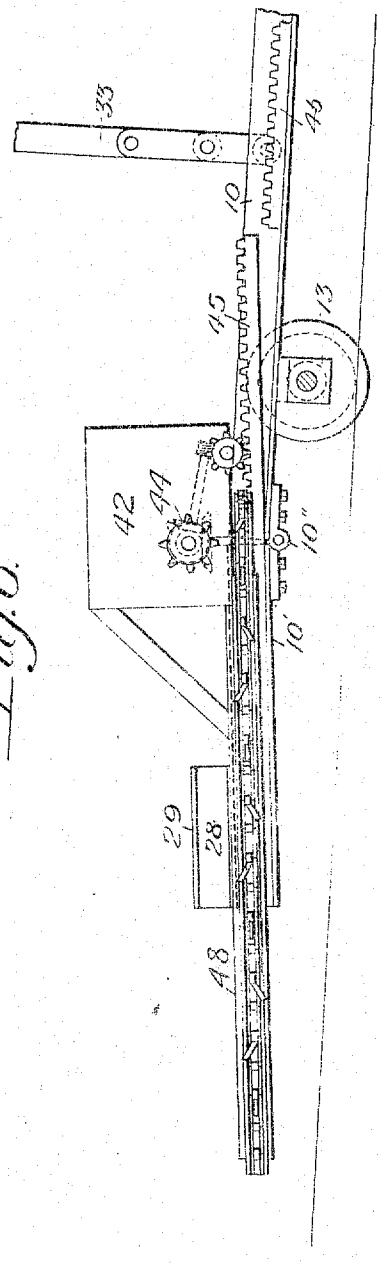


Fig. 6.

Witnesses

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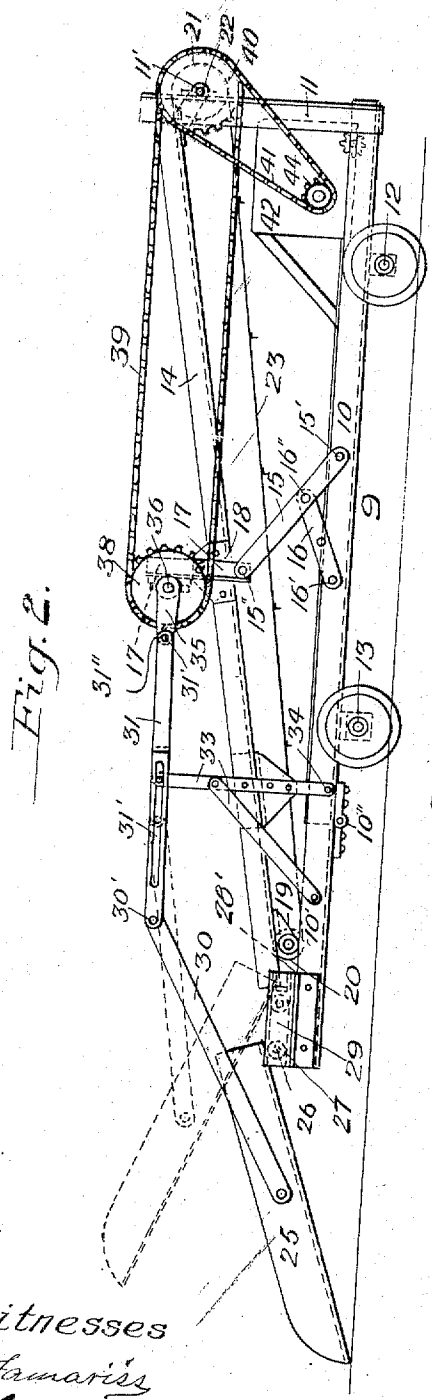


Fig. 2.

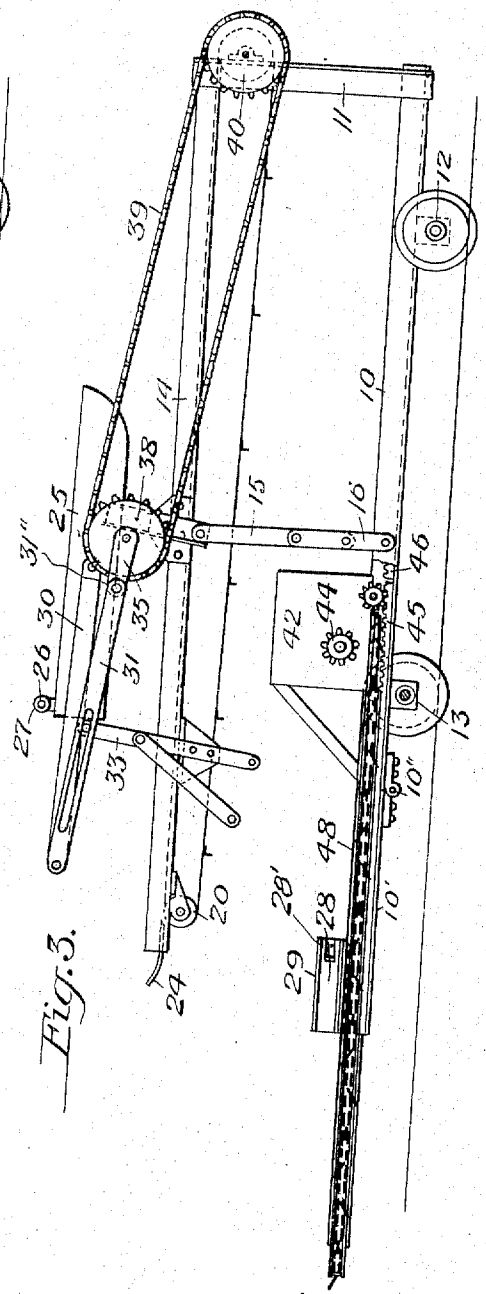


Fig. 3.

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3 SHEETS—SHEET 3.

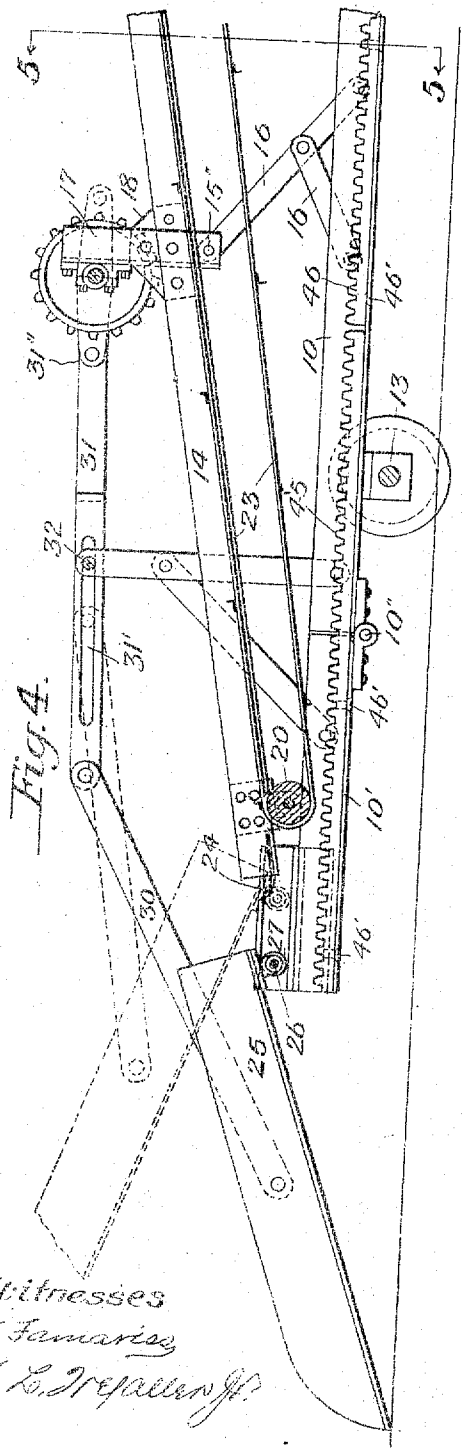


Fig. 4.

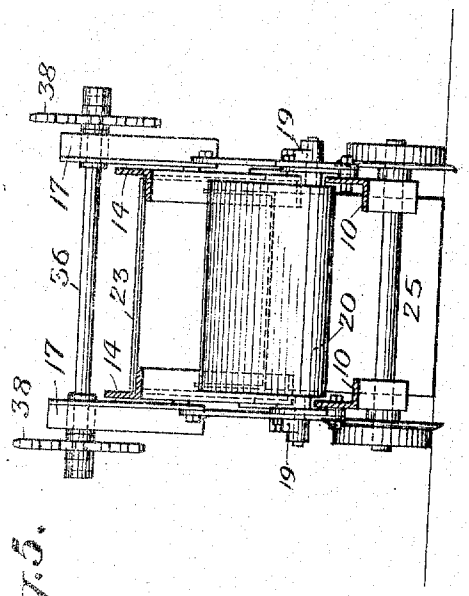


Fig. 5.

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UNITED STATES PATENT OFFICE.

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LOADING-MACHINE.

1,259,626. Specification of Letters Patent. Patented Mar. 19, 1918.

Application filed May 4, 1916. Serial No. 95,308.

To all whom it may concern:

Be it known that I, SAMUEL HOMER, a citizen of the United States, resident of Export, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Loading-Machines; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention pertains to improvements in machinery for mining purposes. It relates more particularly to a machine for loading coal in the mine.

One object of my invention is to provide a machine that can be operated to effectively and expeditiously perform the functions of lifting coal from the ground and loading the same, within the limited confines in a mine.

A further object of my invention is to provide a construction of loading machine, that will permit an undercutting machine to be positioned and operated at the same place with the loading machine, when the latter is out of operation, without removing either machine while the other is being operated.

In the accompanying drawings, Figure 1 is a plan view embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged detail side view, in section, of the forward end of the machine with a shovel carried thereby in inoperative position. Fig. 4 is an enlarged detail sectional view showing the forward end of the machine, showing the shovel in its operative position. Fig. 5 is a cross section on the line 5—5 of Fig. 4. Fig. 6 is a detail in sectional side elevation showing an undercutting machine in its movement toward operating position. Reference numerals in the following specification refer to like parts in the drawings in which is represented a frame 9 comprising oppositely disposed struts formed of the sections 10 and 10′ hinged together at 10″, to the sections 10 of which are suitably secured the uprights 11. The frame is mounted on the trucks 12, 13, the latter being freely disposed on a king-pin (not shown). Carried on said frame and pivotally secured at 11′ on the uprights 11 is an inclined member 14 (Figs. 1 and 2), which inclines downwardly toward the forward end of the machine.

Oppositely disposed link braces, formed of the links 15 and 16, support the inclined member on each side thereof (Figs. 2 and 4), the lower ends of said links 15 being detachably secured by bolts 15′ and the lower ends of the links 16 being pivotally secured at 16′ to the struts 10′. The upper ends of the links 15 are pivotally secured at 15″ to brackets 17, which are riveted on gusset plates 18, the latter being suitably secured to the sides of the inclined member 14, and the upper ends of links 16 are pivotally secured at 16″ to the links 15. Bearings 19 are suitably secured to the under side of the lower end of the inclined member, and an idler 20 is mounted in said bearings. At the higher end of the inclined member and located between the sides thereof is a drum 21 mounted on the shaft 22 (Fig. 2), which is supported in suitable bearings in the uprights 11. An endless carrier 23 having cleats 23′ crosswise thereof is arranged to operate between the sides of the inclined member and on the idler 20 and the drum 21. Slightly above the lower end of the endless carrier a platform 24 is suitably secured to the sides of the inclined member, said platform declining toward and projecting somewhat over the end of said endless carrier. A shovel 25 is positioned at the forward end of the machine, said shovel having both ends open (Figs. 1 and 2) and secured to the under side of the shovel is an axle 26, on the ends of which are freely carried the runners 27 (Figs. 2 and 4), which are mounted in slots at 28 in oppositely disposed guides 29 which are superimposed upon the forward ends of the strut sections 10′. Links 30 are freely connected at one end thereof to the sides of the shovel, the other ends of the links 30 being freely secured at 30′ to the forward end of the slide-bars 31 which have slots 31′ formed therein through which said slide-bars are mounted on the ends of the rod 32 which is carried (Figs. 2 and 4) in the upper end of the supports 33, the latter being detachably secured at their lower ends by bolts 34 engaging suitable openings in the lower ends of said supports and in the struts sections 10, 10′. The rear ends 31″ of said slide-bars are freely secured to the crank arms 35 (Fig. 1) which are suitably keyed on the shaft 36, which is operatively supported on the brackets 17. On the shafts 22 and 36 (Figs. 1 and 2) sprocket wheels 37 and 38 are keyed and carry sprocket chains 39. A power driven sprocket wheel 40 carrying the chain 41 is keyed on the shaft 22 and is operatively connected to the electric motor 42 by said chain 41 engaging the sprocket 44 on the end of the motor shaft.

On the inner sides of the struts 10, 10' are racks formed in sections 45, 46 suitably secured as at 46'. The sections 45 are free to break from the sections 46 when the strut sections 10' decline upon the hinges 10''. The said motor 42 and an undercutting machine 48 are positioned below the carrier and operate on the sectional racks 45, 46.

With the parts constructed and arranged as described, the operation of the same is as follows:—

The driving sprocket being set in motion operates the shaft 22 which actuates the sprocket wheels 37 and the drum 21. The said drum thereby sets the endless carrier in motion, and the sprockets 37 operate the sprockets 38 by means of the chains 39. The movement of the sprockets 37 operates the shaft 36 which actuates the crank arms 35 by which the slide-bars 31 are slidably actuated, on the rod 32, in connection with the links 30 to operate the shovel 25.

With the shovel in its retired position the first effect of the operation of the crank arms and slide-bars is to drive the shovel forward to the position shown in Figs. 2 and 4, and into the material to be loaded. The continued movement of the crank-arms reverses the movement of the slide-bars and draws the loaded shovel backward until the runners 27 are against the innermost end of the slots 28 and the rear open end of the shovel is at the platform 24. The runners 27 being against the closed end of the slots 28 prevents the shovel from continuing its horizontal movement, and the further movement of the slide-bars raises the forward end of the shovel until, with the rear open end of the shovel held in position at the platform 24 by the runners 27 in the slots 28, the shovel is sufficiently tilted to discharge its contents over the platform onto the endless carrier. (Fig. 4.) The movement of the crank-arms is timed to then resume the forward movement of the shovel for the purpose of reloading the same and the endless carrier conveys the discharged materials up over the drum, the cleats 23' serving to prevent the load from slipping backward during its passage, where cars or other desirable means may be positioned to receive the discharge from the carrier.

When desirable the shovel may be swung over on the links 30 which turning at 30' the shovel may be supported in an inverted position on the structure above the inclined member. (Fig 3.) The bolts 15' may then be removed from the link braces and by moving the parts at the pivotal points 16'' the said braces may be extended to elevate the inclined member to the position shown in Fig. 3. With the inclined member and other parts raised as shown in Fig. 3, the sprocket chain may be detached from the sprocket wheel and the latter with a section of the shaft may be uncoupled and removed from its motor driven shaft to allow clearance for passing the link braces in the detrucking of the undercutting machine relative to the loading machine.

It will be apparent that by my construction of loading machine the shovel or scoop may be controlled so as to properly perform its functions within the limited confines afforded in a mine.

It will be further apparent that my construction of machine makes it possible to operate an undercutting machine in a mine at the place where the loading machine is positioned; thereby saving the time and labor that would otherwise attach to such operations.

Various changes and modifications may be made in the construction and operation of the machine herein shown and described, without departing from the spirit of my invention.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a loading machine, a support having a longitudinally disposed passage, a shovel, mechanism for operating said shovel, said mechanism being movably supported in the path of said passage, during the operation of said shovel, so that said mechanism may be moved, when its operation is suspended, for the purpose of clearing the passage through said support to the shoveling point.

2. In a loading machine, a support having a longitudinally disposed passage, a shovel, a movable member carried on said support and moving in and out of the path of said passage, mechanism secured to said movable member for operating said shovel, said movable member being inclined across the path of said passage during the operation of said shovel, said shovel being detachably engaged in its operating position so that said shovel may be retired onto said movable member, when the operation of said shovel is suspended, so that the shovel may be moved with said movable member when the latter is moved out of the path of said passage for the purpose of clearing the passage through said support to the shoveling point.

3. In a loading machine, a shovel, a support, a movable member carried on said support, mechanism carried on said movable member for operating said shovel, said movable member being capable of being moved so as to raise said mechanism from its operative position relative to said shovel for the purpose of effecting a passage through said support to the forward end of a loading machine.

4. In a loading machine having an inclined member, a shovel and mechanism for operating the latter to and from said inclined member, a support having an unob-

structed passage lengthwise between its sides, said inclined member being pivotally supported at one end thereof between the sides at the rear of said support and above said passage, the other end of said inclined member projecting through the plane of said passage, while said machine is operating, and being freely mounted between the sides of said support so as to permit said other end to be raised above said passage when the operation of said machine is suspended, for the purpose of effecting a communicating passage through said support to the shoveling point.

5. In a loading machine, a support, an inclined member carried on said support, guides positioned forward of said inclined member, a shovel, mechanism carried on said inclined member and engaging said shovel to operate the same within said guides, said shovel being detachably engaged to said guides for the purpose of permitting said engaging mechanism and said shovel to be retired onto the said inclined member when the shovel is detached from said guides.

In testimony whereof, I the said SAMUEL HOMER have hereunto set my hand.

SAMUEL HOMER.

Witnesses:
JOHN C. THOMPSON,
J. L. TREFALLER, Jr.