

R. T. McKEEN.

LOADING MACHINE.

APPLICATION FILED SEPT. 20, 1909.

Patented Sept. 5, 1911.

3 SHEETS—SHEET 2.

1,002,534.

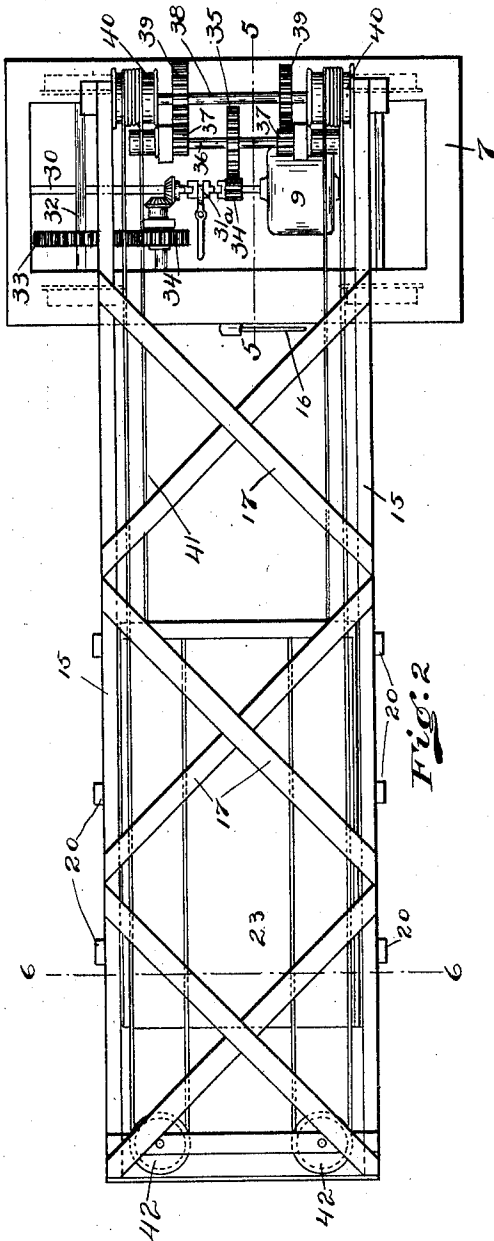


Fig. 2

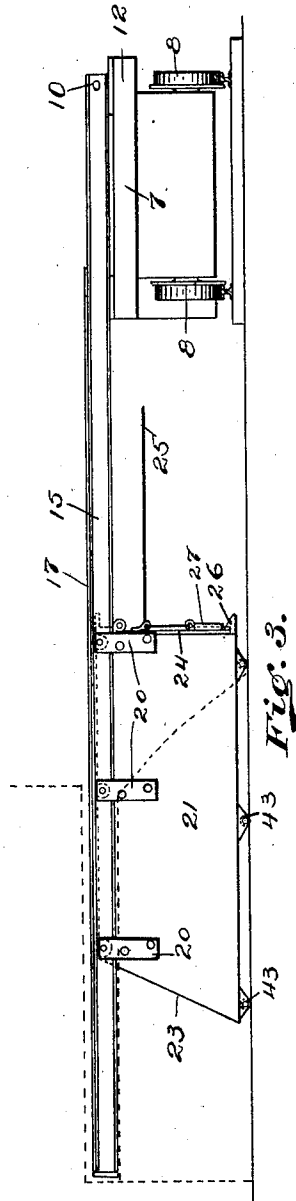


Fig. 3

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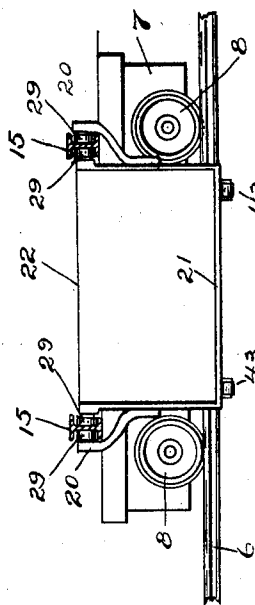


Fig. 6.

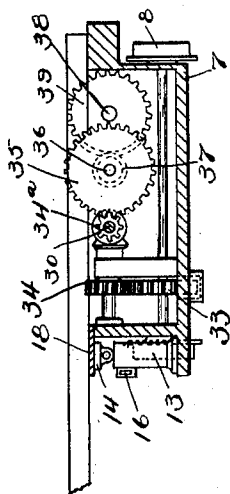


Fig. 5.

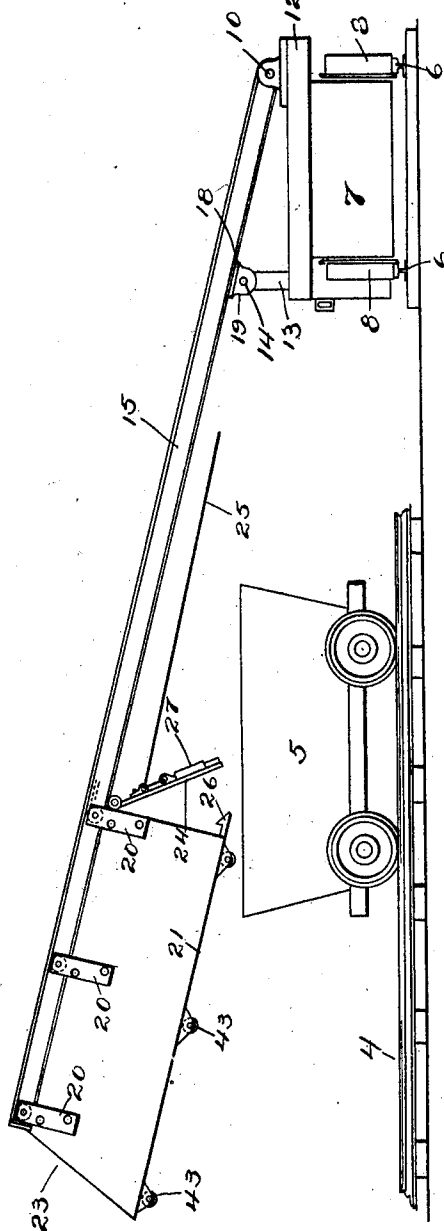


Fig. 4.

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UNITED STATES PATENT OFFICE.

RICHARD T. McKEEN, OF SILERVILLE, KENTUCKY.

LOADING-MACHINE.

1,002,534.

Specification of Letters Patent.

Patented Sept. 5, 1911.

Application filed September 20, 1909. Serial No. 518,460.

To all whom it may concern:

Be it known that I, RICHARD T. McKEEN, a citizen of the United States, residing at the city of Silerville, in the county of Whitley and State of Kentucky, have invented certain new and useful Improvements in Loading-Machines, of which the following is a specification.

In the mining of coal I will describe one system so that my invention and its objects and purposes will more readily be understood. The system I shall describe contemplates permanent main entries one thousand feet, more or less apart, with sufficient coal left on each side to support roof over entries, and cross entries driven three hundred to four hundred feet apart which are abandoned when coal is taken out. Tracks are laid in these cross entries for carrying out the coal and the cars running on them are known as "mine cars." Beginning on these cross entries at a point six feet beyond the pillar supporting main entry a room fourteen feet or more wide is driven between cross entries, parallel to main entry. Coal is then under-cut to depth of six feet by continuous electric coal mining machine. The ledge of coal along which the under-cutting is progressing is called the "face." The coal under cut is then shot down in the usual way. By methods now in vogue it is shoveled up by hand or by some of the ordinary loading machines, which progress is very slow and unsatisfactory.

In carrying out my invention I place a track along the face of the coal where it is being mined and under-shot. This track is portable and is laid eight feet from and parallel to face of coal and cross entry track. Of course the track will be moved whenever necessary. This portable track is preferably of same gage as track for mine cars. On this portable track I run and operate my loading machine. This loading machine is, (for the work it accomplishes) cheap of manufacture, simple in construction and efficient in use.

One of the features of my invention consists in providing a truck which shall be self propelling and carry back and forth along the working face of the coal a scoop or shovel.

Another feature of my invention consists in providing on the truck a crane mounted

at right angles to direction of travel of truck.

Another feature of my invention consists in supporting the crane or boom thereof on the side of track nearest the face of coal on a lifting jack by means of which the end of the crane boom is raised or lowered over the coal to be handled.

Another feature consists in providing simple sheave, drum, cable and brake mechanism in connection with an electric motor on the truck which carries the loading machine for operating the scoop or shovel.

Another feature consists in providing a loading scoop or shovel open only at the top and front end.

Other features and advantages of construction will readily become apparent from the following description.

In the accompanying drawing forming part of this specification, Figure 1 is a diagram of a coal mining system. Fig. 2 is a plan view of my coal loading machine. Fig. 3 a side elevation with the scoop and derrick down in position to take a load of coal. Fig. 4 a side elevation with the scoop and derrick elevated, ready to drop the coal into the mine car. Fig. 5 is a section through electric truck which carries the loading machine to illustrate construction, taken at line 5, 5, of Fig. 2. Fig. 6 is a section through trolley truck taken at line 6, 6, of Fig. 2.

In the drawings the entry is marked 1, the cross entry 2, the face of coal 3, the track in cross entry 4, the mine car 5, the track in front of face of coal on which my machine operates 6, the electric truck or machine carrying truck 7.

The electric truck 7 which carries my coal loading machine is of any desired size, contour and construction, operating on wheels 8 on the track 6. This truck 7 carries a reversible motor 9. A crane is mounted on the truck 7 at right angles to direction of travel of the truck and is hinged at 10 to frame 12 on side of truck opposite to face of coal, at about the height opposite of face of coal, at about the height of the coal seam and is supported on the side of truck 7 nearest the coal by a lifting jack 13; this jack 13 being suitably connected to the truck 7 and moving with it. Said jack supports the crane, being connected at point 14 to the arm or boom of the crane and by means of this jack 13 the end of crane boom

carrying the loading scoop over coal to be handled, is raised or lowered, as required, and desired. The jack is operated through medium of handle 16 (see Fig. 5). The crane may be supported on the electric truck 7 in any other convenient or desired manner.

The crane boom is constructed of two parallel iron or steel I beams 15, braced on top by cross bars or cross braces 17, with an iron plate 18, riveted to lower side, which rests on head 19 at top of jack 13, (see particularly Figs. 4 and 5). To the end of the I beams at end of crane boom I connect by strips or brackets 20, a loading scoop or shovel 21, scoop shaped as shown, open at top 22 and front end 23, at its rear, carrying a hinged door 24; this door 24 is closed by a latch or catch 26 and a spring bolt connection 27, and operated through medium of cable 25, the pulling of which opens the door, (see particularly Fig. 4). The shovel or scoop 21 at its side carries brackets 20 in which are supported rollers 29 one on each side of the I beam; on these rollers 29 the scoop 21 travels up and down on the I beams and consequently between the I beams, to and away from the coal to be loaded or dumped as desired (see particularly Fig. 6). Of course I may employ any other form or construction of scoop or shovel and supporting means therefor. It will readily be seen and understood how, by working jack 13 up and down the crane boom carrying the loading shovel or scoop 21 is raised and lowered.

I will now describe the mechanism for operating the scoop 21 back and forth on the I beams so as to force said scoop into the coal to be loaded and away from the coal ready to be dumped. I will first, however, describe the means of propelling the truck, which are as follows, to-wit:—On the truck 7 as before stated, I place the motor 9, the shaft on which it is mounted being marked 30 and on this shaft I place the clutch mechanism 31; on the axle 32 of the truck 7 I place a gear 33, which meshes with a pinion 34 connected by intermediate mechanism to shaft 30 so as to take power from the motor 9. By throwing the clutch mechanism 31 in the proper direction, the power is transmitted to pinion 34 and gear 33 which is connected to the axle 32 of the truck and imparts motion to the truck 7 and propels it forward and backward, (see Fig. 2). Of course any well known intermediate means may be employed between the truck axle and motor to transmit power to propel the truck.

Now to operate the scoop forward and backward. On shaft 30 of motor 9, I place a pinion wheel 34^a, which meshes with a gear wheel 35 on shaft 36 supported on the truck 7, consequently the pinion wheel 34^a, when shaft 30 is revolving, is turned,

transmitting power to the gear wheel 35, which, mounted on shaft 36, turns said shaft. On this shaft 36 at each end thereof, I place a pinion 37. On a shaft 38 supported on the truck 7, I place two gear wheels 39; the pinions 37 meshing with the gear wheels 39, thus the shaft 38 is turned. On each end of this shaft 38 I place a drum 40. When the shaft 38 turns in either direction these drums 40 turn with it. The mechanism just described can be seen more particularly, in Figs. 2 and 5. On each side of the machine a wire rope or cable 41 is connected to the scoop 21, passing around sheaves 42 at forward end of the boom, thence within outside flanges of I beams 15 to the drums 40 under the rear end of the boom, passing several times around said drums 40, then within the inside of flanges of I beams to a fastening at each side at rear end of scoop 21. By operating the drums 40 in proper direction the cables 41 will pull the shovel or scoop 21 forward and backward on the I beams, the rollers 29 in brackets 20 on the scoop rolling along the flanges of the I beams carrying the shovel or scoop with them.

It will be understood that by throwing the clutch mechanism 31 properly the motor will propel the truck 7 without operating the crane and shovel, or can be made to operate the scoop mechanism, drums and connecting gears, pinions and cables separately, or vice-versa.

The gage of loading or portable track being same as track for mine cars, the electric truck can travel to any part of mine, with boom and shovel detached. When the coal has been shot down and is lying in masses, the loading machine is connected up and begins hauling coal nearest to cross entry. The machine is in position in front of the loose coal, the boom carrying shovel is lowered by the jack 13 the shovel is forced under the loose coal by being forced to travel forward on the I beams; when shovel is filled, it is drawn back, the loading truck 7 is moved to the entry, stopping with boom and shovel over the entry or mine track. Crane is then raised by jack carrying up the loaded shovel, mine car is then pushed under shovel, and shovel unloaded, coal filling mine car. The scoop is then again closed and the electric truck carries the crane and shovel back for more coal.

On the bottom of the scoop 21, I attach rollers as 43, to reduce friction when loading scoop. If sides of shovel strike a large piece of coal, it can be drawn back, the electric truck moving forward or back until chunk of coal will go inside of the shovel.

By using my invention it will be readily seen that time and labor are saved, that the machine is designed to do its work rapidly and efficiently.

I may deviate from the specific construction herein set forth and modify same, and still remain within the scope of my invention.

5 The various parts of the machine may be made of any desired material and connected together in any other manner than herein specifically set forth.

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

1. In a loading machine of the character described, a truck, a crane, said crane movably mounted on said truck, a lifting jack, said jack mounted on said truck and supporting the crane, a shovel, said shovel mounted on said crane, said crane capable of being moved up and down by said jack, and means for moving the shovel forward and backward, all combined and operating as set forth.

2. In a loading machine of the character described, a truck, means for propelling

said truck, a crane, said crane pivotally mounted on the said truck, the frame of the crane being formed of I beams, cross 25 braces between said I beams, a lifting jack mounted on said truck, the crane supported on said lifting jack and capable of being raised and lowered thereby, a shovel, said shovel mounted on said crane, rollers 30 at the top of the shovel, means for moving the shovel forward and backward, the rollers on the shovel traveling in the I beams when the shovel is forced forward and backward all combined and operating as set 35 forth.

Signed at Silerville, Whitley county, Kentucky, this 10th day of August, A. D. 1909.

RICHARD T. McKEEN.

Witnesses:

M. M. TUTT,
D. S. WALKER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."