

(No Model.)

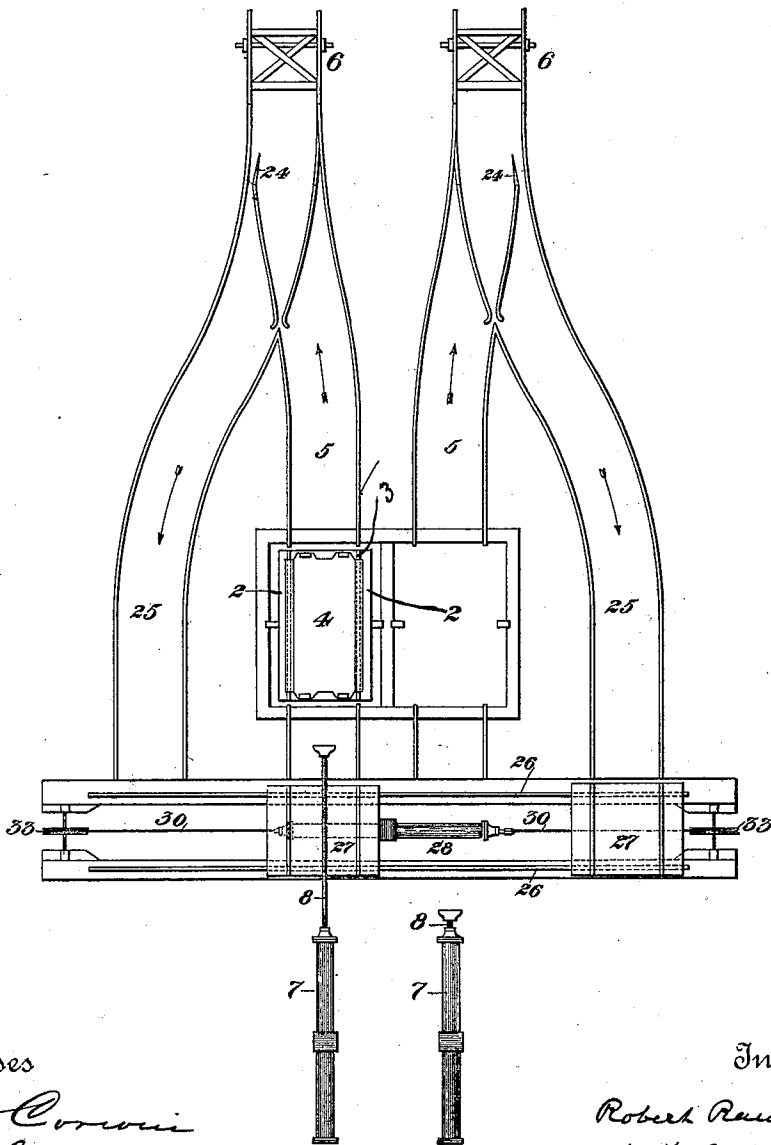
3 Sheets—Sheet 1.

R. RAMSAY.
APPARATUS FOR SHIFTING CARS.

No. 404,656.

Patented June 4, 1889.

FIG. 1



Witnesses

W. D. Conroy
H. L. Gills

Inventor

Robert Ramsay
by *T. B. Baskin*

his Attorney

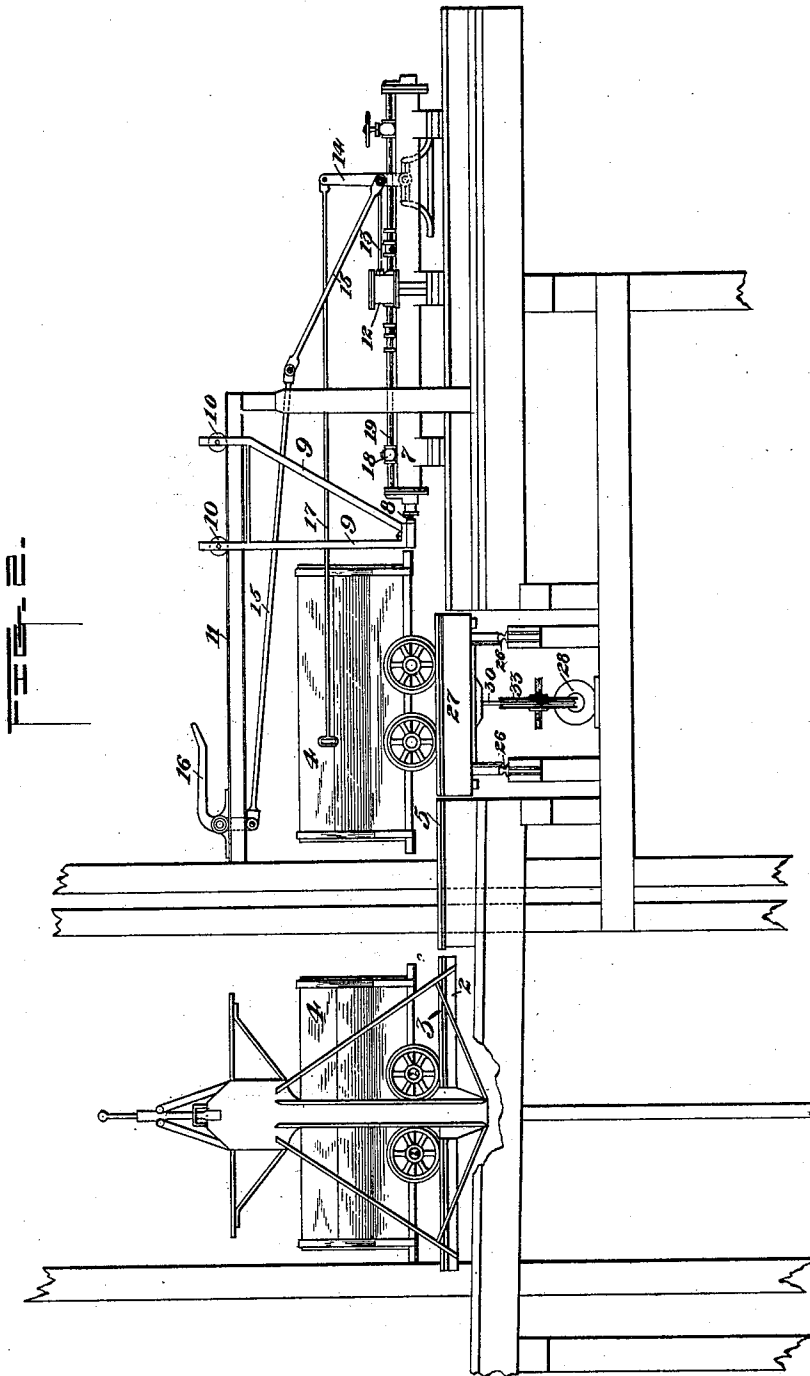
(No Model.)

3 Sheets—Sheet 2.

R. RAMSAY,
APPARATUS FOR SHIFTING CARS.

No. 404,656.

Patented June 4, 1889.



Witnesses
M. D. Corwin
A. L. Gill

Inventor
Robert Ramsay
by *T. Bakewell*
his Attorneys

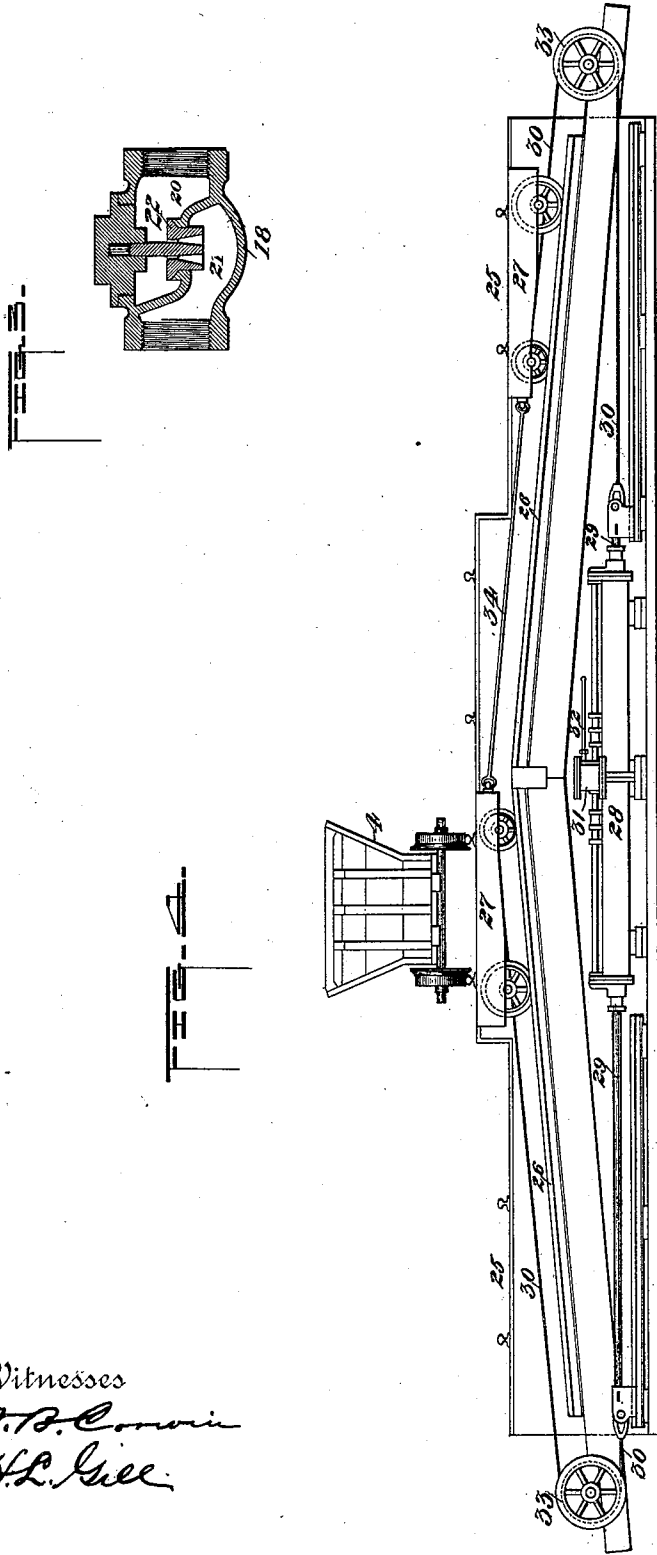
(No Model.)

3 Sheets—Sheet 3.

R. RAMSAY.
APPARATUS FOR SHIFTING CARS.

No. 404,656.

Patented June 4, 1889.



Witnesses
M. B. Conwin
A. L. Gill

Inventor
Robert Ramsay
by *M. B. Baker & W. H. W. W.*
his Attorneys

UNITED STATES PATENT OFFICE.

ROBERT RAMSAY, OF MOUNT PLEASANT, PENNSYLVANIA.

APPARATUS FOR SHIFTING CARS.

SPECIFICATION forming part of Letters Patent No. 404,656, dated June 4, 1889.

Application filed February 25, 1889. Serial No. 301,064. (No model.)

To all whom it may concern:

Be it known that I, ROBERT RAMSAY, of Mount Pleasant, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Shifting Cars, of which the following is a full, clear, and exact description.

Heretofore in transferring coal from the shafts of coal-mines it has been customary to move the loaded cars from the elevating-cage at the mouth of the shaft to the dumping-tipple by hand-power, the loaded cars being pushed over a level track, and when emptied returned in a like manner to the cages. This, however, requires a considerable amount of time and labor, to dispense with which, in so far as possible, is the object of my invention, which consists, first, in apparatus arranged to push the loaded cars off the cages and the empty cars on the same; second, in a system of inclined tracks, by means of which the cars are permitted to run from the mouth of the shaft to the tipples by gravity, and inclined return-tracks on which the empty cars are brought to a point in the rear of the mouth of the shaft in a like manner, and, third, in lifting and shifting apparatus, by means of which the empty cars, when they have returned from the tipple, are brought to a point directly in rear of the elevator-cages and in front of the pushers, by which they are pushed on the cages.

I will now describe my invention, so that others skilled in the art may manufacture and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of my improvement. Fig. 2 is a side elevation. Fig. 3 is a detached sectional view of the check-valve. Fig. 4 is an end view of my improvement.

Like symbols of reference indicate like parts in each.

In the drawings, 2 represents the elevator-cages employed in raising and lowering the coal-cars in the shaft of the coal-pit. These cages may be of the ordinary construction and form, and are provided with sections of tracks 3, on which the wheels of the cars 4 rest, and which connect with the tracks 5 at the floor of the tipple. These tracks 5 lead

from the mouth of the shaft down an incline to the tipples 6, where the coal is unloaded from the cars in the usual manner.

Situate in the rear of the mouth of the shaft is the pushing apparatus, which are two in number, mounted on a suitable platform or foundation, and they consist of steam or hydraulic cylinders 7, provided with pushing-pistons 8, which are connected to frames 9, which travel on wheels 10 on an elevated track 11. Connected with the cylinders 7 are reversing-valves 12, the rods 13 of which are operated by the pivoted levers 14, to which are connected the operating rods and levers 15, 16, and 17.

The rods 15 are connected with the valve-levers 14, so that when the frame 9 has been carried forward by the pistons 8 nearly to the end of their stroke the valve-levers are brought forward by the wheels 10 passing under the arms 16, whereby the valves are reversed automatically and the frame 9 is retracted by the reverse movement of the piston 8. As before stated, the valve is reversed just before the piston 8 reaches the end of the stroke, so as to maintain a cushion of steam in the cylinder, and thereby prevent injury to the piston or cylinder-head. On the return-stroke of the piston, there being less resistance, a check-valve 18 (shown in Fig. 3) is employed to check the passage of steam from the valve to the cylinder through the connecting steam-pipe 19. This check-valve consists of the double chamber 20 21, having a perforated puppet, 22, which opens and allows the exhaust to pass freely, but closes and allows the supply to pass only through the perforations.

In the tracks 5 at the bottom of the incline are switches 24, which connect the tracks with the return-tracks 25, which tracks extend from the switches down an incline to a point on a transverse line between the mouth of the shaft and the pushing apparatus. At this point a transverse inclined track 26 extends upward from the termini of the tracks 25 to a point directly in rear of the shaft, the apex or highest point being on a line between the two elevator-cages. Running on this transverse track are two transfer-carriages 27, the bottoms of which are inclined to correspond with the inclination of the trans-

verse track, while the floors of the carriages are level, and are provided with sections of track on which the wheels of the coal-cars rest. Beneath the track 26 is a steam or hydraulic cylinder 28, provided with a piston-rod 29 and a reversing-valve 31, operated by a suitable lever, connected with the valve-rod 32. Connected with the outer end of the piston-rod 29 are wire ropes 30, which extend over wheels 33 and are secured to the carriages 27. These carriages 27 are connected with each other by the link or bar 34, which is of such length that when one carriage is at the foot of one incline connecting with one of the tracks 25 the other carriage shall be at the top of the incline connecting with the track leading to one of the elevating-cages and directly in front of one of the pushers.

The operation of the apparatus is as follows: The loaded cars are placed on the elevating-cages at the bottom of the shaft and carried to the mouth of the shaft in the usual manner. An empty car being in front of one of the pushers, steam is admitted to the cylinder 7, which causes the pusher to advance and push the empty car against the loaded car 4 so as to carry it from the cage 2 onto the inclined track 5, down which it passes to the tippie 6. As soon as the pusher reaches the end of its stroke, the valve 12 is automatically reversed by the wheels 10 passing under the arm 16, and the pusher is withdrawn. After the car is unloaded at the tippie, it is pushed onto the return-track 25, down which it travels until it arrives on one of the carriages 27. By opening the valve 31 the piston or plunger 29 is set in motion, which brings the carriage 27 to a point on a line with the cage 2 and the empty car in front of the pusher. By means of the hand-lever 17 the pusher is again set in motion and permitted to advance until the empty car is pushed on the elevator-cage and the full car pushed off it, when it is again retracted and the empty car is again lowered in the shaft. There are two elevating-cages, two

sets of tracks, and two pushers, so that as the loaded car is being sent to the tippie the empty car may be returned—that is, the two sets of devices may be worked alternately, or, where desired, together, independently of each other.

Although I have described my invention as applied to coal-mines, it may be used in connection with other mines when desired.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In devices for shifting cars, the combination of an inclined delivery-track, a pusher, an inclined return-track, a transverse carriage, and apparatus for operating the pusher and the transverse carriage, substantially as and for the purposes described.

2. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston or pushing-rod, and a reversing-valve, substantially as and for the purposes described.

3. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston or pushing-rod, a reversing-valve, and a check-valve, substantially as and for the purposes specified.

4. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston or pushing device, a reversing-valve, and an arm connected with the reversing-valve and arranged to be operated automatically, substantially as and for the purposes described.

5. In devices for shifting cars, a pusher having a steam or hydraulic cylinder, a piston, a reversing-valve, and a hand-lever connected with the reversing-valve, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 13th day of February, A. D. 1889.

ROBERT RAMSAY.

Witnesses:

ROBERT HAY,
MORRIS RAMSAY.