

No. 822,153.

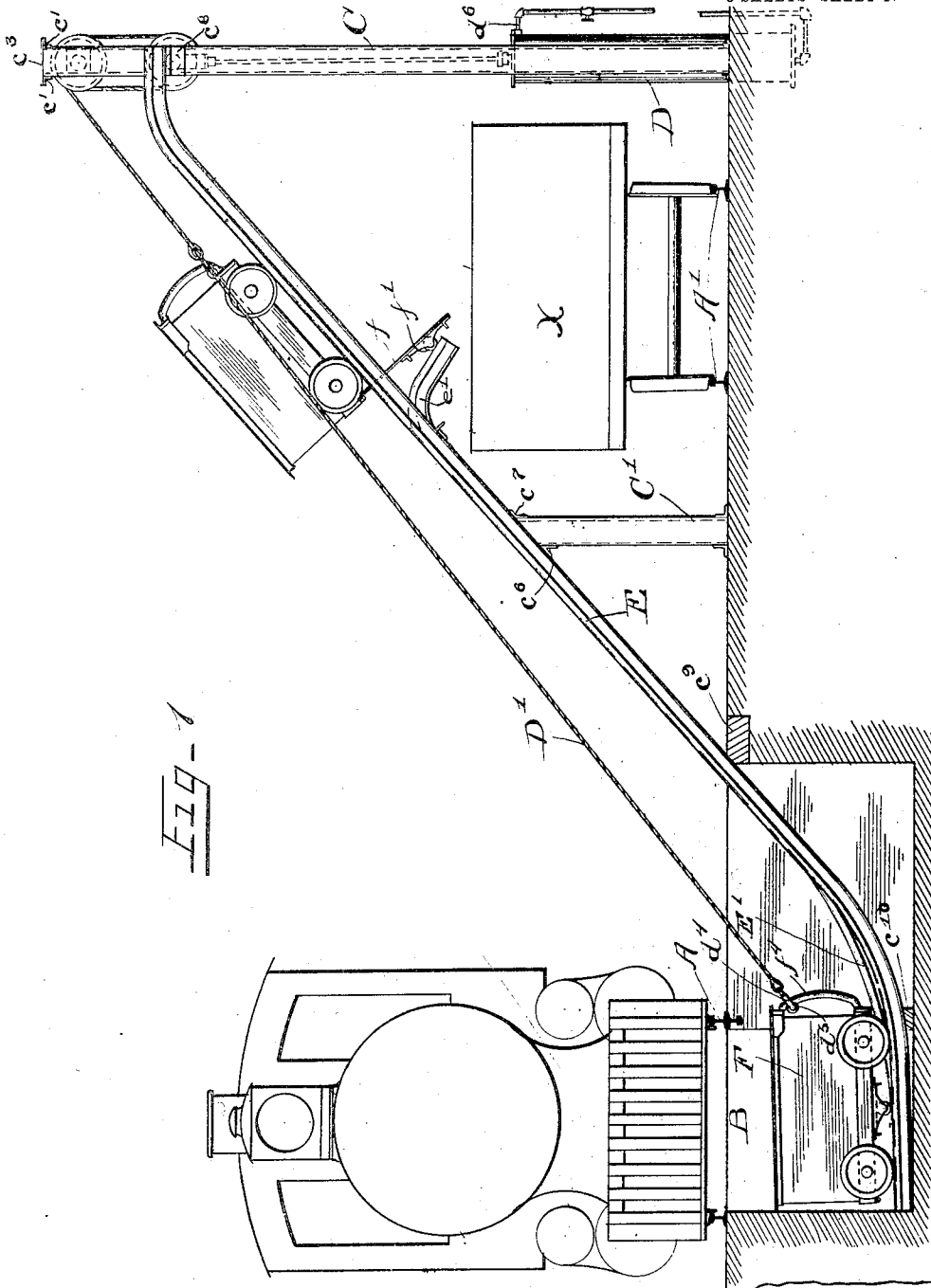
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W. ROBERTSON.

MATERIAL AND CINDER PIT ELEVATOR.

APPLICATION FILED OCT. 17, 1904. RENEWED NOV. 2, 1905.

3 SHEETS-SHEET 1.



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UNITED STATES PATENT OFFICE.

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MATERIAL AND CINDER-PIT ELEVATOR.

No. 822,153.

Specification of Letters Patent.

Patented May 29, 1906.

Application filed October 17, 1904. Renewed November 2, 1905. Serial No. 285,608.

To all whom it may concern:

Be it known that I, WILLIAM ROBERTSON, a subject of the King of Great Britain, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Material and Cinder-Pit Elevators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in material-elevators, and more particularly to that class of material-elevators to which my prior invention, elevator for cinder-pits or the like, patented to me April 1, 1902, No. 696,491, belongs. Heretofore in the elevators of this class the comparatively sharp up-curve of the rails at the bottom of the pit has sometimes caused an upward or downward movement of the dumping-bottom of the car, thereby sometimes displacing the ashes or other material or at least acting as a brake upon the movement of the car. It is also true that as heretofore constructed the cable instead of drawing true at all times has a tendency to lift or to partly lift the front end of the car.

The object of this invention is to provide a construction whereby the dumping-bottom is held from movement until dumping position is reached and also to avoid a tendency to lift the front end of the car.

It is also an object of the invention to provide a simple but strong structure upon which the car moves and which is so constructed as to enable the same to be erected without the aid of skilled iron-workers.

In the drawings, Figure 1 is a side elevation of a device embodying my invention. Fig. 2 is an end elevation of the same with the pit omitted. Fig. 3 is a top plan view thereof. Fig. 4 is an enlarged longitudinal section of the car. Fig. 5 is a fragmentary section taken on line 5 5 of Fig. 3.

As shown in said drawings, A indicates a railway-track having a cinder-pit (indicated by B) beneath the same. A' indicates a parallel switch-track adjacent to said track A, adapted to contain the cars X, into which the cinders from the pit are dumped by the conveyor. Rigidly supported on a suitable foundation adjacent the track A' are two up-

rights C, comprising parallel inwardly-facing channel-bars, between which is secured a pneumatic cylinder D, whereby power is supplied to the car. Parallel ways or uprights c^2 are provided on each side the cylinder D and fit closely thereto, and lugs d are rigidly bolted to said cylinder and uprights c^2 and hold the cylinder rigidly in place. Transverse angle-bars c' are rigidly secured on each side said uprights at the top, connecting the same together, and a plate c^3 , covering the same and the ends of the uprights, is secured thereto, affording a rigid top beam.

Shorter standards or uprights C' are provided intermediate the standards C and the edge of the cinder-pit, which are connected at their upper ends by transverse angle-bars $c^6 c^7$ and supported upon the beam thus formed and on angle-blocks c^8 , bolted near the top of said standards C, are inclined track-rails E, the upper ends of which are rigidly secured upon the uprights C and the lower ends of which extend downwardly into and are supported in the bottom of the pit B and are curved to approximately a horizontal position, as shown in Figs. 1 and 5, thus bringing the car F into position in the pit to receive a maximum load. Said rails, as shown, are each supported upon a transverse bearing or tie c^9 at the edge of the pit and one or more ties c^{10} in the bottom thereof, thus affording a very rigid structure. Intermediate the track-rails E is the dumping-rail E', which, as shown, extends from the bottom of the pit upwardly to a point above the track A', where the extremity of the same is turned downwardly, affording an inclined end e' . Supported upon said track-rails is a dumping-car F, which may be of any suitable size or shape to enter the cinder-pit and receive the load and which is provided with a bottom section f , hinged at the rear end of the car-body and, as shown in Figs. 1 and 4, provided with a roller or wheel f' , which tracks and is supported on the intermediate curved rail E'. Said dumping-bottom extends forwardly into close relation with a rearwardly-extending permanently-closed bottom section f^2 in said car, so that when the hinged bottom f is closed the material is securely held in the car. The intermediate track-rail E' is curved upon a different radius from the track-rails at the point where the same turn in the pit and at said point extend sufficiently above the tread-surfaces of the track-rails E to enable

the roller f' to track thereon without movement of the bottom within the car as the track-wheels pass the curve.

The uprights C and c^2 are rigidly braced by the angle-bars c^4 and c^5 , connected at the bottom and opposite the rear ends of the track-rail E on the uprights C and near the top of the cylinder D to the uprights c^2 . Journaled between and at the top of the ways or uprights c^2 are the sheaves d , and journaled on the upper end of the piston-rod d' are sheaves d^2 , about which the cable D' is passed, whereby the car is actuated. Said cable leads downwardly from the upper end of the structure to the front end of the car, upon which is provided a central strong curved bar or traveler f^3 , one end of which is rigidly bolted at the bottom of the car and the other at the top thereof and above the track-rail E' and upon which the end of the cable D' is engaged by means of an eye d^4 , through which said traveler extends and in which is provided a roller d^5 , which bears against the rear side of the traveler, enabling the line or cable to swerve up or down thereon to bring the draft at all times in alinement with the center of gravity of the car and its load, as shown in Fig. 1.

The operation is as follows: The weight of the car acts normally to return the car to the cinder-pit after dumping, where it remains until loaded. After the car has been filled by the dumping of the grates of a locomotive located above the pit compressed air is admitted above the piston of said cylinder by means of any suitable valves and connections, such as pipes d^6 , opening into said cylinder and forces the piston downwardly, thereby elevating the car to dumping position. Inasmuch as the lower end of the cable is engaged upon the traveler f^4 by means of the roller d^5 , the draft is always approximately in alinement with the center of gravity, as shown in Fig. 1, in which the line is shown engaged near the top of the car when in the cinder-pit and near the bottom when in dumping position. It is thus obvious that any tendency of the line to lift the front end of the car from the track when drawing the same from the pit is avoided and the draft at all times is applied at the most effective point. As the car moves upwardly from the pit the roller f' tracks on the intermediate track-rail E' and makes the upward turn at the bottom of the incline without movement of the hinged bottom in relation to the fixed bottom of the car. As the car rises the bottom remains closed until the upper inclined end e' of the track-rail E' is reached, when said bottom f swings downwardly, permitting the contents to fall into the receiving-car.

When the load has been dumped, pressure is released from the upper end of the cylinder, permitting the car to descend by gravity into

the pit. This downward movement acts to close the hinged bottom and enables the car to immediately receive another load.

I do not purpose limiting this application for patent otherwise than necessitated by the prior art, as obviously many details of construction may be varied without departing from the principles of my invention.

I claim as my invention —

1. In an elevator of the class described, an inclined way, a car movable thereon, a cable operating from the top of said incline for moving the car, a central vertically-disposed traveler at the front end of the car extending from top to bottom thereof and a sheave engaging said traveler and to which the end of the cable is attached whereby the draft of the cable is at all times in alinement with the center of gravity of the load.

2. In a dumping-elevator, an inclined track having the lower end thereof bent to approximately a horizontal position an intermediate track-rail having a downturned upper end, a car movable on said track, a bottom section hinged at the rear end of the car and extending forwardly to near the middle of the car, a roller on said bottom adapted to track on said intermediate rail, a portion of said intermediate rail adjacent the bend in the track-rails having a curve of a different radius from the track-rails and a cable operated from the top of the incline and having a vertically-sliding connection with the car end whereby the draft on said cable is at all times applied in alinement with the center of gravity of the car and its load.

3. A car of the class described comprising a car-body having a permanent bottom extending from the front end thereof, toward the middle, a bottom section hinged at the rear end of the car and extending forwardly to the fixed bottom and a truck or roller at approximately the center of said car permanently secured on said hinged bottom section, and a traveler on the front end of the car slightly outcurved and connected with the top and bottom of the car.

4. A car of the class described comprising a car-body having a fixed bottom section extending from the front end thereof toward the middle, a bottom section hinged at the rear end of the car and extending forwardly to the fixed bottom section, a truck or roller at approximately the center of said car permanently secured on said hinged bottom section and adapted to track on an intermediate rail thereby holding the bottom closed to the end of the rail and vertically-disposed means affording an adjustable attachment for a cable at the front end of the car.

5. A cinder-pit elevator-car of the class described comprising a car-body having a permanent bottom extending from the front end thereof, toward the middle, a bottom section hinged at the rear end of the car and

extending forwardly to the fixed bottom and a truck or roller at approximately the center of said car permanently secured on said hinged bottom section and a vertical traveler located centrally on the front end of the car and affording a sliding connection for the cable whereby the car is operated.

6. A cinder-pit car of the class described comprising a receptacle having a dumping-bottom, track-wheels thereon, a cable adapted to operate said car and an outwardly-curved traveler secured at the top and bottom of the car at its front end and shaped to adapt the draft of said cable to be in alignment approximately with the center of gravity of the car.

7. The combination with a cinder-pit of an inclined track leading thereinto and having the lower ends curved to approximately horizontal, a central rail also leading into the pit and having the lower curvature of a greater radius than the track-rails, a cinder-pit elevator-car, a hinged bottom at its rear end, a roller on said bottom at approximately the middle of the car and pneumatically-operated means to actuate the car.

8. In a device of the class described the

combination with a pit of an inclined track leading therefrom and having a horizontal section in said pit, a car on said track a pivoted bottom thereon, means for holding said bottom in position when the car moves from the horizontal to the inclined portion of the track, a cable and means connecting said cable with the car adapting it to adjust itself to the line of draft.

9. In a device of the class described the combination with a cinder-pit of an inclined track leading upwardly therefrom and provided with a horizontal section in the bottom of said pit, an intermediate rail raised for a portion of its length above said track, a car, a pivoted bottom section thereon, a wheel on the forward end of said section adapted to track on said intermediate rail, a vertical traveler on the front of the car and a cable movably attached thereto.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

WILLIAM ROBERTSON.

Witnesses:

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H. S. RUDD.