

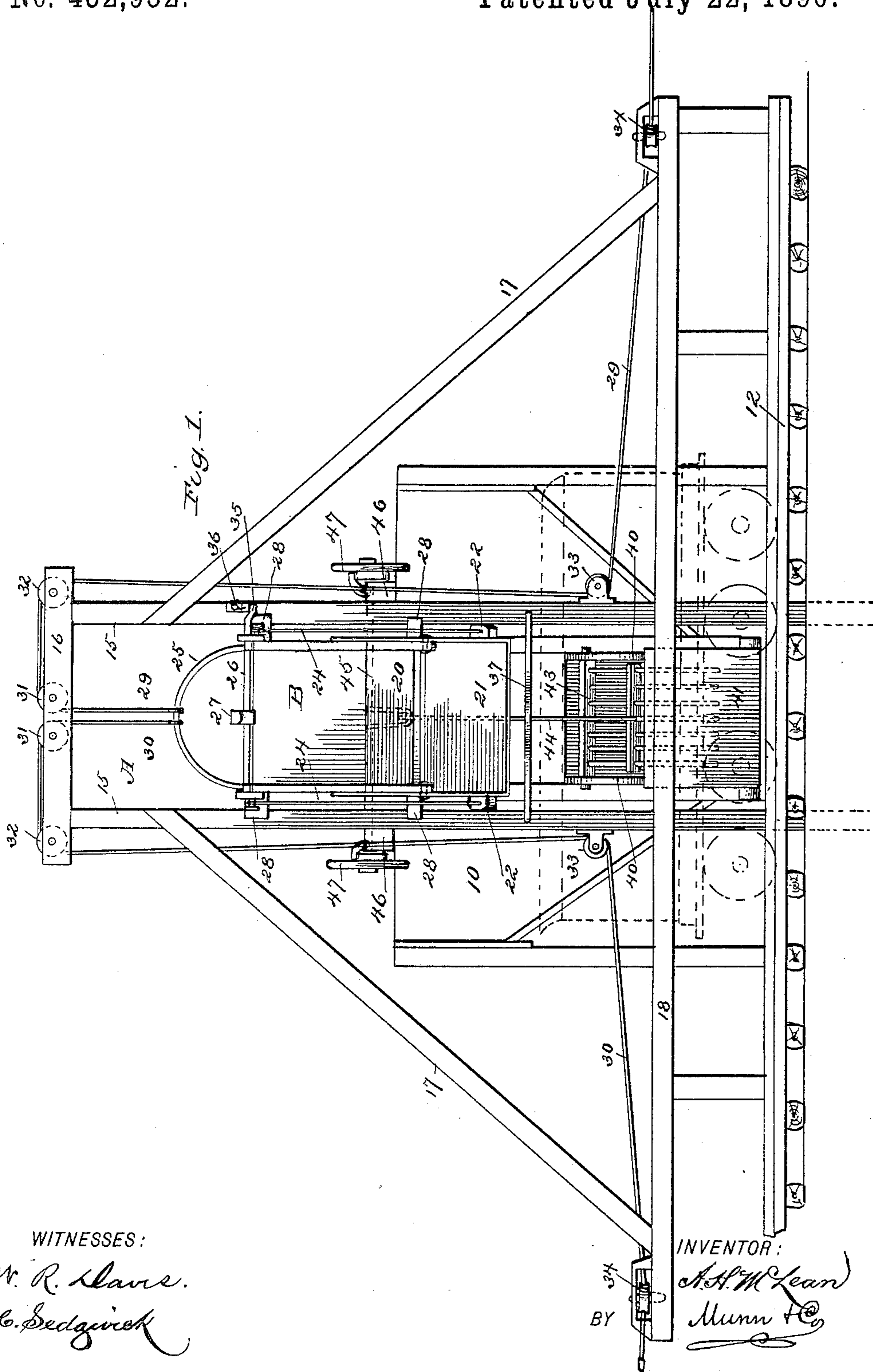
(No Model.)

2 Sheets—Sheet 1.

A. H. McLEAN.
ELEVATOR.

No. 432,952.

Patented July 22, 1890.



WITNESSES:

W. R. Davis.
C. Sedgwick

INVENTOR:

A. H. McLean
Munn & Co.

BY

ATTORNEYS

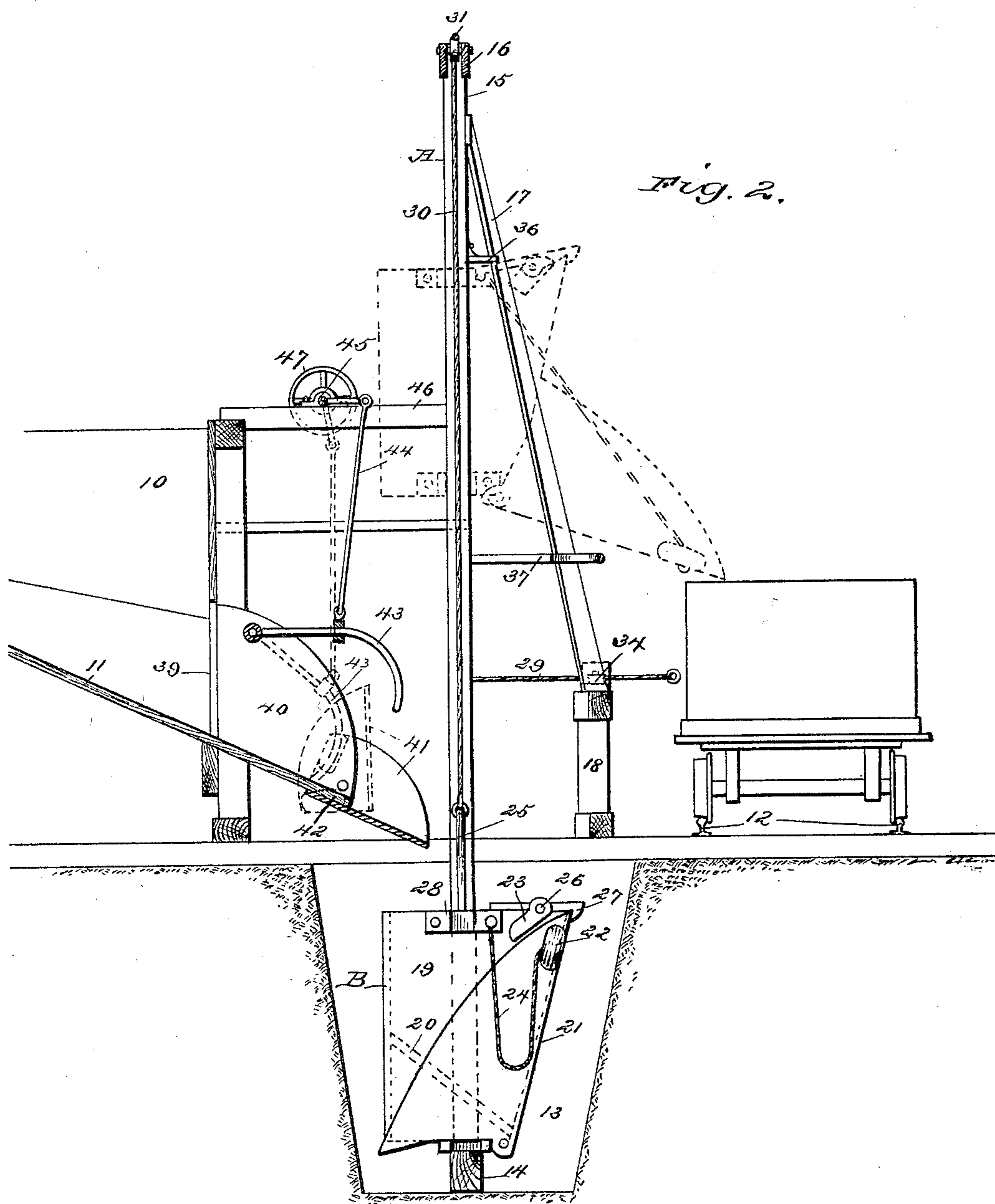
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A. H. McLEAN.
ELEVATOR.

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Patented July 22, 1890.



WITNESSES:

W. R. Hays,
C. Sedgwick

INVENTOR:

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BY Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

ANGUS HERBERT McLEAN, OF SAGINAW, MICHIGAN.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 432,952, dated July 22, 1890.

Application filed April 22, 1890. Serial No. 348,964. (No model.)

To all whom it may concern:

Be it known that I, ANGUS HERBERT McLEAN, of Saginaw, in the county of Saginaw and State of Michigan, have invented a new and useful Improvement in Elevators, of which the following is a full, clear, and exact description.

My invention relates to an improved elevator, especially designed for loading coal from a bin into the tender of an engine; and it has for its object to provide a means whereby the bucket adapted to be elevated will be raised by the engine, and at the proper moment, as the tender is brought in front of the bucket, the said bucket will be dumped to deliver the coal into the tender.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in both the views.

Figure 1 is a front elevation of the device, and Fig. 2 is a central vertical section through the same.

In carrying out the invention, any suitable form of bin 10 is employed to hold the coal, one having an inclined bottom 11 being preferred. The end of the bin from which the coal is delivered faces the track 12, and in front of the said end, between it and the track, a pit 13 is formed. Upon the bottom of the said pit the base-beam 14 of a frame A is placed, which frame consists of two spaced parallel standards 15, united at their top by a cross-bar 16 and at the bottom by the said base-beam 14. The frame may be stayed or strengthened in any suitable or approved manner by braces 17, one of which is preferably located at each side. Between the track and the front of the frame a guard-fence 18 is preferably erected, to which guard-fence the braces 17 may be attached.

Within the frame A a bucket B is adapted to slide, which bucket consists of a body portion 19, having its bottom 20 inclined downward in the direction of the front, and a door 21, which constitutes the front of the said bucket, which door is pivoted to the body

portion at its lower end and provided with side guards which extend rearward in contact with the outer face of the body, as shown in Fig. 2. The door is provided at its upper end with a weight 22, attached one at each side, and to the upper sides of the body of the bucket, at the front, guide-lugs 23 are attached, which define the rearward movement of the door. The weights 22 of the door are connected with the body by means of ropes or chains 24, which are of sufficient length to permit the door to drop downward and remain in a downwardly-inclined position to form a continuation of the incline formed by the bottom of the body. The body of the bucket is provided with an attached bail 25, and upon the front upper portion of the body a shaft 26 is journaled, and upon said shaft, at or about its central portion, an outwardly-extending latch 27 is pivoted. In order that the bucket may be guided properly in its vertical movement within the frame, guide-cleats 28 are attached to each side at top and bottom, which guide-cleats are recessed to receive the inner face of the standards 15 of the frame.

To the bail of the bucket two ropes or chains 29 and 30 are attached, which lead upward over guide-pulleys 31 in the top cross-bar 16 of the frame, and downward over similar pulleys 32, also journaled in the said cross-bar, one of said ropes or chains being carried down at each side of the frame and over guide-pulleys 33, attached to the frame at or near the central portion, and from the said guide-pulleys the ropes or chains are carried in opposite directions in contact with similar pulleys 34, journaled upon the fence 18. The extremities of the ropes or chains are preferably provided with a link, a hook, or other gripping or fastening device, whereby they may be readily attached to a locomotive.

The shaft 26 of the bucket is provided at one end with a crank-arm 35, which crank-arm is adapted for engagement with a trip 36, attached to one of the standards of the frame, the trip 36 being so located and the length of the ropes or chains being so calculated that when the extremity of either rope or chain is attached to an engine, when the tender of the engine is opposite the frame A the crank-arm 35 of the bucket-shaft 26 will contact

with the said trip 36, and release the door of the bucket and so deliver the coal to the said tender.

A closing-bar or yoke-like frame 37 is attached to the standards of the frame below the trip 36, for the purpose hereinafter described, the said yoke being of sufficient depth and of suitable shape to permit of the uninterrupted upward passage of the bucket.

The bin 10 at its end facing the frame A is provided with an opening 39, and a downwardly-inclined chute 40, attached to the outer walls of the said opening, and to the lower extremity of the chute 40 an auxiliary chute 41 is pivoted in such manner that it may be carried up to the vertical position shown in dotted lines in Fig. 2, the said auxiliary chute having attached to its sides at the lower end weights 42. Within the chute 40 a gate or cut-off 43 is pivoted, which preferably consists of a series of curved fingers united by suitable brace-bars, and the said gate is practically made to conform to the contour of the chute in which it is pivoted. The gate or cut-off 43 is elevated to permit the coal to flow from the bin by a link-connection 44 with a cranked shaft 45, journaled upon beams 46, attaching the frame A to the bin, which shaft is manipulated preferably through the medium of hand-wheels 47, one of which is located at each end, as shown in Fig. 1.

In operation when one of the ropes or chains 29 or 30 has been attached to an engine the shaft 45 is manipulated to draw up the gate or cut-off 43, and as said gate or cut-off ascends it throws downward the auxiliary chute 41, and the coal escaping from the bin is delivered by the two chutes into the bucket B, which is in the pit 13. When the bucket is filled, the gate is lowered and the supply of coal is stopped. As the engine advances, the loaded bucket is drawn upward, and when said bucket contacts with the auxiliary chute 41 it throws said chute upward to its normal or vertical position, (illustrated in dotted lines in Fig. 2,) the movement of the auxiliary chute being greatly augmented by the attached weights 42, and when the tender is opposite the frame A the crank-arm 35 of the shaft 26 contacts with the trip 36 upon the frame, and the said shaft is rocked sufficiently to disengage the latch 27 from the door 21 of the bucket, whereupon the said door falls downward, as shown in Fig. 1, and the coal passes from the bucket to the tender, as shown in dotted lines, Fig. 2. When the tender has received its load, the engine is backed and the bucket thereby lowered, and as the bucket drops downward the open door is brought in contact with the yoke-frame 37 and is pressed thereby inward to such an extent that it automatically engages with its latch 27. The bucket then continues downward with its door closed to its seat within the pit, and is in position to receive another charge.

It will be observed that the device is very

simple and readily manipulated, and that the engine is made to do the work of hoisting the coal; also, that the tender may be filled whether the engine approaches from either up or down the track.

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

1. In a device of the character described, the combination, with a frame provided with a trip and a closing-bar, of a bucket held to slide vertically up and down in said frame, provided with a drop-door hinged at its lower edge to swing downward and a trip-latch engaging said door, and a rope attached to said bucket and guided outward from the frame, substantially as shown and described.

2. In a device of the character described, the combination, with a bin provided with a cut-off and a frame provided with a trip and a closing-bar, of a bucket held to slide vertically in said frame, provided with a drop-door and a trip-latch engaging said door, and a rope attached to said bucket and guided outward from the frame, substantially as shown and described.

3. In a device of the character described, the combination, with a bin provided with a chute having an auxiliary chute and a cut-off, and a frame provided with a trip and a closing-bar, of a bucket held to slide vertically in said frame, provided with a drop-door and a trip-latch engaging said door, and a rope attached to said bucket and guided outward from the frame, substantially as shown and described.

4. In a device of the character described, the combination, with the frame, a bucket held to slide vertically in the said frame and provided with a shaft journaled upon its upper front portion having an attached latch, and a crank-arm and a drop-door adapted to be engaged by the said latch, of a trip attached to the frame, and a closing-bar also attached to the frame below said trip, substantially as shown and described, whereby when the bucket is elevated the trip contacting with the shaft releases the door, and when the bucket is descending the closing-bar automatically closes the said door, substantially as shown and described.

5. In a device of the character described, the combination, with a frame, a bucket held to slide in the frame, provided with a shaft journaled upon its upper forward portion having an attached latch and a crank-arm, and a front drop-door adapted for engagement with the said latch, of hoisting ropes or chains attached to the bail of the bucket and passing over guides in the frame outward in opposite directions therefrom, a trip located upon the frame adapted for contact with the bucket-shaft, a closing-bar also attached to the frame and adapted for contact with the drop-door of the bucket when the latter descends, and a bin provided with a chute having an auxiliary drop-extension and adapted

to deliver the material to the bucket, substantially as and for the purpose specified.

6. In a device of the character described, a bin provided with an attached delivery-chute, an auxiliary chute pivoted at its lower end to the outer end of the said main delivery-chute to swing outward and downward and having its pivoted end weighted to assist it in closing, a cut-off gate pivoted in the main chute, and means, substantially as shown and described, for raising and lowering the said gate, the said auxiliary chute when swung closed being in the upward path of the gate to be swung down thereby, as and for the purpose specified.

7. In a device of the character described, a bin provided with a downwardly-extending delivery-chute, an auxiliary extension-chute pivoted to the lower end of the main chute, the said extension-chute being provided with attached weights at its inner end, a cut-off gate pivoted in the main chute, consisting of a series of downwardly-curved connected fingers, a crank-shaft, and a connection between the said gate and the crank-shaft, substantially as shown and described.

8. In a device of the character described, the combination, with a bin provided with a downwardly-extending chute, a weighted extension-chute pivoted to the lower end of the main chute, a gate consisting of a series of curved connected fingers pivoted in the main chute, and means, substantially as shown and

described, for elevating the said gate, of a frame, a bucket held to slide in the said frame and provided with a drop-door, the said bucket in ascending being adapted to carry the auxiliary chute to the perpendicular position, as and for the purpose specified.

9. In a device of the character described, the combination, with a bin provided with a downwardly-extending chute, a weighted extension-chute pivoted to the lower end of the main chute, a gate consisting of a series of curved connected fingers pivoted in the main chute, and means, substantially as shown and described, for elevating the said gate, of a frame, a bucket held to slide in the frame and provided with a drop-door, the said bucket being adapted in ascending to contact with the auxiliary chute, a shaft having a crank-arm journaled upon the bucket and having an attached latch, a trip attached to the frame and adapted for contact with the crank-arm of the bucket-shaft, a closing bar or yoke also secured to the frame, adapted for contact with the drop-door of the bucket when the latter is open, and means, substantially as shown and described, for elevating the said bucket, as and for the purpose specified.

ANGUS HERBERT McLEAN.

Witnesses:

ESTHER STEELE,
WILLIAM H. SWEET.