No. 687,116. Patented Nov. 19, 1901.

B. BULKELEY.

CAR.

(Application filed June 28, 1901.)

(No Model.)

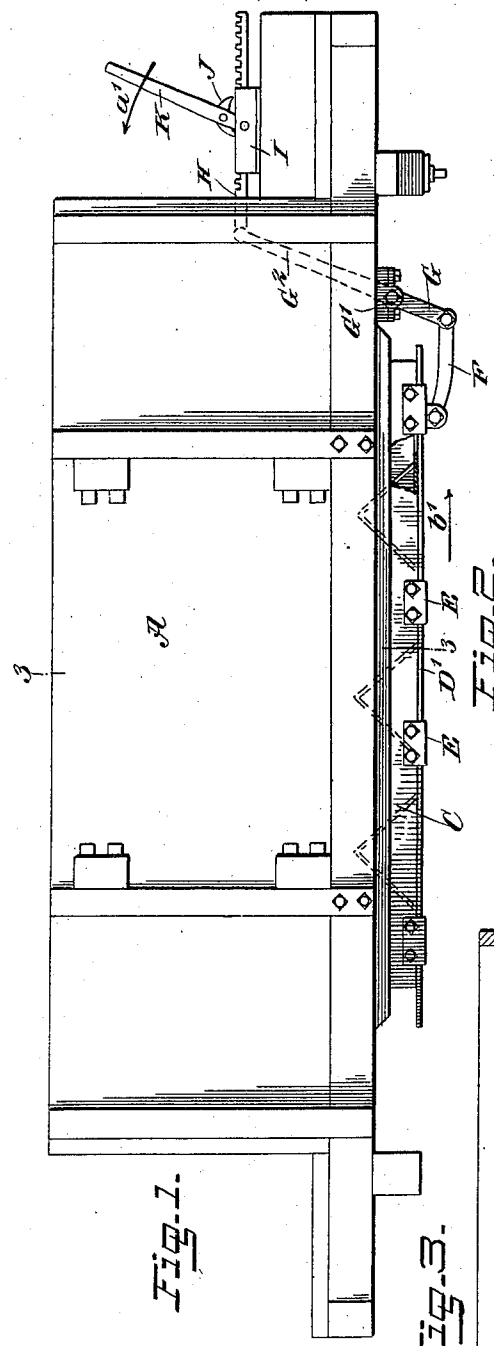


Fig. 1.

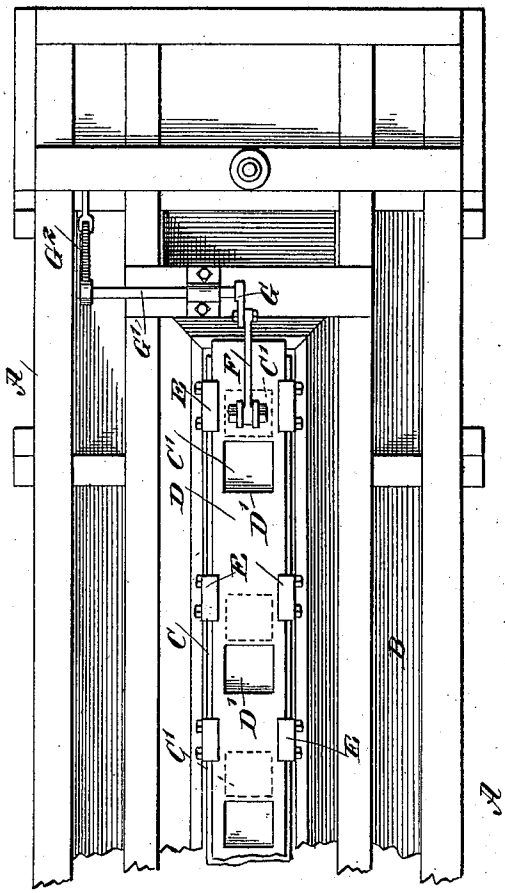


Fig. 2.

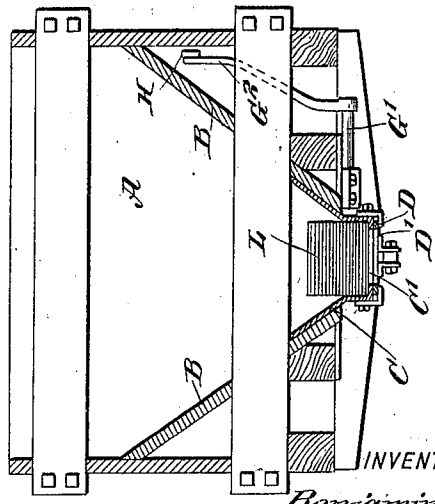


Fig. 3.

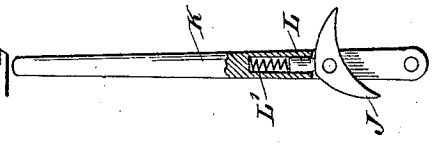


Fig. 4.

WITNESSES:

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BENJAMIN BULKELEY, OF MARION, IOWA.

CAR.

SPECIFICATION forming part of Letters Patent No. 687,116, dated November 19, 1901.

Application filed June 28, 1901. Serial No. 66,381. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN BULKELEY, a citizen of the United States, and a resident of Marion, in the county of Linn and State of Iowa, have invented new and useful Improvements in Cars, of which the following is a full, clear, and exact description.

The invention relates to railroad freight-cars of the hopper-bottom type; and its object is to provide a new and improved bottom door more especially designed for ballast-cars carrying crushed stone or other material and arranged to allow for convenient opening of the door to drop the contents of the car in separate piles in the middle of the road-bed, the arrangement permitting of quickly closing the door to stop the discharge of the material whenever it is desired to do so.

The invention consists of novel features and parts and combination of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied, parts being broken out. Fig. 2 is an inverted plan view of the improvement. Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 1, and Fig. 4 is an enlarged sectional side elevation of the operating-lever.

The bottom A of the car is provided with the usual hopper-bottom B, terminating at its lower end in a metallic box C, having its bottom formed with openings C′, spaced apart and adapted to be opened and closed by a door D, mounted to slide longitudinally in suitable bearings E, carried by or formed on the box C. The door D has spaced openings D′, adapted to move in and out of register with the openings C′ to open or close the hopper-bottom box C for allowing the material to flow out of the car or to shut off the flow of material whenever it is desired to do so. In order to move the door for the purpose mentioned, the following device is provided: One end of the door D is pivotally connected by a link F with an arm G, depending from a shaft G′, journaled in suitable bearings attached to the under side of the car-body A, as plainly shown in the drawings, and on the said shaft G′ is secured an upwardly-extending arm G^2, pivotally connected with a rack H, mounted to slide longitudinally in suitable bearings I, secured to the body E at one end thereof. (See Fig. 1.) The pawl J is adapted to engage the rack H to move the latter either forward or backward, and the said pawl J is fulcrumed on a lever K, pivoted on the bearing I and under the control of the operator. The pawl J is a double pawl and is held in either of its two positions by a spring-pressed slide L, mounted to slide in a recess in the lever K and pressed on by a spring L′, as plainly shown in Fig. 4, to hold the pawl J in either of its two positions.

The operation is as follows: When the several parts are in the position as illustrated in Figs. 1 and 2 then the door D is in a closed position—that is, its openings D′ are out of register with the openings C′ in the bottom of the box C. Now when it is desired to discharge the contents of the car onto the road-bed then the operator moves the pawl J into the position shown in Fig. 1 and then imparts a forward and downward swinging motion to the lever K to cause the pawl J to move the rack H inwardly in the direction of the arrow a', so that a swinging motion is given to the arm G^2, and consequently the shaft G′ is rocked and the arm G pulls on the link F to move the door D in the direction of the arrrow b' until its openings D′ are in register with the openings C′. When this takes place, the material contained in the car can readily flow out of the car-body onto the track by way of the registering openings D′ and C′. When it is desired to again close the car, then the operator swings the pawl J into the reverse position, so that on actuating the lever K, as previously described, the rack H is caused to move outward in the inverse direction of the arrow a', so that the door D slides in the inverse direction of the arrow b', and consequently the openings D′ move out of register with the openings C′ to close the bottom of the box C.

By the arrangement described a single operator can readily move the door D into an open or closed position to allow the contents

of the car to flow out onto the road-bed or to shut off the flow of the material whenever it is desired to do so.

In order to cause the material contained in the body E to readily flow through the registering openings C′ and D′, I provide inverted-V-shaped blocks L within the box C, between adjacent openings C′, to prevent any of the material from remaining on the flat bottom of the box C.

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

1. A hopper-bottom railroad-car, having an apertured bottom, and a door sliding on the said bottom and having openings adapted to move in and out of register with the openings of the said bottom, a shaft mounted to turn in suitable bearings and provided at each end with an arm, the arms extending in opposite directions, a link connecting one of said arms with one end of the door and a sliding device pivotally connected with the other arm to swing the same, as set forth.

2. A hopper-bottom railroad-car, having an apertured bottom, a door sliding on the said bottom and having openings adapted to move in and out of register with the openings of the said bottom, and manually-controlled means for moving the said sliding door, the said means comprising a link pivotally connected with the said door, a shaft having arms of which one is connected with the said link, a rack mounted to slide and connected with the other arm, and a lever and pawl for engaging the said rack to move the latter in either a forward or backward direction according to the position of the pawl on the lever, as set forth.

3. A hopper-bottom railroad-car, having an apertured bottom, a door sliding on the said bottom and having openings adapted to register with the openings of the said bottom, a rack mounted to slide, connections between the said rack and the door to move the latter, a lever, a double pawl fulcrumed on the lever and adapted to engage the rack to move the latter either backward or forward, and means for holding the pawl in either of its two positions, as set forth.

4. A hopper-bottom railroad-car, having an apertured bottom, a door mounted to slide on the said bottom and having openings adapted to register with the openings of the said bottom, a rack mounted to slide, connections between the said rack and the door to move the latter, and a lever carrying a pawl for engaging and moving the rack either backward or forward, as set forth.

5. A hopper-bottom railroad-car having a box on the bottom of the car, the bottom of the box being formed with spaced openings, means for guiding the material to the openings in the box, a door mounted to slide on the said box-bottom and having spaced openings adapted to register with the openings in the said box-bottom, and means for moving the door, comprising a link connected with the door, a device mounted to slide, a swinging connection between the sliding device and the said link, and means for moving the sliding device either backward or forward, as set forth.

6. A hopper-bottom railroad-car, having an apertured bottom, a door mounted to slide on said bottom and having openings adapted to register with the openings of the said bottom, a rack mounted to slide, connections between the said rack and the door to move the latter, a lever, a double pawl fulcrumed on the lever and adapted to engage the rack to move the rack either backward or forward, and a spring-pressed slide mounted to slide in a recess in the lever, and adapted to hold the pawl in either of its two positions, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJAMIN BULKELEY.

Witnesses:
H. B. EARLING,
C. H. MARSHALL.