

R. M. ZIMMERMAN.
DUMP CAR.
APPLICATION FILED SEPT. 2, 1910.

1,009,618.

Patented Nov. 21, 1911.

3 SHEETS-SHEET 1.

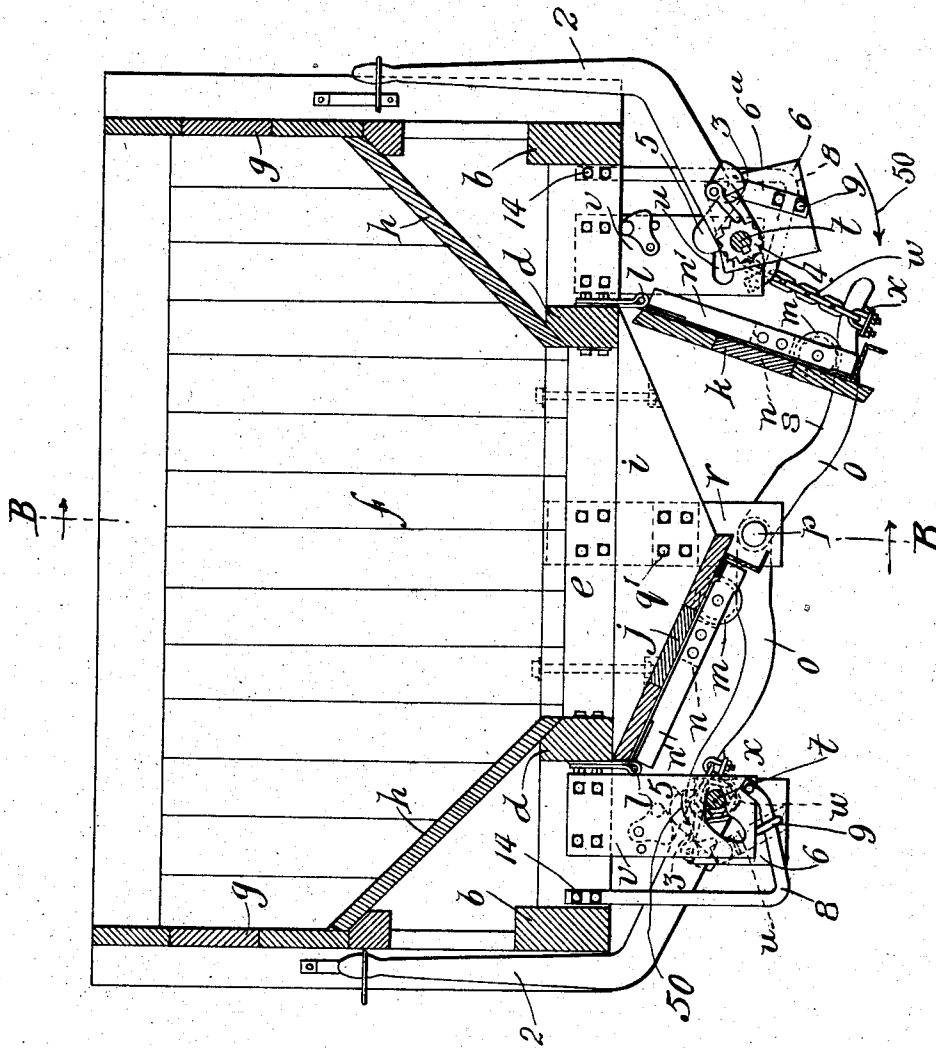


Fig. 1.

Witnesses
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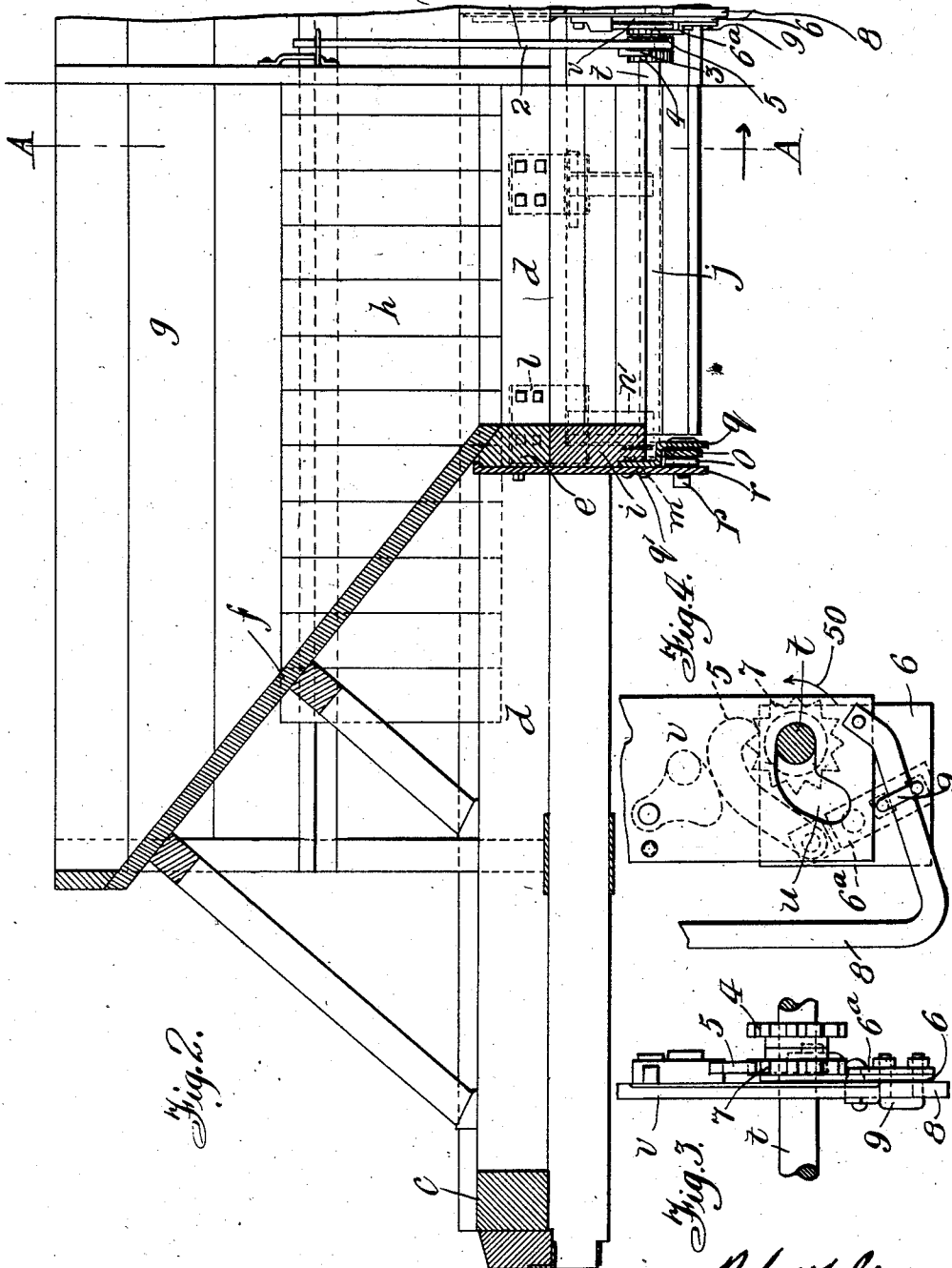
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3 SHEETS-SHEET 2.



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3 SHEETS—SHEET 3.

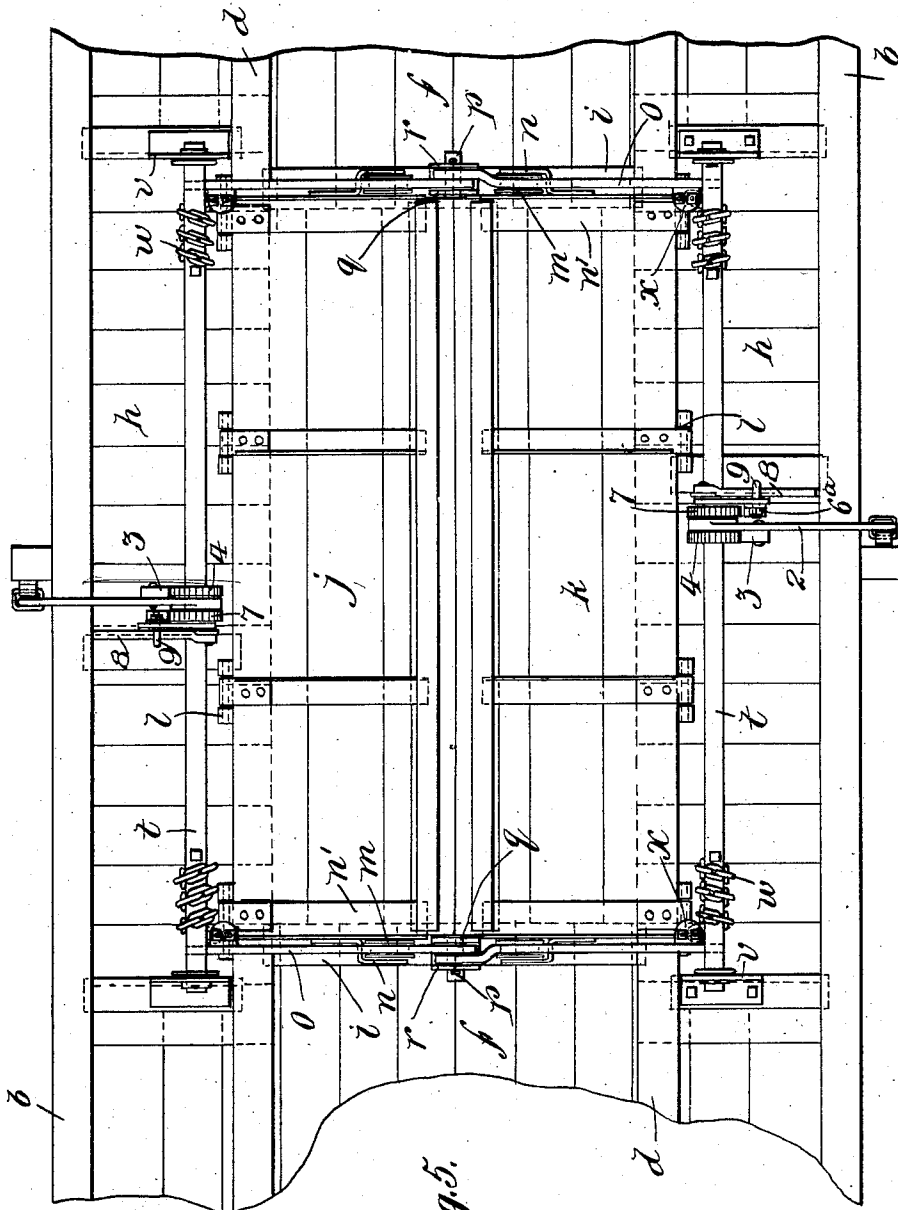


Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

ROBERT MONTAGUE ZIMMERMAN, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR TO
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DUMP-CAR.

1,009,618.

Specification of Letters Patent.

Patented Nov. 21, 1911.

Application filed September 2, 1910. Serial No. 580,229.

To all whom it may concern:

Be it known that I, ROBERT MONTAGUE ZIMMERMAN, of the city of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Dump-Cars; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates particularly to dump cars of the type having discharge doors oppositely hinged to the underside thereof and operated by lever mechanism and the invention may be said to consist of the construction, combination and arrangement of parts hereinafter described and pointed out in the claims. For full comprehension, however of my invention reference must be had to the accompanying drawings forming a part of this specification, in which similar reference characters indicate the same parts and wherein—

Figure 1 is a transverse vertical sectional view of a car constructed according to my invention taken on line A A Fig. 2; Fig. 2 is a longitudinal sectional view of one end of the car taken on line B B Fig. 1; Figs. 3 and 4 are respectively detail side and face views illustrating the ratchet and pawl operating mechanism drawn to an enlarged scale; and Fig. 5 is a bottom plan of the middle portion of the car.

In the car illustrated the body comprises a floor frame consisting of a pair of side sills *b*, end sills *c* longitudinal intermediate sills *d* and auxiliary sills *e* situated transversely between the sills *d*. The superstructure carried by this floor frame comprises inclined end hopper walls *f* and side walls consisting of vertical and inclined portions *g* and *h* respectively, the longitudinal intermediate sills *d* and auxiliary sills *e* having the hopper walls fastened thereto and forming the frame of the discharge opening of the car, the sills *e* being formed with a downward extension *i* of triangular form with the apex of the triangle at a point midway of the sides of the discharge opening.

The doors *j* and *k* are hinged as at *l* to the sills forming the sides of the discharge opening while the extensions *i* act as abutments for the doors when the latter are closed. The inner edges of these doors are beveled and adapted to abut when the doors are closed, the outer edges of the doors being also beveled to accommodate the hinges *l*,

the doors and the extensions *i* forming a hopper-like receptacle. Located at the opposite ends of the doors near the inner edges thereof are trundle rollers *m* rotatively mounted in brackets *n* secured to transverse angular strengthening members *n*¹ which latter are secured to the underside of the doors.

The doors are operated by two pairs of levers *o* arranged at opposite ends of the door frame and upon which the trundle rollers bear, the inner ends of the levers being fulcrumed, to the car frame, in line with and below the meeting edges of the doors when closed, by means of pins *p* passing therethrough and through angular brackets *q* and plates *r* secured to the extensions *i*. These levers are downwardly curved as at *s* about midway of their length while the inner ends are straight and adapted to support the trundle rollers when the doors are in their closed position.

The levers *o* are operated by a pair of shafts *t* mounted in cam-slots *u* formed in bearings *v* secured to the frame of the car at opposite sides of the discharge opening, the levers being connected to these shafts by chains *w* secured to the latter and to perforated lugs *x* on the underside of the levers near the outer ends thereof.

The cam slots *u* are inclined upwardly and inwardly for approximately one-half their length the remaining portion of the slots extending inwardly in a substantially horizontal direction, these slots being located at a sufficient distance from the pins *p* to have the shafts beyond the arcs described by the ends of the levers when the shafts are at the outer ends of the slots so that the levers in their movement may clear the shafts, while the latter when moved to the inner ends of the slots are adapted to engage underneath the ends of the levers and support the same.

The shafts *t* are operated by means of levers *2* fulcrumed thereto at a point about midway between the ends of the shafts and carrying pawls *3* engaging ratchet wheels *4* mounted rigidly upon the shafts, while detent pawls *5* carried by floating plates *6* and brackets *6*^a secured to such plates engage additional ratchet wheels *7* rigid on the shafts, and lock the latter against reverse movement. The purpose of the floating plates is to maintain the operative relation

of the detent pawls and ratchet wheels, upon movement of the shafts *t* in the slots *u* and they are loosely mounted upon the operating shafts and guided by rails 8 to which the plates are movably connected by U-bolts 9 which also serve to clamp the plates and the brackets for supporting the detent pawls, the guiding rails being fixed to the frame of the car by bolts 14.

10 Operation: To raise the doors from open position to closed position the levers 2 are operated to rotate the shafts *t* in the direction indicated by the arrows 50, the shafts being at this time at the bottom of the slots *u* and the trundle rollers *m* are bearing upon the levers *o* at the outer ends of the curved portions *s*. As the shafts *t* are rotated the chains *w* are wound thereon and pull upon the outer ends of the levers *o* and lift them to a position just above the shafts thus raising the doors, the trundle rollers moving to the inner end of the curved portions, the chains *w* assuming an approximately horizontal position. As the rotation of the shaft *t* continues the pull exerted between the said shaft and the lever through the chains causes the shafts to ride up the inclined slots and inwardly along the horizontal portions thereof, engaging during this movement under the ends of the levers between which and the bottom walls of the slots they are wedged, causing the levers, through the trundle rollers, to jam the doors tightly against the door frame. To open the doors the shafts *f* are rotated in an opposite direction which unwinds the chains *w* therefrom and permits the shafts to move from the horizontal portions of the slots and therefore from their positions beneath the levers *o*, the shafts then moving down the inclined portions of the slots thereby releasing the levers and allowing the doors to fall to their full open position where they are stalled by the engagement of the trundle rollers with the outer end of the curved portions *s* of the levers.

What I claim is as follows:—

1. In a dump car, the combination with a pair of doors hinged at their opposite edges, of a pair of levers fulcrumed at one end near the meeting edges of the doors when closed and adapted to each operate one of the said doors independently of the other, and means for actuating the levers, such door and operating means being arranged to present when the doors are open a single unobstructed discharge opening.

2. In a dump car the combination with a pair of doors hinged at their opposite edges, a pair of levers presenting downwardly curved middle portions fulcrumed in vertical line with the meeting edges of the doors when closed and adapted to operate the said doors; and means for actuating the levers.

3. In a dump car, the combination with a pair of doors hinged at their opposite edges and adapted to close toward each other, of an operating lever arm for each door fulcrumed to the car frame at a point adjacent the free edge of the door when in its closed position and upon which lever arm the door freely bears, and means for operating said lever arms.

4. In a dump car, the combination with a pair of doors hinged at their opposite edges, of a pair of door operating levers fulcrumed to the car frame at a common point in vertical line with the meeting edges of the doors when closed and upon which the doors freely bear, and means for actuating the said levers.

5. In a dump car the combination with a pair of doors hinged at their opposite edges, a pair of levers presenting downwardly curved middle portions fulcrumed in vertical line with the meeting edges of the doors when closed and adapted to operate the said doors; trundle rollers carried by the door and bearing on the said levers; and means for actuating the levers.

6. In a dump car, the combination with a door, of operating means therefor including a bodily movable shaft means for operating the shaft, means operatively connecting the shafts to the door, a floating plate attached to the shaft, a guiding rail secured to the car frame, a U-bolt secured to the floating plate and inclosing the guide rail whereby the said rail guides the said plate, and locking means carried partly by the plate and partly by the shaft to lock the latter against reverse rotation.

7. In a dump car, the combination with a pair of doors hinged at their opposite edges, of a pair of levers fulcrumed in vertical line with the meeting edges of the doors when closed and adapted to operate the said doors; and means for operating the levers, such means including members adapted to move beneath the levers and support the same when they are in their uppermost position; bearings having cam slots in which the said members are rotatably supported; flexible means connecting the said members to the outer ends of the levers; and means for operating the shafts.

8. In a dump car, the combination with a pair of doors hinged at their opposite edges, a pair of levers presenting downwardly curved middle portions fulcrumed in vertical line with the meeting edges of the doors when closed and adapted to operate the said doors; and laterally movable shafts adapted to operate the levers and support the same in their uppermost position.

9. In a dump car the combination with a pair of doors hinged at their opposite edges, of a pair of levers fulcrumed in vertical line with the meeting edges of the doors when

closed and adapted to operate the said doors; laterally movable shafts; bearings having cam slots in which the shafts are rotatably supported; flexible means connecting the shafts to the outer ends of the levers; and means for operating the shafts.

10 10. In a dump car the combination with a pair of doors hinged at their opposite edges, of a pair of levers fulcrumed in vertical line with the meeting edges of the doors when closed and adapted to operate the said doors; laterally movable shafts; bearings having cam slots inclined toward the center of the car and terminating in an approxi-
15 mately horizontal portion in which slots the shafts are rotatably supported; flexible means connecting the shafts to the outer ends of the levers; and means for operating the shafts.

20 11. In a dump car the combination with

a pair of doors hinged at their opposite edges, of a pair of levers fulcrumed in vertical lines with the meeting edges of the doors when closed and adapted to operate the said doors; laterally movable shafts; 25 bearings having cam slots in which the shafts are rotatably supported; flexible means connecting the shafts to the outer ends of the levers; and ratchet and pawl mechanism for operating the shafts, a float- 30 ing plate; and a detent pawl carried by the said plate.

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

ROBERT MONTAGUE ZIMMERMAN.

Witnesses:

STANLEY P. KING,
ALBERTH BATCHELOE.

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