No. 736,260. PATENTED AUG. 11, 1903.

H. S. HOY.

DUMP WAGON.

APPLICATION FILED APR. 7, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

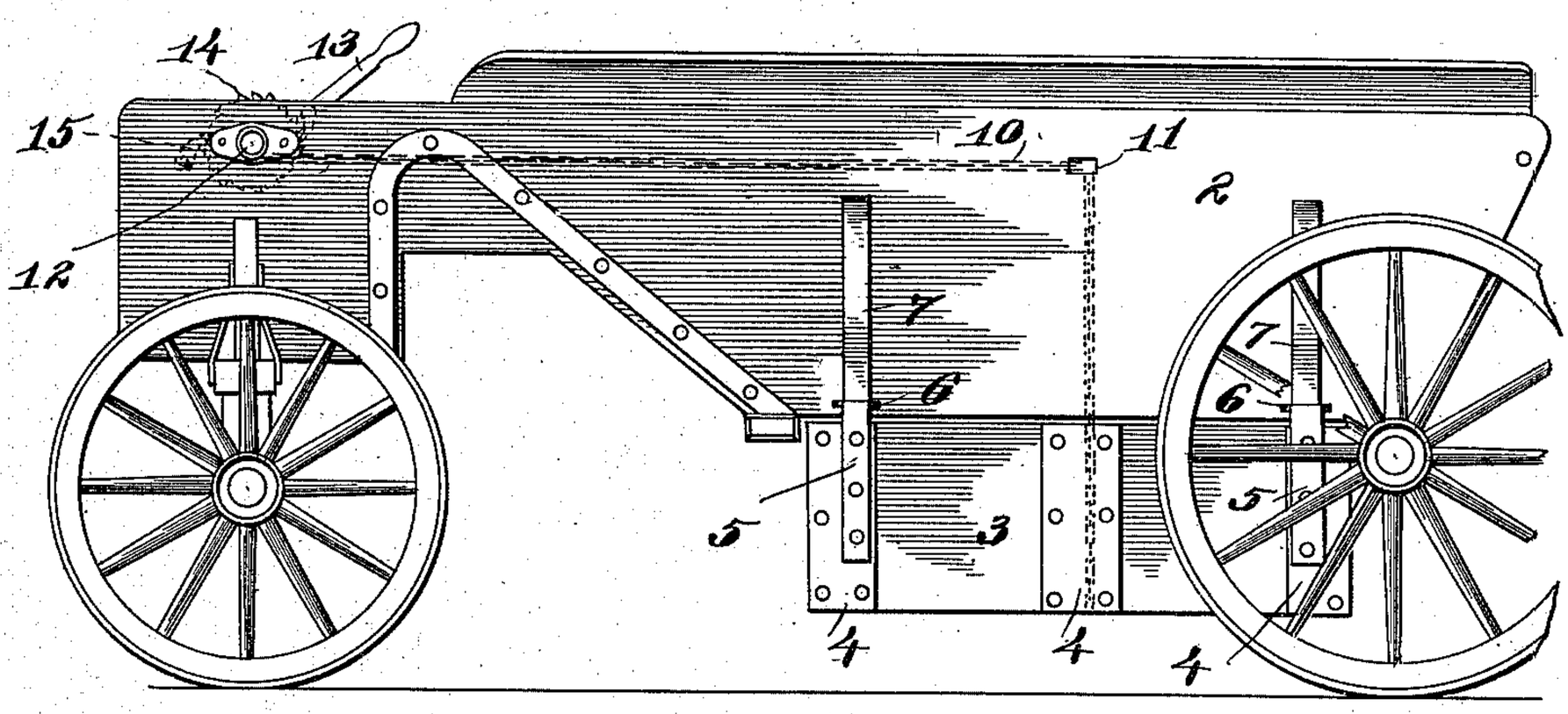


Fig. 3.

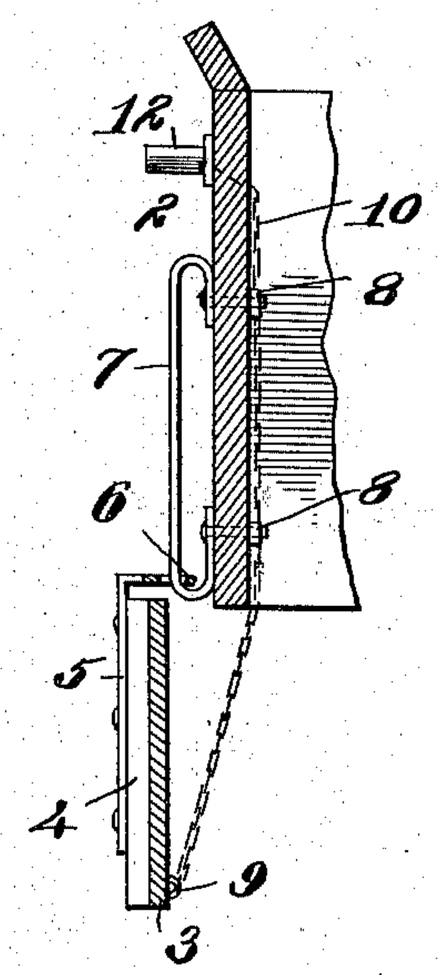


Fig. 2.

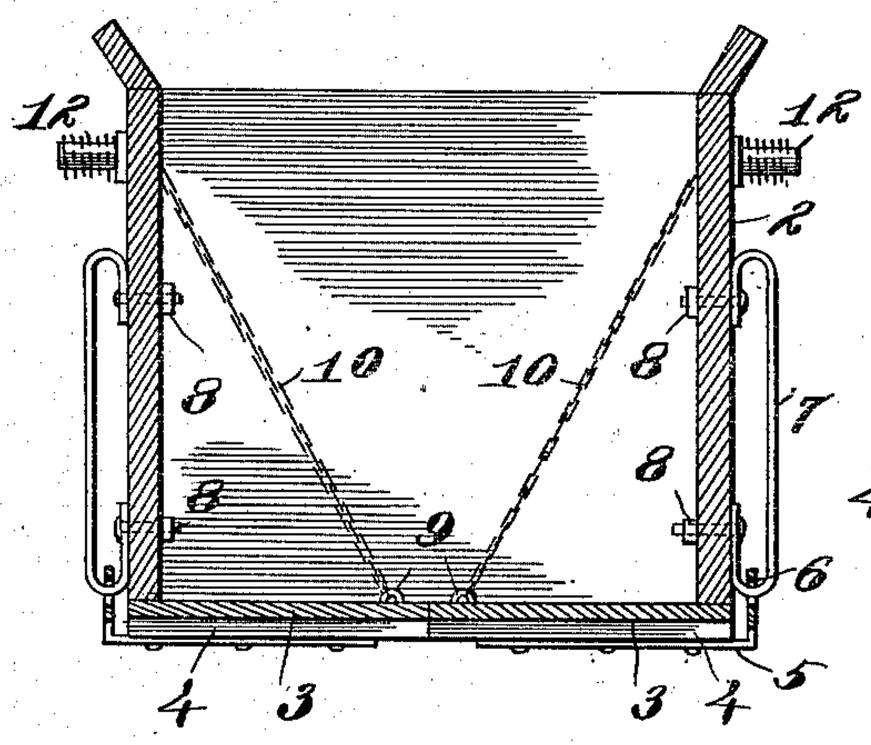


Fig. 4.

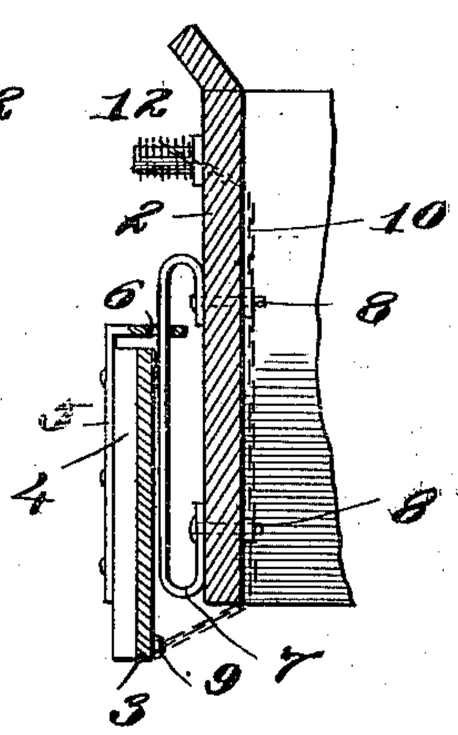
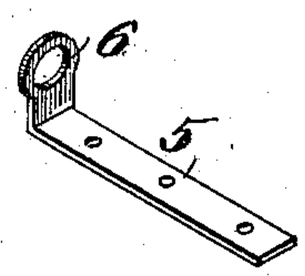


Fig. 7.



Witnesses.

G. A. Faubeschmidt

J. W. Beckstrom

Inventor.

Henry S. Hoy,

By Fred N. Bonnsock Atty.

No. 736,260. PATENTED AUG. 11, 1903.

H. S. HOY.

DUMP WAGON.

APPLICATION FILED APR. 7, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

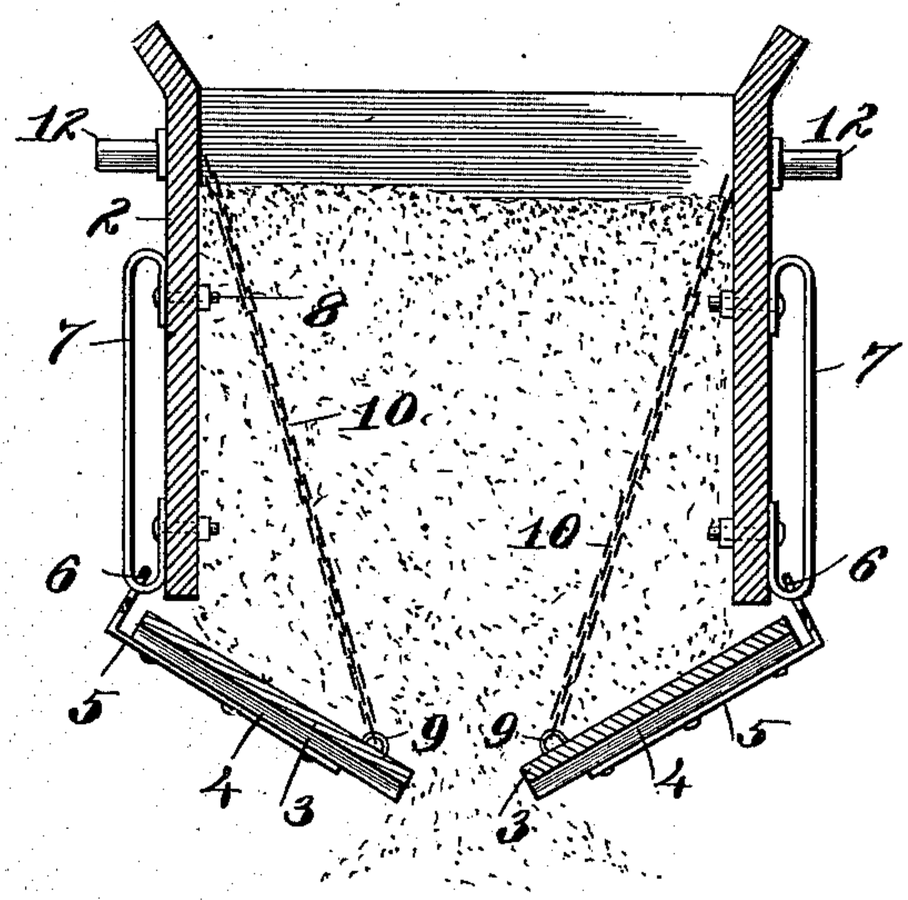
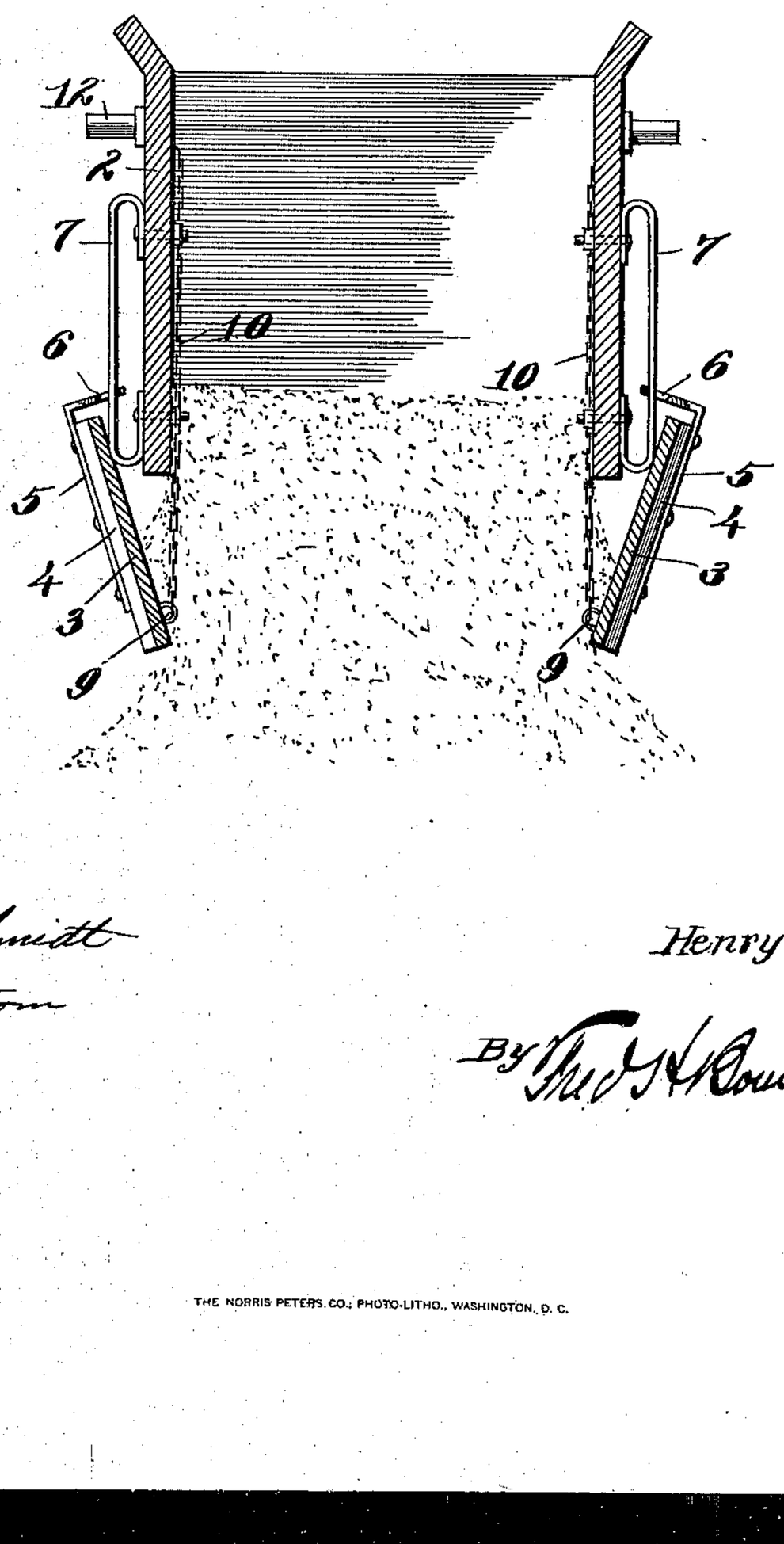


Fig. 6.



Witnesses—

G. A. Pauberschmidt

J. W. Beckstrom

Inventor—

Henry S. Hoy

By Thos. H. Bowlock Atty.

No. 736,260. Patented August 11, 1903.

UNITED STATES PATENT OFFICE.

HENRY S. HOY, OF CHICAGO, ILLINOIS.

DUMP-WAGON.

SPECIFICATION forming part of Letters Patent No. 736,260, dated August 11, 1903.

Application filed April 7, 1903. Serial No. 151,559. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. HOY, a citizen of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Dump-Wagons, of which the following is a specification.

This invention relates to dump-wagons, with particular reference to the drop-doors therefor and the mechanism for operating same.

The object of the invention is to provide means whereby the doors at the bottom of the box may be not only dropped to release the load, but may be raised opposite the outer sides of the box, thereby not only more completely releasing the load, but entirely clearing the doors of the dump, so that the wagon may be easily drawn away without straining the doors or their supports.

Further objects of the invention are to so connect doors and box as to secure automatically a more complete clearance of the bottom doorway and to control the different movements of the doors with the same chains and operating means and in the simplest and most positive manner.

My invention consists generally in a dump cart or wagon, the box of which is provided with a pair of bottom gravity drop-doors, means for closing said doors and retaining the same in their closed position, and connecting means between said doors and box permitting a movement of the former when open up the outer sides of the latter, said connecting means so disposing the center of gravity of each of said doors when hanging free in its normal open position as to insure proper closure under operation of said closing means, the same means operating to raise said door to its upper position upon the outer side of the box upon application of power through said means when the free edge of the open door has been forced outwardly by the dumped material.

My invention further consists in means whereby the lateral pressure of the escaping material during the operation of unloading may be utilized to automatically clear the bottom doorway and force the doors to an at least partially-raised position upon the outer sides of the box.

My invention further consists in a series of guides, which also serve as pivotal supports for the doors at their outer edges, adapted to guide the doors in their movement up the outer sides of the box.

My invention further consists in the novel manner of pivoting or supporting said doors, whereby when hanging open the centers of gravity thereof are properly disposed for the purposes of this invention; and my invention further consists in the various details of construction and in combinations of parts, all as hereinafter more fully described, and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of a dump-wagon with my invention applied thereto. Fig. 2 is a vertical section through the wagon-box substantially on the line *z z* of Fig. 1. Fig. 3 is a sectional end view of one of the sides, showing the door in its lowest open position. Fig. 4 is a view similar to Fig. 3, showing the door raised upon the side of the box. Fig. 5 is a section through the wagon, illustrating, approximately, the preferred point of stopping or checking the doors in their downward movement, at which point they will be subject to the lateral pressure of the escaping material and forced to a position substantially as shown in Fig. 6, which is a similar section showing the doors in a vertical and a partially-raised position, in which they are temporarily retained by the dumped material. Fig. 7 is a detail view of the preferred form of eye-strap secured to the door and supporting same at the side of the box.

Referring now to the drawings in detail, the wagon-box 2 is preferably of the well-known hopper shape, with a drop-bottom comprising two doors or closers 3 3, which are herein shown with broad cleats 4 to enable the door or bottom to withstand the heavy strain imposed upon it. Bolted or riveted to the cleats 4, at least two upon each door, are straps 5, with their projecting ends bent at an angle and each provided with an eye 6, adapted to receive the bent bar or guide-rod 7, preferably secured, by means of bolts 8, to the sides of the box. In the adjacent edges of the doors and preferably in the center cleats

4 eyebolts 9 are provided for the ends of chains 10, which pass up within the box 2 through apertures 11 in the sides to the exterior thereof and finally to the bar or reel 12, to which the ends of the chains are suitably secured. A ratchet-lever 13, a crank, or any other suitable means may be provided for rotating the reel and winding the chains thereupon. Mechanism of this character is too common and well known to require detailed description, preferably comprising the ratchet-wheel 14, mounted upon the shaft or reel 12, the ratchet-lever 13, and an independent pawl 15 for securing the reel against reverse rotation. When the cart or wagon is loaded with refuse or other material in bulk, the doors are sustained in their closed position by the chains 10, wound upon the reel 12, which is held against rotation, tending to unwind said chains by the pawl-and-ratchet or similar checking means, the releasing of which permits the unwinding of the chains and a dropping of the doors under the weight of the load. Sufficient play of the chains being provided for, the doors will swing downwardly and outwardly under the fall and distribution of the load, each door being forced to or slightly beyond the position indicated in Fig. 3. Upon rewinding the chain an edgewise pull is exerted upon the door, which is held against inward movement by the pressure of the dumped material resting thereagainst. Said rewinding tends, therefore, to raise each door vertically on the outer side of the box to the position indicated in Fig. 4. The wagon being moved away a few feet will be clear of the dump, and when the chains are again released and the doors drop to the point where they hang free from the rods 7 the bend or angle in the straps 5 will so dispose the center of gravity of each suspended door as to give the same an inclined position, whereby the application of power through the chain will cause said door to close when said chain is rewound.

While my wagon may be operated in the manner above outlined, the adjustment and relationship of parts provide for a clearance of the wagon-box bottom and a partial raising of the doors on the outer sides thereof in a manner which may be termed "automatic." If the ends of the chains are secured to the reel or movement of the door end thereof otherwise suitably checked to limit the downward movement of the doors when released prior to complete opening or at substantially the position indicated in Fig. 5, the lateral pressure exerting against them by the load will tend to force them outwardly, the inner edge of each door describing a circle the center of which is the aperture in the side of the box through which the chain passes. The outer edge of the door being held against movement in a horizontal direction and capable of movement along the guide-rods in a vertical direction will be forced upwardly as the door approaches a vertical position, finally assuming a position substantially as indicated in Fig. 6. In this position it will be apparent that the doors are practically free of the dump and not likely to be strained as the wagon is drawn away therefrom, and raising them higher on the outsides of the box will not be necessary under ordinary conditions. Once clear of the dump obviously the weight of the door and the disposition of its center of gravity under the construction herein described will cause it to assume the normal suspended and inclined position, from which it may be readily closed upon winding of the chain upon the reel. It will be apparent, however, that when desired the chain may be wound upon the reel when the door is in a position substantially as indicated in Fig. 6, which will, as in the other manner of operating, raise said door bodily to a higher position outside the box.

It will be apparent that the details of construction of my cart or wagon will be subject to innumerable modifications without departing from the spirit of this invention. Even the exercise of mechanical skill would scarcely be required to substitute guides of various different forms and kinds or to check the fall of the doors prior to complete opening otherwise than by decreasing the length of the chains. I do not desire, therefore, to limit my invention to the specific construction herein shown and described.

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

1. In a dump-wagon, the combination, with a wagon-box provided with bottom, drop-doors, of means for closing said doors and retaining the same in their closed position, and pivotal supports constituting slide-bearings upon which said doors are movable bodily up the outer sides of the box.

2. In a dump-wagon, the combination, with a wagon-box provided with a pair of bottom, pivotally-supported, gravity drop-doors of means for closing said doors and retaining the same in their closed position, and pivotal connecting means between said doors and box upon which said doors are slidable bodily up the outer sides of said box.

3. In a dump-wagon, the combination, with a wagon-box provided with a pair of bottom, pivotally-supported, gravity drop-doors, the supporting members upon said box comprising exterior vertical guides and the supporting members upon said doors being loosely mounted thereupon, whereby the same means which provides fixed supports for said doors when closed permits of a vertical movement of said doors, when open, up the outsides of the box.

4. In a dump-wagon the combination, with a box provided with a pair of bottom, pivotally-supported, drop-doors, of means for closing said doors and retaining the same in their closed position and means for checking the fall of said doors when released prior to com-

plete opening, and the connecting-supports for said box and doors movable pivotally and slidably with relation to each other, whereby each door may be moved bodily up the outer side of the box.

5. In a dump-wagon, the combination, with a wagon-box provided with a pair of bottom, pivotally-supported, drop-doors, of means for closing said doors and retaining the same in their closed position, and means for checking the fall of said doors prior to complete opening, and the pivotal supports slidable upon each other and permitting a vertical movement of the pivoted edge of said door as the place of said door approaches a vertical position under the lateral pressure of the escaping load.

6. In a dump-wagon, the combination, with a wagon-box provided with a pair of bottom, pivotally-supported, drop-doors, of means for closing said doors and retaining the same in their closed position, and means for checking the fall of said doors prior to complete opening, the pivotal supporting members upon said box comprising vertical guides and the supporting members upon said doors being loosely mounted thereupon, whereby the pivotally-supported edge of said door is free to move vertically as the plane of said door approaches a vertical position under the weight of the load after release of said retaining means.

7. In a dump-wagon, the combination, with a wagon-box provided with bottom, drop-doors, of pivotal side supports for said doors adapted to guide the latter vertically against the sides of the box, and a suitable reel and flexible connection for operating said doors and retaining the same in a closed position.

8. In a dump-wagon, the combination, with a wagon-box, of a drop-bottom, the hinge members supporting said bottom, when closed, guiding same when open against the vertical sides of the box, and means for operating said bottom upon said hinge members.

9. In a dump-wagon, the combination, with a wagon-box provided with a pair of outwardly-swinging, drop-doors, of a pair of chains attached thereto to close said doors and retain the same in their closed position, a reel upon which said chains are wound, and pivotal connections between each door and box providing for a free vertical movement of said door, when open, the outer side of said box.

10. In a dump-wagon, the combination, with a wagon-box provided with a pair of outwardly-swinging, drop-doors, of a pair of chains attached thereto to close said doors and retain the same in their closed position, a reel upon which said chains are wound, means for checking the fall of said doors and prior to complete opening, and pivotal connections between each door and box providing for a free vertical movement of said pivoted edge up the outer side of said box.

11. In a dump-wagon, the combination, with a box provided with a pair of bottom, pivotally-supported, gravity drop-doors, of means for closing said doors and retaining same in their closed position, the pivotal connecting means between said doors and wagon providing for a bodily movement of the former up the outer sides of the latter and so disposing the center of gravity of each of said doors, when hanging free in its normal open position, as to insure proper closure upon operation of said closing means, said closing means also operating to raise each door bodily to its upper position at the outer side of the box upon the application of the power when the free edge of the open door has been forced outwardly by the dumped material.

12. In a dump-wagon, the combination, with a wagon-box provided with exterior, vertical guides, of a door supported by said guides for pivotal and vertical movement with relation to said box.

13. In a dump-wagon, the combination, with a wagon-box, of vertical guides upon said box, a drop-door, hinge members upon said doors pivotally and slidably movable upon said guides, said guides and members being located outside the plane of said door.

14. In a dump-wagon, the combination, with a wagon-box provided with a series of exterior, vertical guides, of a drop-door pivotally secured in said guides which support same from a point outside the plane of said door.

15. In a dump-wagon, the combination, with a wagon-box provided with a series of exterior, vertical guides, of a drop-door pivotally secured in said guides and supported thereby from a point without the plane of said door, and means for closing said door and retaining the same in its closed position.

16. In a dump-wagon, the combination, with a wagon-box provided with a series of exterior, vertical guides, of a drop-door pivotally secured in said guides and supported thereby from a point without the plane of said door, means for closing said door and retaining the same in its closed position, and means for checking the fall of said door prior to complete opening.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY S. HOY.

Witnesses:
W. H. MORENUS,
F. E. STEWART.