

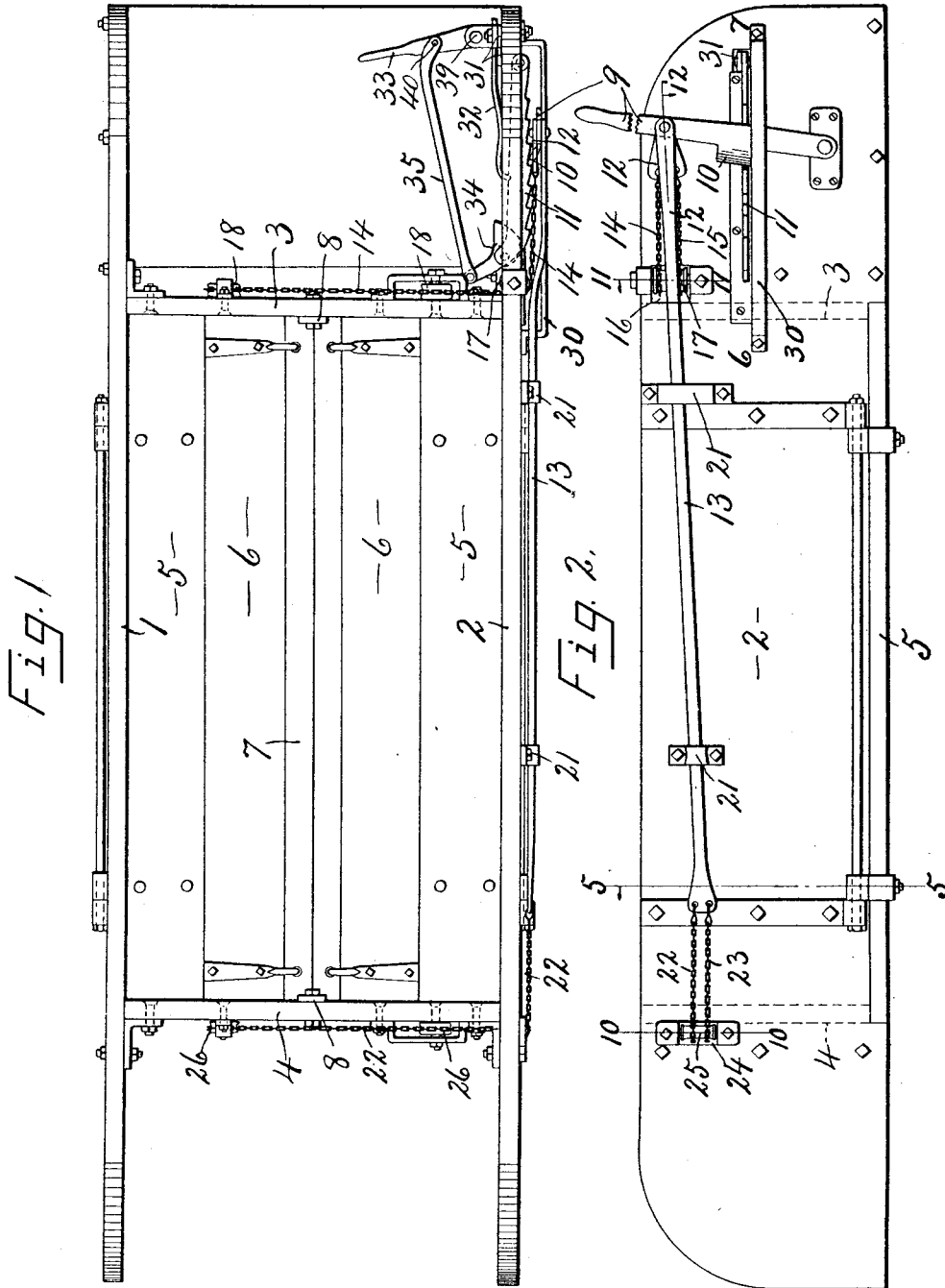
W. L. COLLINS.
DUMP WAGON.

APPLICATION FILED MAR. 6, 1911.

Patented June 11, 1912.

1,029,343.

2 SHEETS—SHEET 1.



Witnesses:
R. W. Bailey.
H. E. Chare

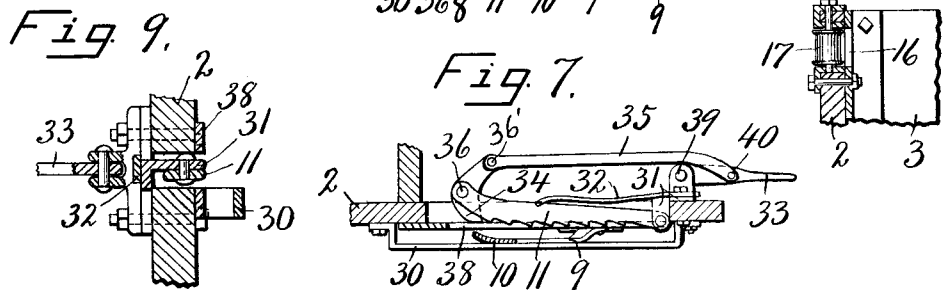
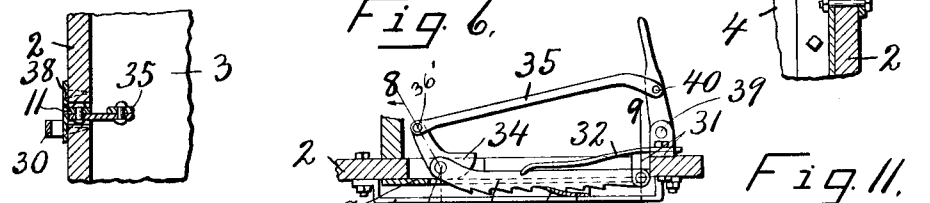
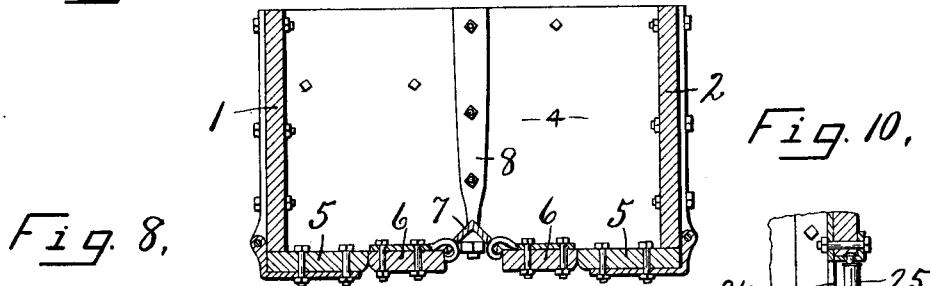
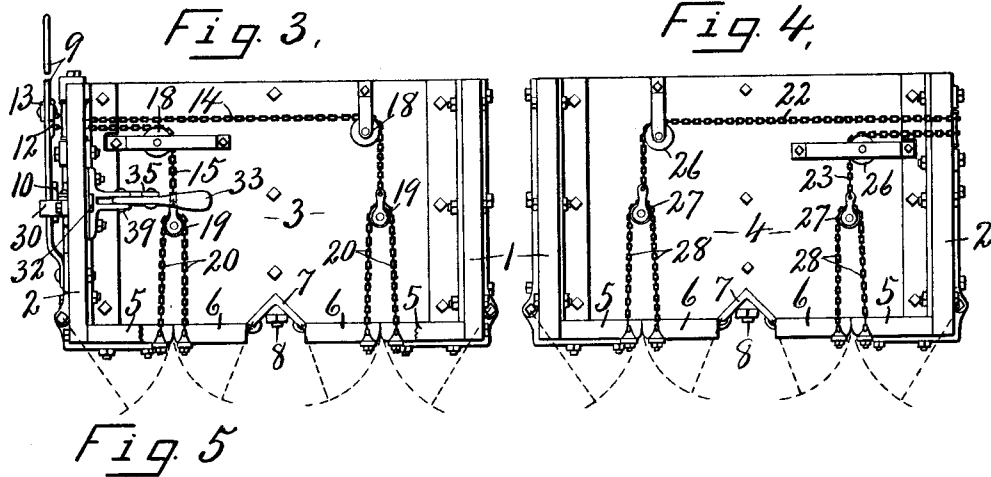
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2 SHEETS—SHEET 2.



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Fig. 12.
12
14
13
9
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UNITED STATES PATENT OFFICE.

WILBUR L. COLLINS, OF NEWARK, NEW YORK, ASSIGNOR TO DANIEL W. CROWLEY,
OF NEWARK, NEW YORK.

DUMP-WAGON.

1,029,343.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed March 6, 1911. Serial No. 612,503.

To all whom it may concern:

Be it known that I, WILBUR L. COLLINS, of Newark, in the county of Wayne, in the State of New York, have invented new and
5 useful Improvements in Dump-Wagons, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improve-
10 ments in dump wagons in which the box is provided with opposite pairs of laterally swinging bottom doors meeting substantially midway between the sides and longitudinal center of the box and refers more particu-
15 larly to the door operating and controlling mechanism.

The main object is to provide simple means for quickly and tightly closing the doors from their full open position by a
20 single operation as distinguished from the repeated operations of a ratchet and pawl action in the operation of a drum.

Another object is to reduce the number of parts necessary in the operation of opening
25 and closing the doors and holding them in their closed position.

A still further object is to provide simple means for releasing the doors from their closed position to permit the discharge of
30 the load.

Another object is to connect both ends of the doors to the same door operating lever by means of self-adjusting flexible connections whereby both ends of both doors may
35 be tightly closed in the same operation even though one door may close first.

Other objects and uses will be brought out in the following description.

In the drawings—Figures 1 and 2 are re-
40 spectively a top plan and a side elevation of a dump box embodying the various features of my invention. Figs. 3 and 4 are front and rear end views respectively of the same dump box and door controlling mechanism.
45 Fig. 5 is a transverse sectional view through the box taken on line 5—5, Fig. 2. Figs. 6 and 7 are similar horizontal sectional views through the front end of one side of the box showing more particularly the door
50 holding and releasing mechanism, said mechanism being in position for holding the doors closed in Fig. 6 and for releasing the

doors in Fig. 7. Figs. 8 and 9 are enlarged detail sectional views of portions of the same mechanism taken respectively on lines 8—8
55 and 9—9 Fig. 6. Figs. 10 and 11 are enlarged detail sectional views taken respectively on lines 10—10 and 11—11 Fig. 2 showing more particularly the sheaves at the rear and front ends of the box around
60 which the cables are passed for connection with the opposite ends of the doors. Fig. 12 is an enlarged horizontal sectional view through the end lever and adjacent portions of the links which are connected to the
65 cables taken on line 12—12 Fig. 2.

The dump box preferably comprises opposite side walls —1— and —2—, front and rear end walls —3— and —4— and lengthwise bottom doors —5— and —6— arranged
70 in pairs or sets at opposite sides of the longitudinal center of the box all of which parts may be made of wood, sheet metal or any other suitable material. The bottom of the box is provided with a central lengthwise
75 bar —7— extending from end to end and preferably secured at its ends to the ends of the box by strap bolts —8—, said bar being preferably in the form of an inverted V so as to divide and deflect the load more or
80 less equally to opposite sides thereof during the operation of discharging the same. The inner doors of each set or pair are hinged to the central bar —7— so as to swing downwardly and inwardly when released while
85 the outer doors of each set or pair are hinged to the sides of the box in such manner as to swing downwardly and outwardly as shown by dotted lines in Figs. 3 and 4. One of the objects in providing opposite
90 pairs of doors is to reduce the length of the arcs through which they swing and thereby reduce the amount of movement of the cables and operating lever so that the doors may be closed from their full open position
95 by a single movement of said lever in one direction and through a comparatively short stroke or arc. These doors preferably abut against the lower edges of the sides and ends of the box and when closed fit closely against
100 the opposite edges of the central bar —7— so as to avoid leakage.

Pivoted to one side, usually the right hand side —2— of the box near the front

end thereof is an upright hand lever —9— having its intermediate portion provided with a fixed pawl —10— for engagement with a toothed rack —11— presently described to hold the doors in their closed position. Pivotaly connected to the upper end of this lever above the pawl —10— and preferably by the same pivot are links —12— and —13—, the link —12— being comparatively short and is attached to one end of separate cables —14— and —15— which are passed laterally through an opening —16— in the adjacent side of the box just in front of the front end —3— and around a sheave —17— journaled in said opening, said cables being passed around sheaves —18— on the front end of the box and are provided with fall-blocks —19— around which are passed suitable cables —20— having their ends connected to the front ends of the meeting edges of the doors. The sheaves —18— and their corresponding fall-blocks —19— are preferably located directly over the meeting edges of their respective pairs of doors so as to travel as nearly vertical as possible in the operation of opening and closing the doors and at the same time exerting a direct vertical lift in closing the doors and holding them in their closed position. In like manner the link —13— which is comparatively long and extends rearwardly along the outside of the adjacent side of the box in suitable guides —21— has its rear end attached to a pair of cables —22— and —23— corresponding to the cables —14— and —15—. These cables —22— and —23— are also passed laterally through an opening —24— in the adjacent side of the box just at the rear of the rear end wall and around a sheave —25— which is journaled in said opening, said cables extending laterally partially across the rear end wall —4— and around sheaves —26— and are provided with fall-blocks —27— similar to the fall-blocks —19— for receiving and supporting cables —28— having their ends attached to the rear ends of the meeting edges of the doors. The sheaves —26— and fall-blocks —27— are also located directly over the meeting edges of their respective pairs of doors so as to allow the fall-blocks to travel as nearly vertical as possible in the operation of opening and closing the doors and to exert a direct upward lift in the operation of closing the doors and holding them in their closed positions.

The lengths of the portions of the chains or cables —14— and —15— and —22— and —23— between the links —12— and —13— and corresponding sheaves —17— and —25— are somewhat greater than the length of the arcs through which the meeting ends of the doors pass from their closed to their full open positions, thereby permitting a

free action of said doors without liability of being stopped by contact of the ends of the links with the sheaves.

It will be observed that the hand lever —9— is fulcrumed at its lower end some distance below the rack —11— and extends upwardly some distance above the upper edge of the box where it is easily accessible for operation and that the links —12— and —13— are connected to the lever some distance above the toothed rack —11— where the arc of movement is sufficiently long to permit the doors to be closed from their full open positions by a single forward movement of the lever. The doors are held in their closed position by engagement of the pawl —10— with one of the teeth of the rack —11—, said lever being held against lateral displacement from the toothed rack —11— by means of a guide bar —30— which is secured in a horizontal position to the adjacent side of the box in close proximity to the pawl —10—.

Door releasing mechanism.—The toothed rack —11— is disposed in a horizontal position in a lengthwise slot in the adjacent side of the box and extends forwardly and rearwardly some distance beyond the arc of movement of the lever —9— with its teeth facing outwardly in the path of movement of the pawl —10— so as to engage and hold said pawl against backward movement in any position of adjustment. This rack —11— is pivoted at its front end in front of the lever to a fixed bracket —31— on the adjacent side of the box so as to allow the remaining portions of the rack to rock horizontally into and out of the path of movement of the pawl —10— so that by moving the rack inwardly it will disengage its teeth from the pawl and allow the doors to open, during which operation the lever —9— will be drawn backwardly to its starting position for closing the doors.

The rack —11— is yieldingly held in operative engagement with the pawl —10— by a spring —32— as best seen in Figs. 1, 6 and 7 and is adapted to be withdrawn from engagement with said pawl against the action of the spring —32— by means of a foot lever —33— and cam —34— which is connected to the lever —33— by a link —35—. The cam —34— is pivoted intermediate its ends at —36— to the rear end of the toothed rack —11— as best seen in Figs. 6 and 7 and is provided with an eccentric cam face which bears against the inner side of a fixed metal plate —38— on the adjacent side of the box so as to rock the toothed rack —11— inwardly against the action of the spring —32— when the foot lever is moved forwardly to the position shown in Fig. 7, thereby disengaging said rack from the pawl —10— and releasing the doors to discharge the load. The foot lever —33— is

pivoted at —39— to a fixed bracket on the inner face of the adjacent side of the box while the link —35— is pivoted at —40— to the intermediate portion of the lever and is also pivoted at its rear end at 36' to the cam lever —34—. The pivots 36', 39 and 40 are relatively disposed in such manner that when the foot lever is rocked forwardly to its position for releasing the doors, the pivot —40— is in nearly a direct line extended through the pivots —36'— and —39—, for locking the foot lever in its releasing position to prevent any possibility of engagement between the teeth of the rack —11— and pawl —10— during the operation of opening the doors or discharging the lead.

It will be seen from the foregoing description that the cam lever —34— is mounted directly upon and movable with the toothed rack —11— and together with the foot lever —33— and link —35— constitutes a particularly simple means for releasing the door holding means. It will also be observed that the means for closing the doors consisting of the lever —9—, links —12— and —13— and cables connected thereto are particularly simple and effective in permitting the doors to be closed in a single forward movement of the lever —9—, both ends of the doors being closed tightly.

The cables —20— and —28— which are connected directly to the front and rear ends of the doors are free to render over the sheaves of the fall-blocks —19— and —27—, thereby assuring the positive closing of the doors of each pair even though one of the doors of either pair should close slightly in advance of the companion door.

In operation assuming that the doors are closed and that it is desired to dump the load, it is simply necessary for the operator to push the lever —33— forwardly to its locked position which may be done either by the foot or by hand, by which operation the rack —11— is withdrawn from engagement with the pawl —10—, thereby allowing the doors to open and causing the hand lever —9— to be drawn rearwardly. After the load has been discharged, the foot lever —33— is returned to its normal position and there yieldingly held by the spring —32— so that as the hand lever —9— is moved forwardly in the operation of closing the doors, the pawl —10— rides along and engages one of the teeth of the rack —11— to effectively hold the doors in such closed position.

What I claim is:

1. In a dump wagon, a dump box having opposite pairs of laterally swinging bottom doors, a lever fulcrumed on the box, flexible connections between the lever and front ends of the doors, separate flexible connections between the lever and rear ends of the doors, a pawl on the lever, a toothed rack pivoted

at one end to the box, and means for moving the toothed rack into and out of engagement with the pawl comprising a cam lever pivoted to the opposite end of the rack, a foot lever, and connections between the foot lever and cam lever.

2. In a dump wagon, a dump box having bottom doors, a door-controlling mechanism comprising a hand lever pivoted to one side of the box and movable lengthwise thereof, a pawl rigid on the lever, a toothed rack pivoted at one end to the same side of the box and movable transversely of the direction of movement of the lever to force its teeth into and out of the path of said pawl, a rock arm pivoted to the opposite end of the rack and provided with a cam, a fixed bearing for the cam on the adjacent side of the box, a foot lever and connections between said foot lever and rock arm for rocking the cam against said bearing to force the rack out of engagement with the pawl, and connections between the first-named lever and doors.

3. In a dump wagon, a dump box having laterally swinging bottom doors, a hand lever pivoted to the front end of one side of the box and movable lengthwise thereof, a pawl on the lever, a toothed rack pivoted at one end to the same side of the box and extending rearwardly from said pivot, a rock arm pivoted to the rear end of said rack and provided with a cam, a bearing for the cam, a foot lever, connections between the foot lever and rock arm for operating said cam to force the rack out of engagement with the pawl, a spring for forcing the rack into engagement with the pawl, and connections between the first-named lever and doors.

4. In a dump wagon, a dump box having bottom doors, door-controlling mechanism comprising a hand lever pivoted to one side of the box and movable lengthwise thereof, connections between said lever and the doors, a pawl rigid on the lever, a horizontally-disposed toothed rack pivoted at one end within a slot in the same side of the box and movable transversely of the direction of movement of the lever to force its teeth into and out of the path of said pawl, a rock arm pivoted to the opposite end of the rack and provided with a cam, a fixed bearing for the cam on the adjacent side of the box at the other end of the slot, a foot lever and connections between said foot lever and rock arm for rocking the cam against said bearing to force the rack out of engagement with the pawl, and a spring bearing against the rack to return same to normal position when the foot lever is released.

5. In a dump wagon, a dump box having laterally swinging bottom doors, a hand lever pivoted to the front end of one side of the box and movable lengthwise thereof,

connections between said lever and the doors,
a pawl on the lever, a toothed rack pivoted
at one end within a slot in the same side of
the box and extending rearwardly from said
5 pivot, a rock arm pivoted to the rear end
of said rack and provided with a cam, a
bearing for the cam at the rear end of said
slot, a foot lever, connections between the
foot lever and rock arm for operating said

cam to force the rack out of engagement 10
with the pawl, and a spring for forcing the
rack into engagement with the pawl.

In witness whereof I have hereunto set
my hand on this 11th day of February 1911.

WILBUR L. COLLINS.

Witnesses:

H. E. CHASE,

E. F. SPEARING.

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