No. 779,891. PATENTED JAN. 10, 1905.

M. VAN WAGENEN & W. A. SWEET.

DUMP WAGON.

APPLICATION FILED MAR. 7, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

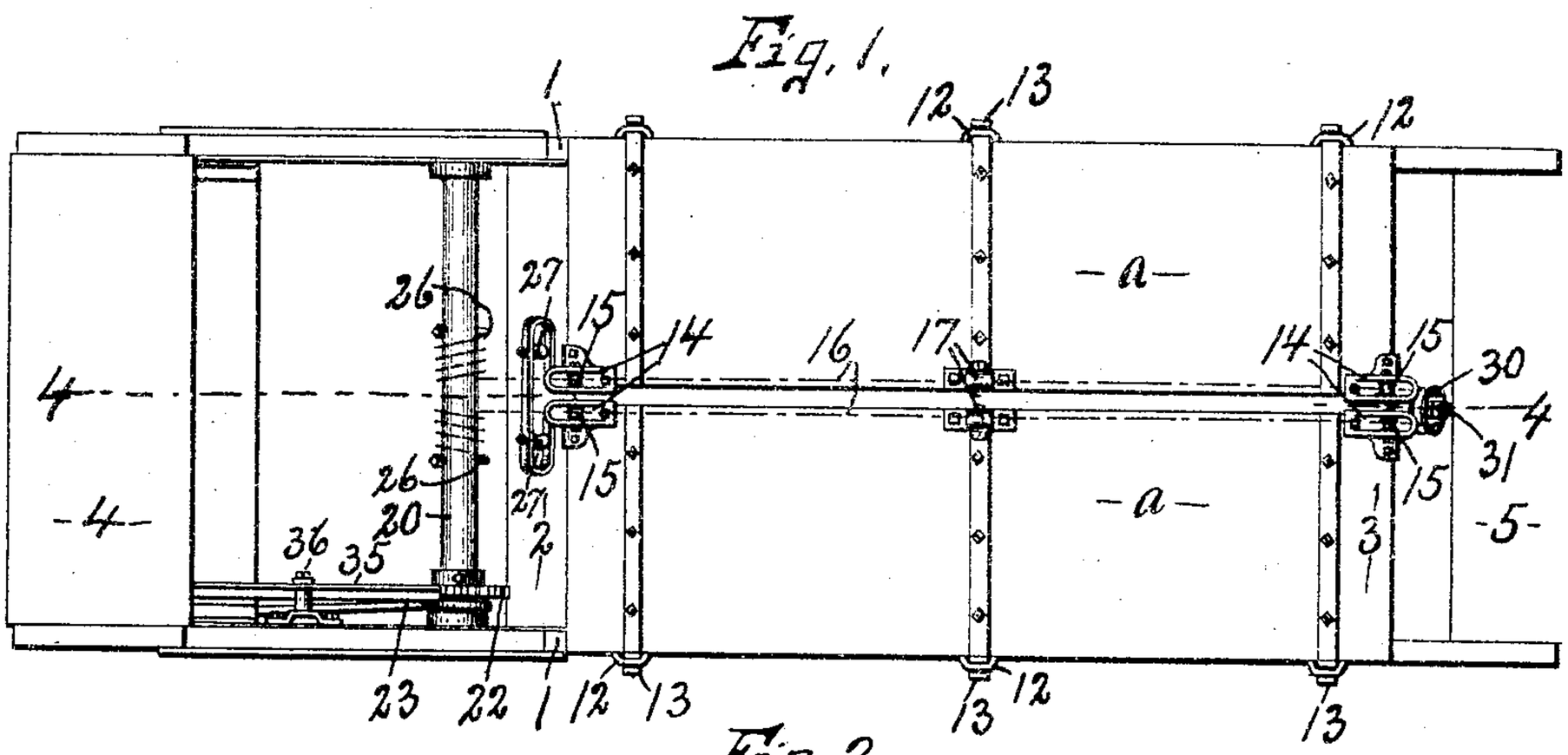


Fig. 2.

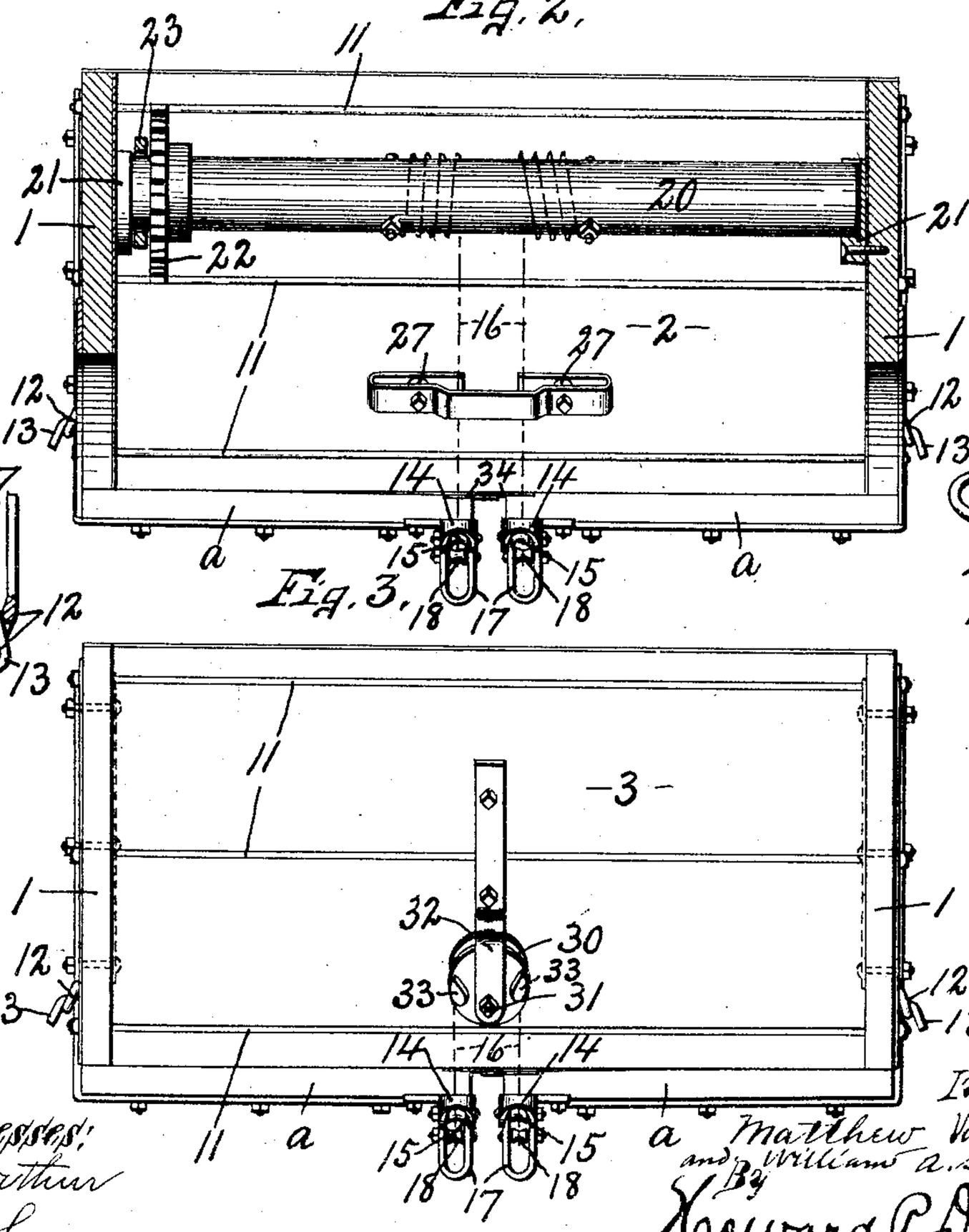


Fig. 7.

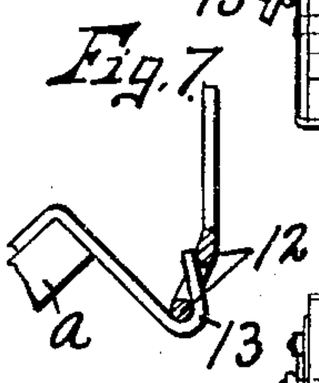
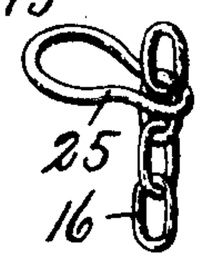


Fig. 3.

Fig. 8.



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2 SHEETS—SHEET 2.

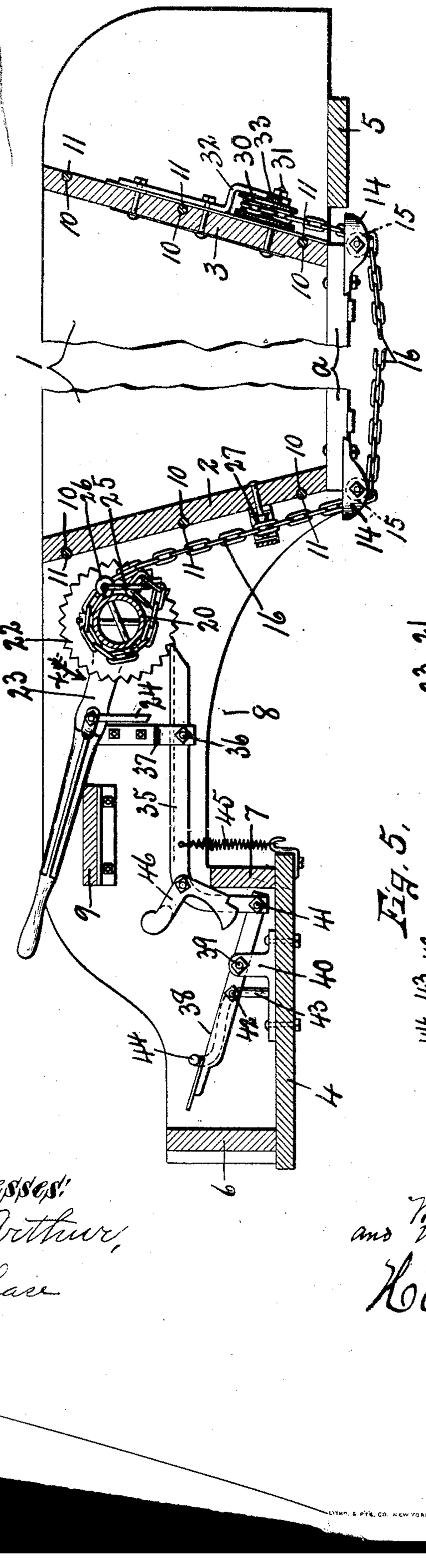

Fig. 4.

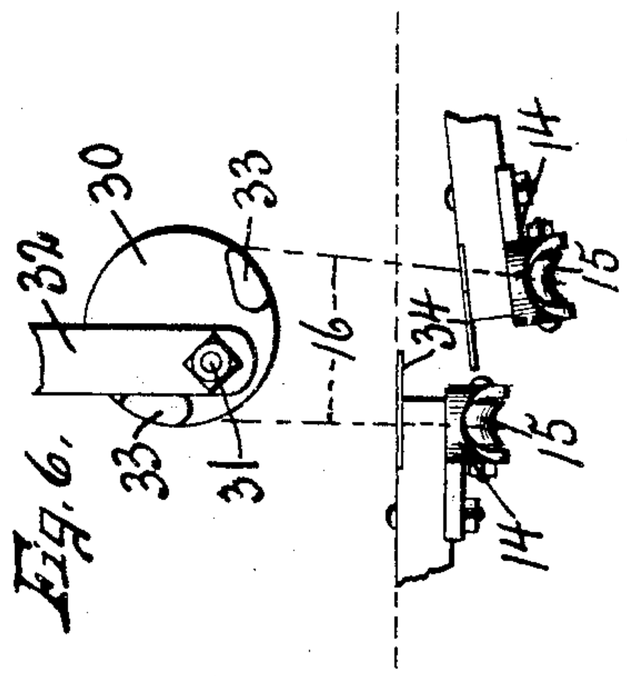

Fig. 6.

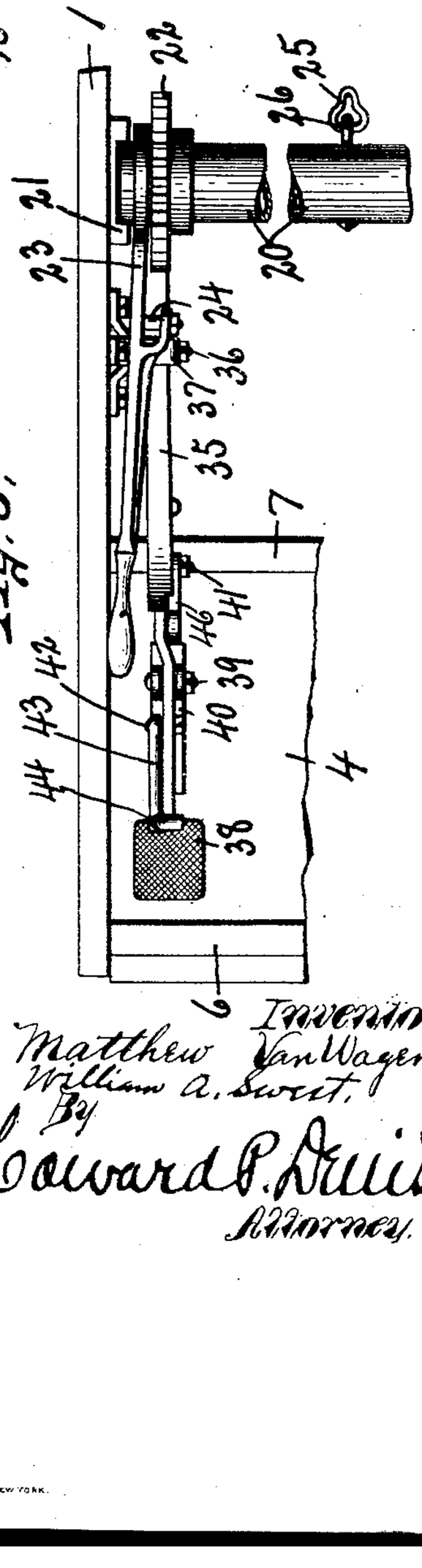

Fig. 5.

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No. 779,891. Patented January 10, 1905.

UNITED STATES PATENT OFFICE.

MATTHEW VAN WAGENEN AND WILLIAM A. SWEET, OF SYRACUSE, NEW YORK; SAID SWEET ASSIGNOR TO SAID VAN WAGENEN.

DUMP-WAGON.

SPECIFICATION forming part of Letters Patent No. 779,891, dated January 10, 1905.

Application filed March 7, 1904. Serial No. 196,998.

To all whom it may concern:

Be it known that we, MATTHEW VAN WAGENEN and WILLIAM A. SWEET, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and 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 improvements in dump-wagons, and refers more particularly to a dump-box having swinging bottom sections and to the means for controlling the operation of said sections.

One object is to provide means brought into action by the winding mechanism whereby one door may be closed slightly in advance of the other to prevent binding or crossing at the meeting edges and at the same time to utilize such means to compensate for any inequality in the movement of the doors, so that both doors may be firmly closed by the same means.

Another object is to provide a winding-drum with a suitable grab-hook for receiving one of the links of the cable or chain, whereby the chain may be taken up or let out one or more links at a time.

Other objects and uses will appear in the following description.

In the drawings, Figures 1, 2, and 3 are respectively an inverted plan, a front elevation, and a rear elevation of a dump-box embodying the features of our invention. Fig. 4 is an enlarged longitudinal sectional view taken on line 4 4, Fig. 1, showing particularly the mechanism for controlling the operation of the doors, the central portion of the box being broken away. Fig. 5 is a top plan of the mechanism for controlling the operation of the doors, omitting the cables or chains and compensating device. Fig. 6 is an enlarged detail view of the eccentric compensating roller, which receives and supports the cables and adjacent ends of the swinging doors to which it is connected. Fig. 7 is a detail sectional view through one of the hinge-eyes, showing the manner of attaching and detaching the door. Fig. 8 is a detail view of the grab-hook and a portion of the cable or chain operatively connected thereto.

Similar reference characters indicate corresponding parts in all the views.

The dump-box in this instance comprises opposite parallel side walls 1, front and rear end walls 2 and 3, and bottom dumping-doors or swinging sections *a*. The sides 1 are extended forwardly and rearwardly beyond the ends 2 and 3 and are united to each other by front and rear platforms 4 and 5, which form suitable bolsters for receiving the front and rear axles, (not shown,) the front extensions being also connected by foot and heel boards 6 and 7. The front extensions of these sides are also formed with cut-outs 8 between the heel-boards 7 and front end wall 2 to permit the front wheels to turn under the sides, and we also provide a suitable seat or seat-support 9, mounted upon the front extensions of the sides. The front and rear ends 2 and 3 incline downwardly and inwardly toward each other, and their opposite ends are provided with suitable grooves in the sides 1 for the purpose of facilitating the assembling of the sides and ends and also to hold them more firmly in their assembled position.

The front face of the end 2 and rear face of the end 3 are provided with grooves 10, running from side to side of the box and receiving transverse tie-bolts 11, having their opposite ends passed through suitable apertures in the sides 1 and provided with nuts whereby the sides may be drawn firmly into engagement with the adjacent edges of the ends 2 and 3. It is now seen that these tie-bolts 11 are let into the grooves 10, so that their outer faces are substantially coincident with the outer faces of the ends 2 and 3, and by this means the tie-rods engage the upper and lower walls of the grooves and hold the ends 2 and 3 from vertical movement relative to the sides, while the grooves in the sides, which receive the adjacent edges of the end pieces, prevent longitudinal displacement of said ends, so that when the tie-rods are drawn up the sides and ends are firmly locked together and form a rigid box without the use of angle-irons or other braces.

The doors A are hinged to the sides 1 near their lower edges and when closed meet in a line substantially midway the sides and parallel with the swinging axes of the door, or, in other words, parallel with the line of draft. Each door is hinged to one side of the box by one or more stirrups 12 and hooks 13, the stirrups 12 constituting the hinge-pins and are secured to the sides of the box, while the hooks 13 constitute open-sided bearings, which are secured to the doors, so that when the doors are in their closed position, as best seen in Figs. 2 and 3, the hooks 13 are held in engagement with the stirrups 12, and, in fact, these hooks are arranged in such manner that it is impossible to remove the doors without removing the wheels, as is apparent upon reference to Fig. 7, which shows the position the door must assume before it can be attached to or detached from the stirrup; but the object of this hook and stirrup connection is to permit the doors to be readily and quickly removed when desired.

Secured to the lower faces of the doors at their ends and also near their meeting edges are suitable sheave-supporting brackets 14, in which are journaled sheaves 15, the lower faces of said brackets being inclined forwardly and rearwardly from the sheaves in the direction of extension of the swinging axes of the doors, so as to avoid abrupt shoulders and prevent the brackets from catching into the wheels of the wagon or into obstacles which may lie in their path as the wagon is being drawn forward. These brackets and the sheaves therein project slightly beyond the ends of the doors to receive a suitable winding-cable 16 and hold it clear from the doors and ends 2 and 3. Additional sheave-supporting brackets 17 are secured to the bottoms of the doors substantially midway between their ends and near their meeting edges and support sheaves 18 in a plane beneath that of the sheaves 15, thereby forming a cable-truss for each door.

A rotary drum 20 is located in the front of the end 2, and its opposite ends are journaled in brackets or hangers 21, which are secured to the inner faces of the sides 1. Secured to one end, as the right-hand end, of the drum 20 is a ratchet-wheel 22, and loosely mounted upon the drum in proximity to the ratchet-wheel is a lever 23, carrying a pawl 24, which is arranged to drop by gravity into engagement with the teeth of the ratchet-wheel 22 when the lever is moved to an upright position, but drops automatically out of engagement with said teeth when the lever is moved to the position seen in Fig. 4, and it is therefore evident that the drum 20 may by means of the ratchet and pawl and lever 23 be rotated in the direction indicated by arrow *x*, Fig. 4. This drum is provided with a pair of grab-hooks 25, which are free to turn in eyes 26 and are adapted to receive the ends of the cable 16, whereby any one of the links at the end of the cable may be slipped into or out of its grab-hook to permit said ends to be taken up or let out one or more links, as desired. The ends of the cable wind upon the drum from the inside or side nearest the end 2 of the box in the operation of closing the doors, as best seen in Fig. 4, so that the portions of the cable which extend upwardly from the front ends of the doors to the drum are nearly parallel with the adjacent end 2 of the box, and by this connection we are enabled to bring the power more directly over the ends of the doors. These upwardly-extending ends of the cables are held within certain limits during the opening of the doors by sheaves 27, which afford a convenient antifriction-bearing for said cables when closing the doors, and owing to the fact that the eyes 26, to which the cables are connected, are separated a greater distance than the distance between the sheaves 27 the ends of the chain are caused to wind toward each other upon the drum, so that when the doors approach their closed position the chains are pulling in nearly vertical lines from the sheaves 15.

The compensating roller 30 is eccentrically pivoted at 31 to the rear end 3 and to a suitable bracket 32 and is provided with stop-shoulders 33 at the opposite sides of the pivot which engage the opposite faces of the bracket 32 for the purpose of limiting the rocking movement of the compensating member 30. The object of this compensating member is to form a bearing for the rear end of the cable and to cause one door to close slightly in advance of the other and at the same time permit the other door to be drawn firmly to its closed position, the meeting ends of the doors being provided with overlapping plates 34 to prevent any gap between said meeting edges. In using these overlapping plates it has been found that owing to the warping of the doors or unequal pull at the ends of the doors the meeting edges of the overlapping plates would sometimes cross each other in closing the doors, and thereby prevent such closing; but we have found by providing an eccentric equalizing member, as 30, with the stops 33 the doors may be made to close one in advance of the other, so as to prevent the crossing of the meeting edges and insure a perfect operation in closing the doors.

The cable 16 is passed under the doors and over the sheaves 15 and 18 and over the eccentric roller 30, which is recessed at intervals to receive the links of the chain and prevent it slipping upon the periphery of the roller, so that they will always move together.

In adjusting the compensating member 30 so that one door will close in advance of the the other it is allowed to tilt to one side until one of the stops 33 engages the bracket 34 and the end of the chain which controls the operation of the door on the tilting side of the

compensating member is relaxed a link or two to permit such door to open slightly while the other door remains closed, so that the continued rotation or winding of the drum continues to wind the chain on the tight side, or rather that part of the chain which is connected to the closed door, and by this operation the compensating member 30 is rocked in the opposite direction, and therefore tends to tighten the chain which is engaged with the other door to close said other door. The compensating member 30 being eccentrically hung, so that the greater part is above the pivot, it is apparent that it will either tilt or fall to one side or the other until limited by the stop 33 and that in either case the door on the tilting side will be opened slightly, and therefore the other door will close slightly in advance as the drum is rotated, whereupon the further rotation of the drum brings the compensating member in action to close the open door.

We have thus far described the means for closing the door. The means for holding the doors in their closed position consists of a pawl or detent 35, which is pivoted at 36 to a hanger 37 on one of the sides 1, the rear end of the pawl 35 being engaged with one of the teeth of the ratchet-wheel 22, while the front end of said pawl is connected to a foot-lever 38. This lever 38 is fulcrumed at 39 upon the bracket 40 upon a platform 4 and is located within easy reaching distance from the seat 9. The rear end of the lever 38 is pivoted at 41 to the front end of the detent 35, and upon the front end or arm of the lever 38 is pivoted at 42 a movable stop or pawl 43, having a handpiece 44, whereby the pawl 43 may be rocked into and out of engagement with the platform 4 or a portion of the bracket 40 to hold the lever 38 in its normal position or to release said lever, as may be desired.

When it is desired to release the detent 35, the pawl 43 is rocked to its inoperative position, and the operator then places his foot upon the front end of the lever 38 and depresses the same, which rocks the rear end of the pawl 35 out of engagement with the teeth of the ratchet-wheel 22, it being understood that the lever 23 is previously thrown forwardly to the position seen in Fig. 4 to throw the pawl 24 out of action.

The front end of the pawl 35 is elevated against the action of a spring 45, and in order to prevent the pawl from accidentally returning to its normal position we provide a weighted catch 46, which is pivoted to the front end of the pawl 35 and operates automatically by its own gravity to engage the top face of the heel-board 7. Now when it is desired to wind the cable for closing the doors the catch 46 is rocked by the foot or hand out of engagement with the part 7, whereupon the spring 45 returns the pawl 35 into holding engagement with the ratchet-wheel 22 and also returns the lever 38 to its normal position. The part 43 is left in this inoperative position until the doors are closed by the operation of the lever 23 and pawl 24 upon the ratchet-wheel 22 in the manner previously stated; but as soon as the doors are closed the pawl 43 is again rocked to the position seen in full lines in Fig. 4, thus preventing any accidental depression of the lever 38, which might release the doors.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a dump-wagon the combination with a dump-box having swinging bottom doors, of a cable and winding mechanism therefor connected to the doors to control their action, a support, an eccentric roller-bearing for the cable, said roller being pivoted below its center to the support, and stops on the roller engaging opposite sides of the support for limiting the rocking movement of said bearing whereby one of the doors is caused to close before the other and the continued action of the winding mechanism causes the rocking of the eccentric to close said other door.

2. In a dump-wagon, the combination with a dump-box having swinging bottom doors, and a drum and cable connected to operate the doors, the connection between the drum and cable including a grab-hook attached to the drum and receiving one of the links of the cable, whereby said cable may be taken up or let out one or more links.

3. In a dump-wagon, the combination with a dump-box having swinging bottom doors, of a drum and cable connected to operate the doors, the connection between the drum and cable including a grab-hook attached to the drum and receiving one of the links of the cable, whereby said cable may be taken up or let out one or more links, and an eccentric bearing-roller for the rear end of the cable.

4. In a dump-wagon, the combination with a dump-box having hinge-pins on its sides, of a pair of bottom doors each having hooks secured to its outer edges and detachably interlocked with said hinge-pins.

5. In a dump-wagon, the combination with a dump-box having sides and ends, each end having one or more grooves running from side to side, and tie-rods let into the grooves and having their ends secured to the ties, whereby the sides are drawn into engagement with the ends, the tie-rods engaging the lower and upper walls of the grooves and preventing vertical displacement of the ends.

In witness whereof we have hereunto set our hands this 22d day of February, 1904.

MATTHEW VAN WAGENEN.
WILLIAM A. SWEET.

Witnesses:
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