J. HEBERLING.

DUMPING WAGON.

APPLICATION FILED JULY 13, 1907.

979,488.

Patented Dec. 27, 1910.

2 SHEETS—SHEET 1.

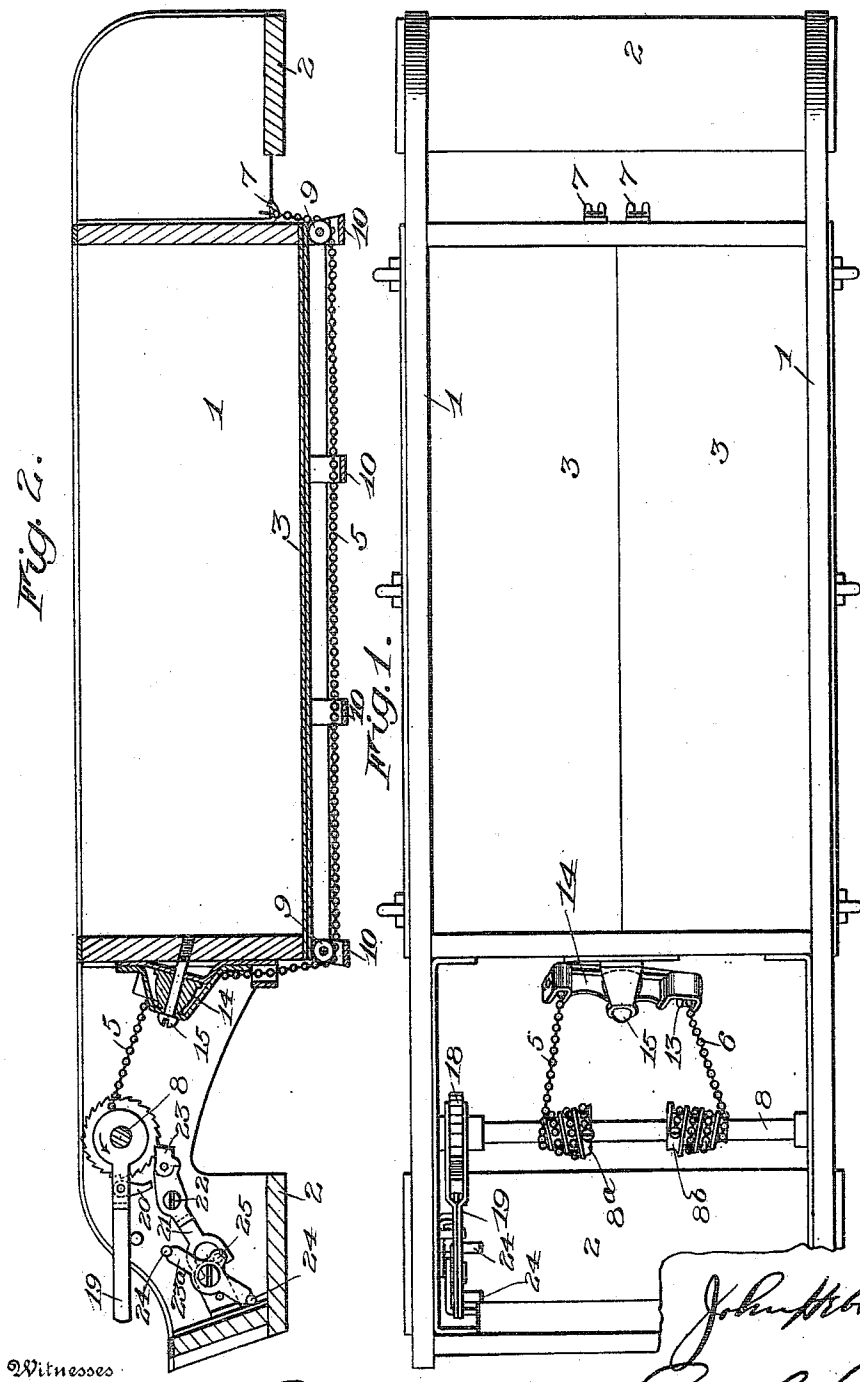

Fig. 2.

Fig. 1.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

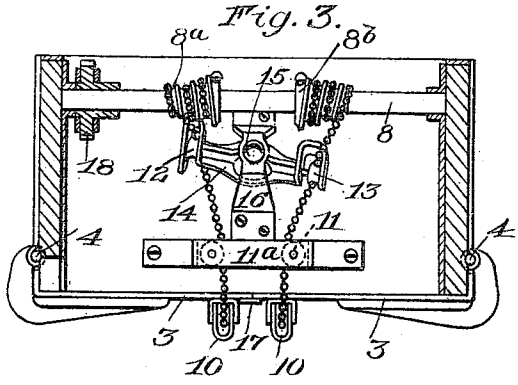



Fig. 4.

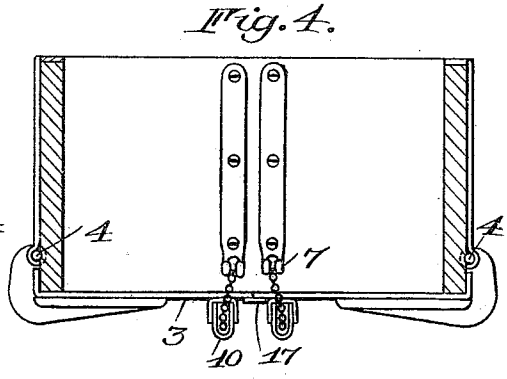



Fig. 5.

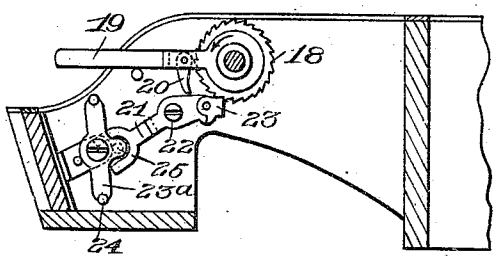



Fig. 6.

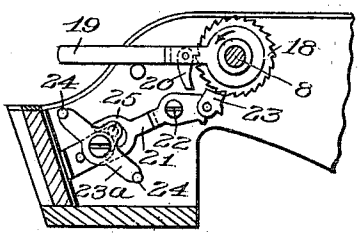



Fig. 7.

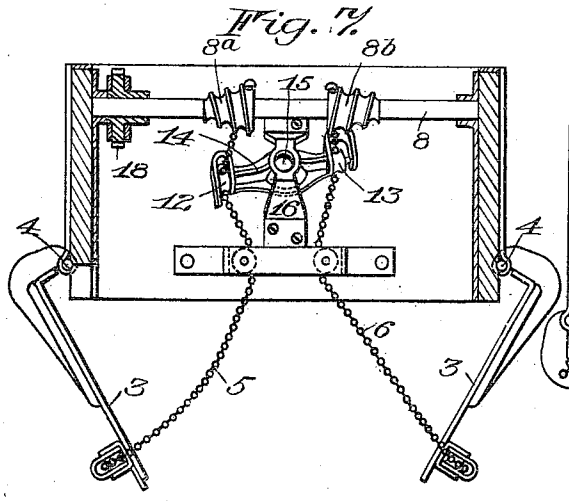
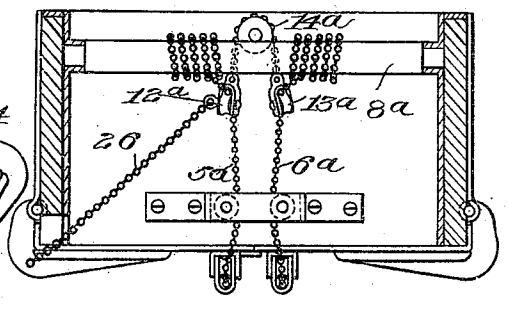



Fig. 8.




Witnesses

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# UNITED STATES PATENT OFFICE.

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## DUMPING-WAGON.

979,488. Specification of Letters Patent. **Patented Dec. 27, 1910.**

Application filed July 13, 1907. Serial No. 383,604.

*To all whom it may concern:*

Be it known that I, JOHN HEBERLING, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Dumping-Wagons; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of the specification, and to the reference-numerals marked thereon.

The present invention relates to dumping wagons of the type employing bottom sections movable to discharge the contents of the wagon box and operated by flexible connections, the tension on which is equalized by a suitable means which preferably also acts to close one section in advance of another; one object of the invention being to provide an equalizing means which will be simple and effective in operation and durable in use; another object being to improve the manner of effecting the closing of one section in advance of another; and a further object being to provide an improved means for locking the winding shaft against accidental release due to jarring or other causes.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings; Figure 1 is a top view of a wagon body constructed in accordance with my invention. Fig. 2 is a central longitudinal vertical section of the wagon body shown in Fig. 1. Fig. 3 is a vertical section in the plane of the winding shaft, showing the bottom sections closed; Fig. 4 is a transverse vertical section in rear of the end wall of the body; Fig. 5 is a detail section showing the pawl operating device in a position permitting the movement of the ratchet in the direction of winding only; Fig. 6 is a like view showing the pawl operating device in the position in which the ratchet is released; Fig. 7 is a section similar to Fig. 3 showing the bottom sections in open position; and Fig. 8 is a section similar to Figs. 3 and 7 showing another embodiment of my invention.

The invention which is susceptible of being embodied in various constructions, in the form shown in Figs. 1 to 7 comprises a wagon body or box having its side boards 1 preferably extended at both ends and connected by cross pieces 2 to which suitable running gear may be secured. Two bottom sections or doors 3 hinged at 4 to the side boards so as to swing outwardly and discharge the contents of the box, are closed by suitable flexible connections preferably two separate chains 5 and 6 each of which in this instance, is secured at one of its ends to one of two hooks 7 arranged on the tail board of the box. The chains pass beneath the sections and at their forward ends are connected to the means employed for drawing or shortening in the connections for the purpose of closing the bottom sections or doors, comprising a winding shaft 8, journaled at the forward end of the box and carrying a pair of conical drums $8^a$ and $8^b$ to the larger ends of which the connections 5 and 6 are secured. In the present embodiment of the invention the flexible connections are guided along the free edges of the sections and for this purpose the ends of the latter may carry guide rollers 9 over which the connections pass, loops 10 being arranged between and adjacent to the rollers to prevent the sagging of the connections, rollers 11 being arranged on a bracket $11^a$ on the front board and serving to guide the forward ends of the connections and retain them in a central position on the box at all times.

The winding shaft 8 is located a short distance in front of the forward end of the wagon box and the ends of the chains or connections extend in a rearward and downward direction to their points of engagement with the doors, or the guide rollers 11 in the event it is desired to employ the latter. In the space thus provided between the shaft and the end of the box is located means for equalizing the tensions applied to the door operating connections which in the present embodiment of the invention comprises two supports, or guides over which the separate chains are passed, said supports being connected and capable of movement in opposite directions for the purpose of taking up one chain or connection and paying out the other, as will be more fully described. In its preferred form the equalizing device comprises the supports or guides 12 and 13 which may be in the form of rollers turning about axes arranged at the ends of an arm 14 and extending transversely to

the longitudinal axis of the box. The arm 14 is an oscillatory lever journaled on an axis 15 which is slightly inclined to the horizontal and is supported by a bracket 16. It is apparent that, with the bottom sections in the positions shown in Fig. 7, if the winding shaft 8 is rotated in the direction of the arrow Fig. 2, the flexible connection will be wound about the drums $8^a$ and $8^b$, first fast and then gradually slower owing to the varying diameter of the drums, and should one connection have more tension applied thereto than to the other, due to stretching of one connection, or other causes, the equalizing means will take up a portion of the other connection.

The free edge of one of the sections is provided with a batten strip 17 which when the sections are closed covers the joint and prevents leakage. The use of this strip makes it necessary to close one section in advance of the other and this can be accomplished automatically by any suitable device designed to set it in the position shown in Fig. 7 whenever the doors are opened. In the arrangement of parts which I prefer to employ for accomplishing this object, I mount one of the supports or guides so that it may move toward and from the axis of the arm or lever 14, for instance, when the support is in the form of a roller, as shown, I permit the latter to move axially on its bearing. The winding of the chain 6 on the shaft 8 causes its successive convolutions to lie one beyond the other so that when the chain is drawn tight it will also extend laterally and shift the roller 13 outwardly on the lever relatively to the axis thereof. As the position of the support 12 on the lever does not change, it follows that when the support 13 moves nearer to the axis than the device 12, as is the case when the winding shaft is released, the equalizing mechanism in this instance the lever will be shifted so as to pay out the connection 5 and take up slack in the connection 6 or the one operating the section without the batten strip; and upon the winding of the connections this section will close in advance of the other. From the above it will be apparent that the movable support 13 serves as a means for automatically varying the leverage of the equalizer.

As a preferred means for operating the winding shaft I provide the latter with a ratchet wheel 18 and journaled on said shaft is a swinging lever 19 carrying a dog 20 engaging with the ratchet to rotate the latter. In order to maintain the shaft against rotation there is provided a pawl lever 21 pivoted at 22 on the forwardly extending end of the side board of the box at one end of which is a movable nose 23 permitting the release of the ratchet without undue wear on the teeth of the latter. The position of the lever is controlled by a device movable to three positions, in one position holding the pawl out of engagement with the ratchet, in another holding the pawl in engagement with the ratchet while permitting its movement only in the direction of winding the shaft, and in the other holding the pawl in engagement with the ratchet against any movement, so that when the wagon is loaded its contents cannot be deposited by the accidental release of the ratchet by jars or other causes. This device comprises a swinging member $23^a$ pivoted intermediately of its ends to the side board and carrying foot pieces 24 by which it is operated, and an eccentric projection 25 which is adapted to work in a bifurcation in the outer end of the pawl lever 21. In locking position, the swinging device lies against the lower arm of the bifurcated end as shown in Fig. 2; in winding position midway between the arms as shown in Fig. 5 and in releasing position against the upper arm as shown in Fig. 6.

In Fig. 8, I have shown a modified form of the equalizing mechanism in which the movable supports $12^a$ and $13^a$ are united by a flexible connection $14^a$ and the equalizing means thus formed may be made to effect the closing of one section before the other by attaching a flexible connector 26 at one end to the equalizing means and at the other end to the section carrying the batten strip or the door which is desired to close last, so that when the sections drop the vertically movable device $12^a$ will descend paying out its flexible connections $5^a$ and the device $13^a$ will flex or take up its flexible connection $6^a$ causing the section operated by the latter to close in advance of the other. The winding shaft employed for drawing on the flexible connections $5^a$ and $6^a$ is indicated in this figure by $8^a$.

It will be noted that the flexible connections instead of passing directly downward extend rearwardly from the drawing means preferably over supporting guides revoluble about axes transverse to the longitudinal axis of the wagon box, so that I am enabled to arrange the drawing means beneath the driver's seat removing the operating lever at one end thereof to a position where the wagon box does not interfere with its movement whereby a long stroke may be given the lever enabling the operator to close the doors quickly.

I claim as my invention.

1. The combination with a wagon box and bottom sections thereon, of flexible connections for the sections, means for drawing the connections to close the sections, and means for equalizing the tension on the connections embodying two connected supports movable in opposite directions over which the connections travel.

2. The combination with a wagon box and bottom sections thereon, of flexible connections for the sections, means for drawing the connections to close the sections, means for equalizing the tension on the connections, comprising two vertically movable supporting devices over which the connections travel and connection between said devices causing one to move upwardly when the other moves downwardly, and means causing said equalizing means to effect the closing of one section in advance of the other.

3. The combination with a wagon box and bottom sections thereon, of flexible connections for the sections, means for drawing the connections to close the sections, and equalizing means embodying two vertically movable pulleys arranged to turn about axes transverse to the longitudinal axis of the wagon box, over which the flexible connections are passed and a connection between said pulleys causing them to move in opposite directions.

4. The combination with a wagon box and bottom sections thereon, flexible connections secured at the rear of the box and engaging the sections and a shaft for winding the connections arranged in front of the box, of equalizing means embodying two guides supporting the flexible connections between the shaft and the box and a connection between said guides for moving them in opposite directions.

5. The combination with a wagon box and bottom sections thereon, of flexible connections for operating the sections, means for drawing the connections to close the sections and an equalizing means comprising an oscillatory lever and pulleys at the ends thereof on which the connections are supported, said pulleys rotating on axes extending transversely to the longitudinal axis of the box.

6. The combination with a wagon box and bottom sections thereon, of flexible connections for said sections, a winding shaft for drawing the said connections, a ratchet wheel on the shaft, a pawl controlling said ratchet wheel, and a device movable into one position to release the ratchet wheel, to another position to lock the pawl against movement and to still another position to permit the ratchet wheel to move past the pawl in one direction only.

7. The combination with a wagon box and bottom sections thereon, of flexible connections for said sections, a winding shaft for the connections, a ratchet wheel on the shaft, a pawl having one end bifurcated and the other end controlling the ratchet wheel, and a device movably engaging one arm of the bifurcated end to hold the pawl against movement, movable to engage the other arm to release the ratchet wheel, and movable to an intermediate position between the arms to permit the ratchet to move only in the direction of winding of the shaft.

8. The combination with a wagon box and bottom sections thereon, of flexible connections for said sections, a winding shaft for the connections, a ratchet wheel controlling the shaft, a pawl having one end bifurcated and the other end controlling the ratchet wheel, and a pivoted member having a projection working in the bifurcated end and movable to release the ratchet and to lock the pawl against movement.

9. The combination with a wagon box and bottom sections thereon, of flexible connections for said sections, means for drawing the connections to close the sections, a shaft about which one of the flexible connections is wound, and a lever equalizer coöperating with the connections embodying a device shiftable on the equalizer and moved to and from the pivot of the lever equalizer by the action of the connection in winding and unwinding.

10. The combination with a wagon box and bottom sections thereon, flexible connections for said sections, means for drawing the connections to close the sections, and an equalizing means embodying a lever, of supports over which the connections pass arranged on opposite sides of the pivot of the lever, one of said supports being movable to and from the pivot to vary the leverage and cause one section to close before the other.

11. The combination with a wagon box and bottom sections thereon, of flexible connections for said sections, a lever equalizer having devices over which the connections pass, one of said devices being movable toward the pivot of the lever, and means for drawing on the connections to cause the device to move relatively to the pivot of the lever and effect the closing of one section in advance of the other.

12. The combination with a wagon box and bottom sections thereon, of flexible connections for said sections, an equalizing lever having devices thereon over which the connections pass, one of said devices being movable on the lever to vary the leverage thereof, and means for shifting the device.

13. The combination with a wagon box and bottom sections thereon, of flexible connections for the sections, means for drawing the connections to close the sections, and equalizing means arranged in the rear of the drawing means, and directing the flexible connections downwardly to the sections.

14. The combination with a wagon box and bottom sections thereon, of flexible connections for operating the sections means for drawing the connections located above the sections, means for equalizing the tensions applied to the connections which is arranged in rear of the drawing means, the flexible connections extending rearwardly from the

drawing means to the equalizing means and thence downwardly to the sections.

15. The combination with a wagon box having movable bottom sections thereon, of a winding shaft arranged in front of the box, pulleys adapted to turn about axes transverse to the longitudinal axis of the box and arranged in the rear of the shaft but in front of the box, an oscillatory member carrying the pulleys, and flexible connections passing rearwardly from the shaft to the pulleys and thence to the sections.

16. The combination with a wagon box, movable bottom doors thereon and connections coöperating with the doors, of means for drawing the connections to close said doors, a support, an equalizing device having ends engaging said connections and adjustable on the support to simultaneously move its ends in opposite directions to shorten one connection and lengthen the other.

17. The combination with a wagon box, movable bottom doors thereon and connections coöperating with the doors, of means for drawing the connections to close said doors, an equalizing device having guides thereon over which the connections pass and are supported, and a pivotal support for said device located between the guides.

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Witnesses:
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