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M. C. ERNSBERGER.

DUMP WAGON.

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Fig. 1

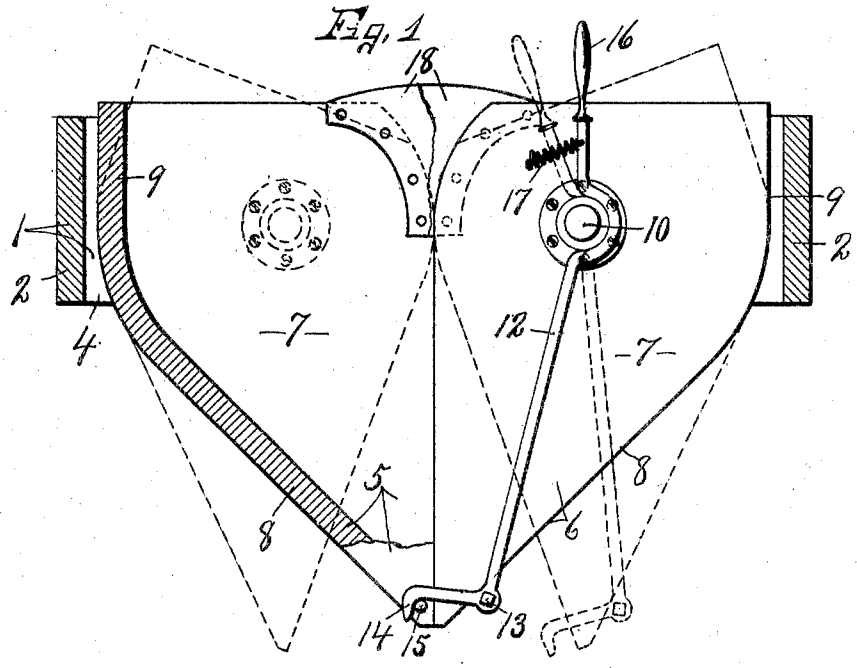
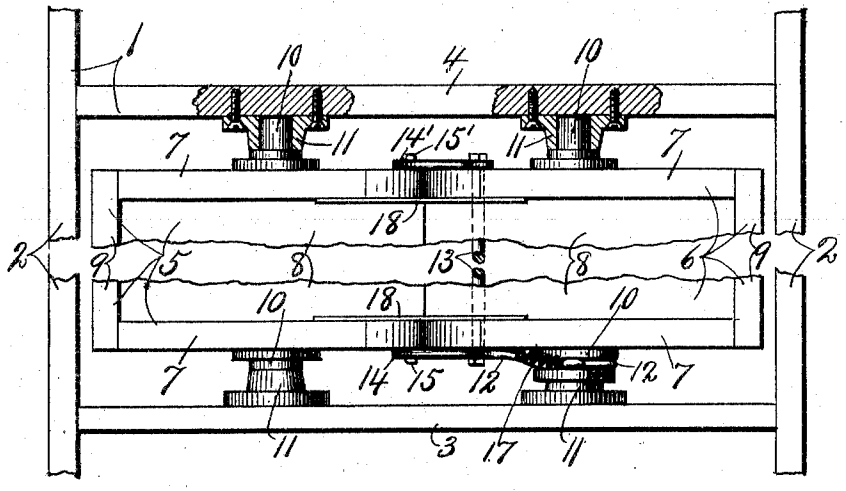


Fig. 2.



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No. 783,939. Patented February 28, 1905.

UNITED STATES PATENT OFFICE.

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DUMP-WAGON.

SPECIFICATION forming part of Letters Patent No. 783,939, dated February 28, 1905.

Application filed June 8, 1903. Serial No. 160,586.

To all whom it may concern:

Be it known that I, MILLARD C. ERNSBERGER, of Auburn, in the county of Cayuga, 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 in which the dump-box is divided longitudinally to form opposite symmetrical dumping-sections each having an inclined bottom wall converging downwardly toward the other, said sections having their adjacent sides open and are pivotally hung at points slightly above and inside of their longitudinal centers of gravity.

The primary object of this invention is to construct and mount two tilting box-sections in such manner that when they are closed and loaded the load is disposed with reference to the pivotal axes of the sections so that the pressure of the load which tends to open the sections is somewhat in excess of that which tends to close the sections, so that when the sections are released or unlocked from each other the load will force them apart and discharge itself automatically by its own gravity, while, on the other hand, the sections are hung in such manner that when open by the excess pressure of the load between the pivotal axes and the load is discharged the lower ends are automatically forced together by the mere gravity of said sections.

Further objects will appear in the subsequent description.

In the drawings, Figure 1 is an end view, partly in section, of a dump-wagon embodying the various features of my invention. Fig. 2 is an enlarged top plan of the front and rear ends of the parts seen in Fig. 1, the central portion being broken away.

Similar reference characters indicate corresponding parts in all the views.

In carrying out the objects of my invention I provide an open supporting-frame 1, which is adapted to be mounted upon the front and rear axles of a suitable running-gear (not shown) and preferably consists of opposite parallel side walls 2 and front and rear end walls 3 and 4, which are united to each other in any well-known manner to form a substantial and durable frame for supporting dump-box sections 5 and 6. These dump-box sections are duplicates of each other and are pivotally hung upon the end walls 3 and 4, with their axes lying in substantially the same horizontal plane, the tops and inner sides of the sections being open, the open sides facing each other, and therefore when the box-sections are closed with their meeting faces together they constitute practically a single box or receptacle for receiving and retaining the load. Each of these box-sections comprises opposite end walls 7, inclined bottom walls 8, and outer side walls 9, the end walls 7 of each section being disposed in upright substantially parallel planes coincident with those of the other section, so that when the box-sections are closed their meeting edges abut against each other and lie in a vertical plane midway between the side walls 9. The bottom walls 8 incline downwardly and inwardly from the lower edges of the side walls 9 and normally abut against each other at the bottom edges or apex of the box when the sections are closed. Each of these sections is provided with a pair of studs or metal trunnions 10, which are secured to and project longitudinally from the end walls 7, said trunnions being seated in suitable metal bearings 11, projecting inwardly from the end walls 3 and 4.

The axes of each pair of trunnions for each section are coincident and are disposed in lines slightly inside of but near their longitudinal centers of gravity, so that the portions at the outside of and beneath the pivotal axes are slightly heavier than the portions at the inside and above said axes, whereby the lower ends of the sections automatically swing from their open positions to their closed positions and when empty are held in their closed positions by the superior weight at the outside and beneath the axes. On the other hand, these axes are so arranged with reference to the degree of inclination of the bottom walls 8 that when the sections are loaded owing to the inclined position of the bottom walls the load is thrown inwardly and downwardly toward

the center between the axes of the sections, and therefore exerts a wedging action upon the bottom walls which is concentrated toward the apex of the box and tends to separate or open the sections, but is prevented from doing so by a suitable locking device, presently described. It is also apparent from the construction just described that while the load exerts a wedging action upon the bottom walls of the sections to open said sections this wedging force is only comparatively light and does not represent in any degree the superimposed load. Therefore the strain upon any locking means which may be employed to hold the sections together is only slight.

Any desired means may be employed for locking the meeting edges of the sections in their closed position; but I have here shown a lever 12 as secured to a rock-shaft 13 and as provided with a hook-shaped extremity 14, which is movable into and out of engagement with a pin 15, the rock-shaft 13 being mounted upon one of the box-sections beneath its bottom wall, and the pin 15 is secured to the other section, so that when the sections are brought together the hook-shaped extremity 14 automatically interlocks with the pin 15. The opposite end of the rock-shaft 13 is provided with a hook 14′, similar to the hook 14, for engaging a pin 15′, similar to 15, so that when the shaft 13 is rocked both of the hooks 14 and 14′ are thrown into and out of engagement with their respective pins 15 and 15′.

The lever 12 extends upwardly to a position in convenient reaching distance from the seat of the vehicle and is provided with an operating-handle 16, said lever being held in its normal locking position by a spring 17.

The meeting edges of the end walls of the box-sections extend above the horizontal plane of the axes of the trunnions and are therefore cut away in lines concentric with the trunnions to permit the rocking or tilting of the sections, and the space thus formed is closed by suitable extensions 18, which are secured to the inner faces of the end walls of one of the sections and lap upon the inner face of the adjacent end wall.

The inclination of the bottom walls and the relative position of their pivotal axes are important factors in accomplishing the desired automatic action of the box-sections—that is, in permitting the load to automatically discharge itself when the sections are unlocked—whereupon said sections immediately and automatically close by their own gravity as soon as the load is discharged. In order that the importance of these factors may be more clearly understood, it appears to be necessary to consider three possible load conditions—viz., first, a full load, such as would entirely fill the box-sections either level or heap measure; second, a partial load resting on the bottom walls between the vertical planes of the pivotal axes of the box-sections, and, third, a partial load supported on the bottom walls outside, if possible, of the vertical planes of said axes. In the first instance, which is most common, a large percentage of the load is carried on the portion of the bottom wall outside of the vertical planes of the axes of the sections, while the preponderance of the load is carried by the bottom walls between said planes and operates as a wedge against the lower portions of the inclined walls to separate or open the same, while at the same time if each box-section and its half of the load were considered as separate from the other the tendency might be to hold the box-section in its normal closed position. It therefore follows that this tendency of the box-sections to open is mainly due to the wedging action of the compact load between the vertical planes of the axes of the swinging box-sections. Under the second condition, the load being entirely within vertical planes of the axes, the wedging force acting to open the sections is of course greater by reason of the fact that no exterior load is to be overcome. In the third instance the load would hold the box-sections closed were it not for the inclination of the bottom walls, which precipitate the load to the center and produce the same conditions and effects as described for the second condition.

It is now clear that no matter what the load conditions may be the box-sections when unlocked are opened automatically by the mere gravity and wedging action of the load at the apex of the box, and the sections are also automatically closed by their own gravity when empty.

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

1. Two dump-box sections pivotally hung at points near their longitudinal centers of gravity so that their lower ends will close together automatically, in combination with locking members arranged in the ends of the sections and operating automatically to lock the members together when the latter have assumed a closed position.

2. In a dump-wagon, oppositely-arranged dump-box sections having adjacent open sides and pivotally hung at points inside their longitudinal centers of gravity and laterally of and outside of the meeting line of the sections, said sections being so shaped and proportioned that the capacity of each is greater on the inside of a vertical plane intersecting the axis than on the outside of the same.

3. In a dump-wagon, oppositely-arranged dump-box sections opening toward each other and pivotally hung inside their longitudinal centers of gravity and laterally of and outside of their meeting line, said sections being formed with downwardly and inwardly inclined straight walls and so constructed and arranged that when closed the capacity of each

is greater within a vertical plane projected through its pivotal axis than on the outside of such plane and so constructed and arranged that the portion of each section outside of and beneath the pivotal axis of the same is heavier than the portion at the inside and above said axis whereby the lower ends of the sections automatically swing from their open positions to their closed positions and whereby the sections automatically spread apart under the action of a load.

4. In a dump-wagon, a supporting-frame, in combination with two dump-box sections pivotally hung on the frame at points inside their longitudinal centers of gravity and each being so pivotally hung laterally of and outside the meeting-point of the sections and having downwardly and inwardly inclining straight walls whereby the load exerts a light wedging action upon the lower portions of the bottom walls to separate or open the same to discharge the load, the empty sections closing by their own gravity.

5. In a dump-wagon, a supporting-frame, in combination with two dump-box sections pivotally hung on the frame at points inside their longitudinal centers of gravity and having downwardly and inwardly inclining walls whereby the load exerts a light wedging action upon the lower portions of the bottom walls to separate or open the same to discharge the load, the empty sections closing by their own gravity, and movable and automatically-operating means to lock said sections in their closed position.

In witness whereof I have hereunto set my hand this 2d day of June, 1903.

MILLARD C. ERNSBERGER.

Witnesses:
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HENRY C. TRIPP.