D. GERBER.

DUMP WAGON.

APPLICATION FILED MAR. 6, 1912.

1,104,111. **Patented July 21, 1914.**

4 SHEETS—SHEET 1.

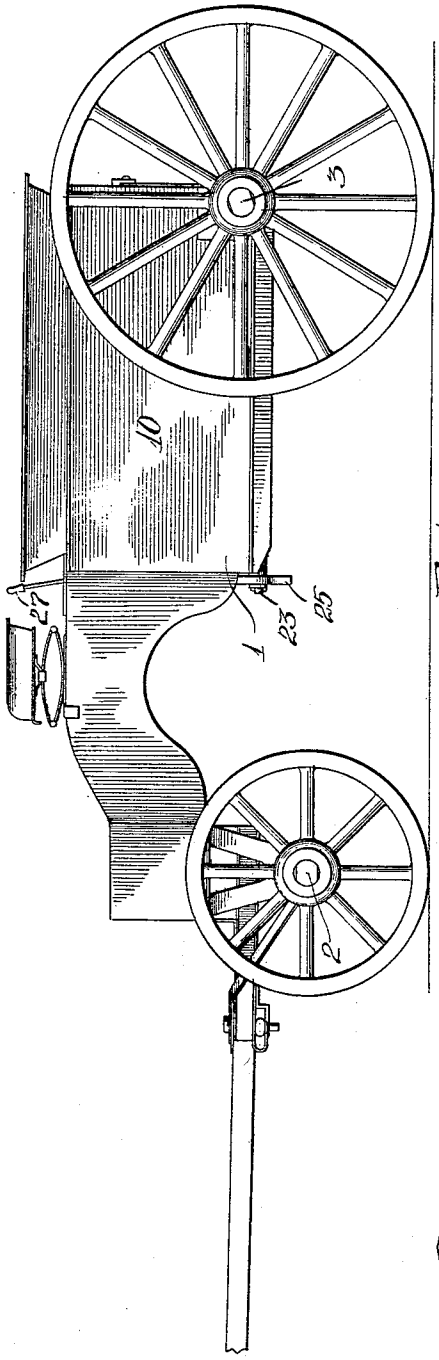


Fig. 1.

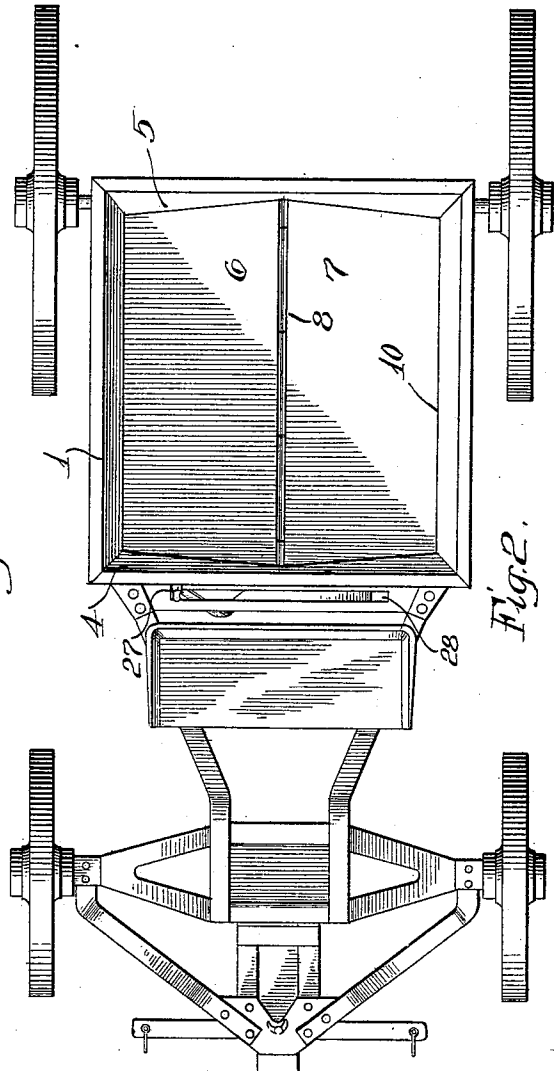


Fig. 2.

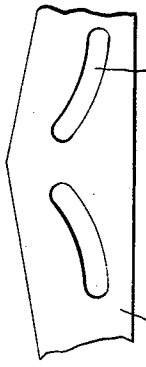


Fig. 3.

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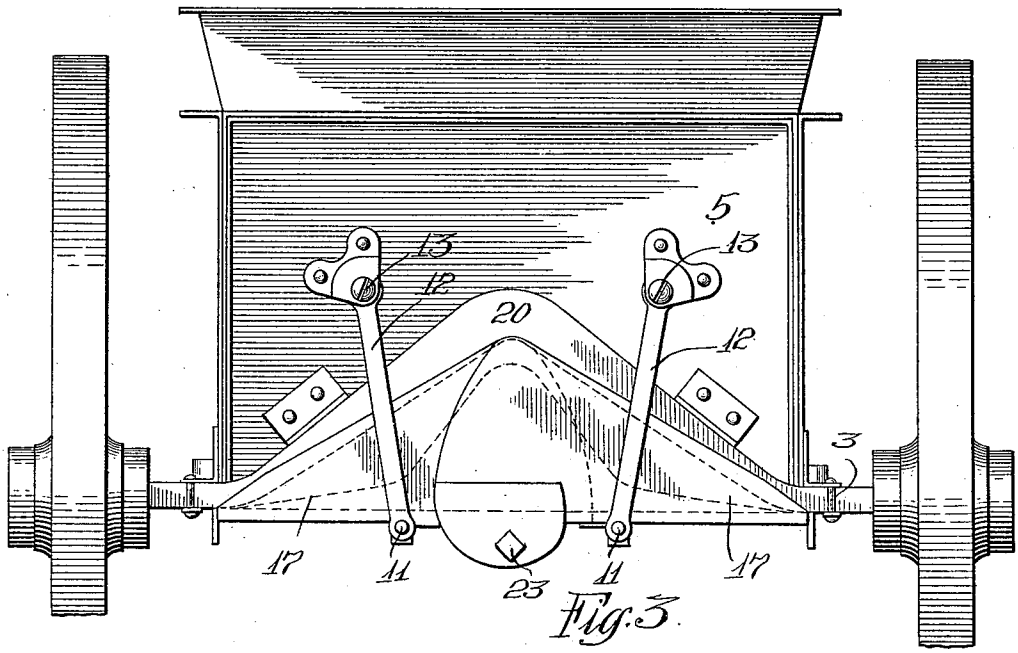


Fig. 3.

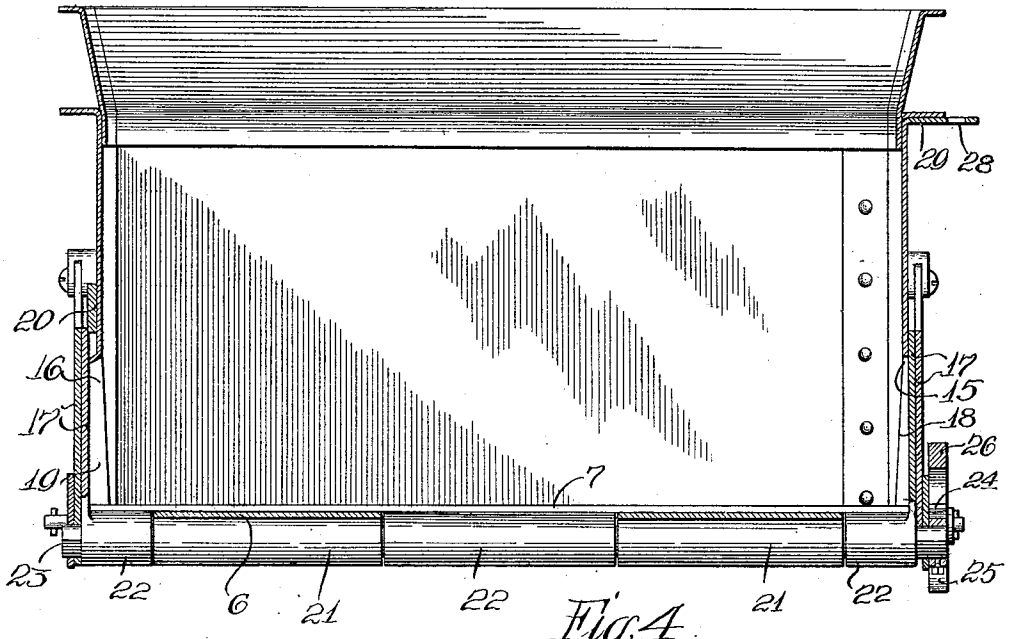


Fig. 4.

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4 SHEETS—SHEET 3.

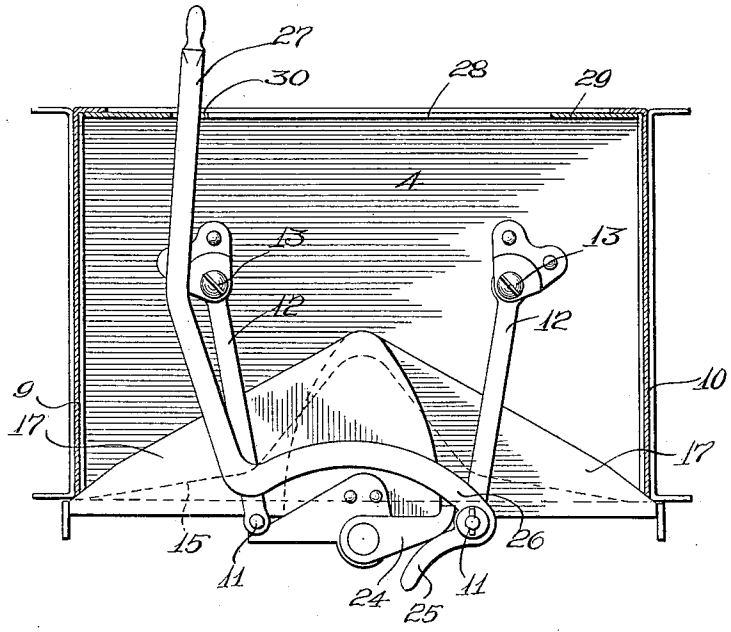


Fig. 5

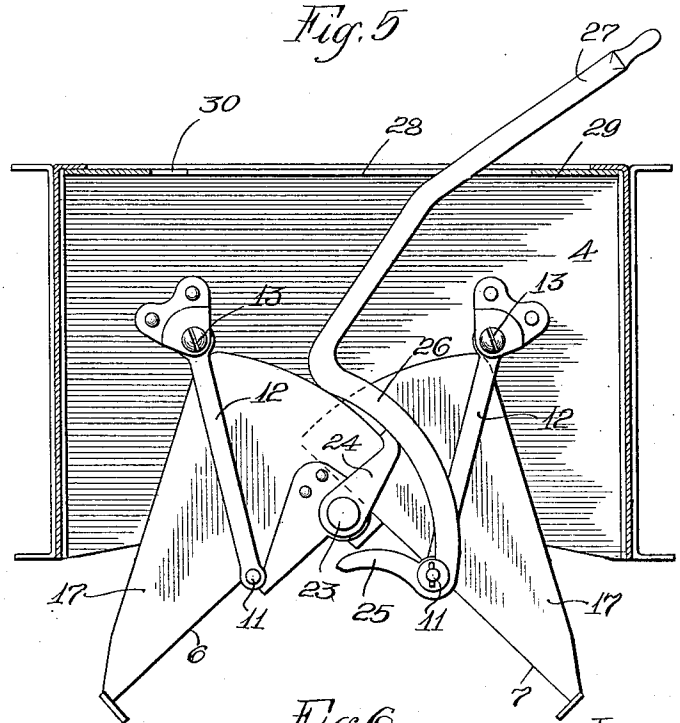


Fig. 6.

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4 SHEETS—SHEET 4.

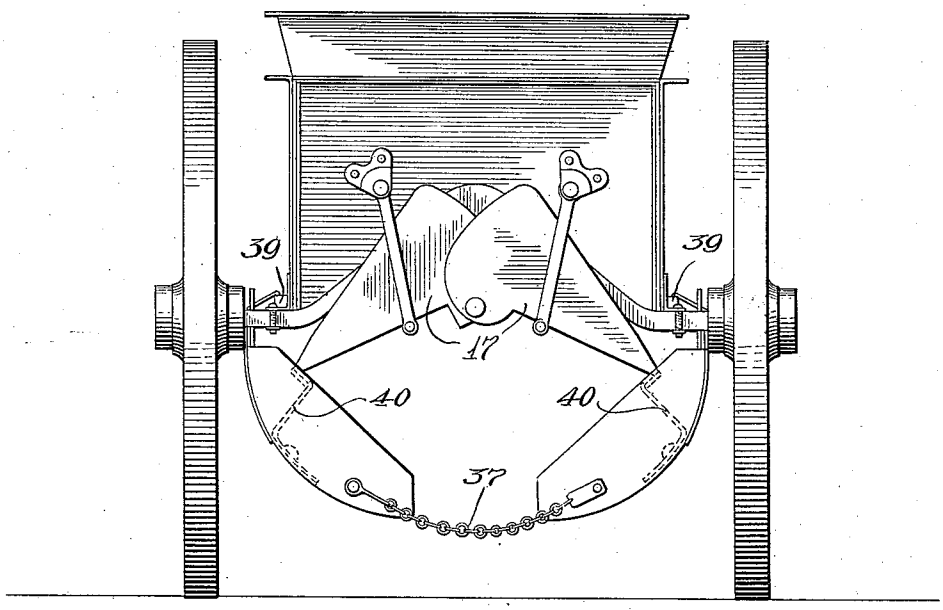


Fig. 7

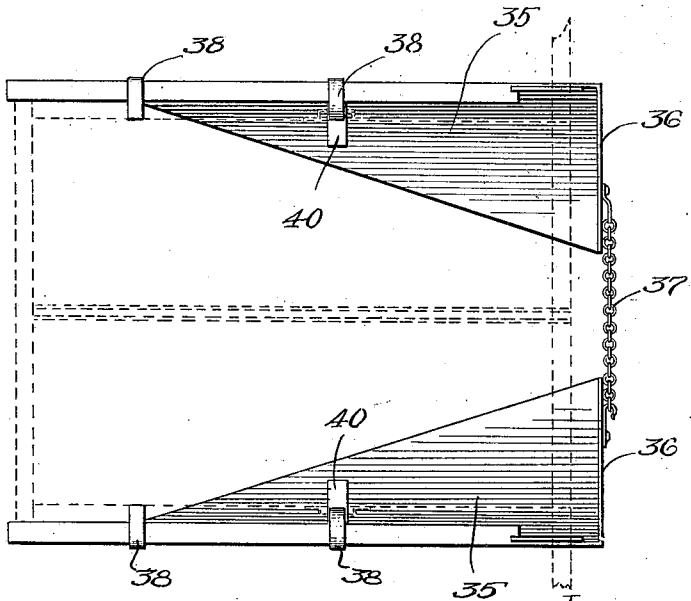


Fig. 8

Witnesses:
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UNITED STATES PATENT OFFICE.

DWIGHT GERBER, OF BELLEVUE, PENNSYLVANIA.

DUMP-WAGON.

1,104,111. Specification of Letters Patent. Patented July 21, 1914.

Application filed March 6, 1912. Serial No. 681,867.

To all whom it may concern:

Be it known that I, DWIGHT GERBER, a citizen of the United States, residing at Bellevue, county of Allegheny, State of Pennsylvania, have invented a certain new and useful Improvement in Dump-Wagons, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to produce a novel and efficient dumping bed or bottom for wagons, cars, or other apparatus where it is or may be desirable to provide means for quickly discharging a load by dumping it out of the bottom.

A further object of my invention is to produce a dumping apparatus which shall require no chains for operating or controlling it.

A further object of my invention is to produce a dumping apparatus requiring a comparatively small space beneath the normal horizontal plane of the dumping doors in which to operate, thus permitting the bottom of a wagon box to which it is applied to be brought nearer the ground than has heretofore been possible and permitting the wheel base of the wagon to be shortened without decreasing the capacity of the wagon or raising the top thereof higher than is now customary.

A further object of my invention is to provide means whereby the contents of a dumping wagon may be spread in a long layer as distinguished from being dumped in a heap, when desired.

The various features of novelty whereby my invention is characterized will be hereinafter pointed out with particularity in the claims; but, for a full understanding of my invention and of its various objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is a side elevation of a dump wagon arranged in accordance with a preferred form of my invention; Fig. 2 is a top plan view of the wagon; Fig. 3 is a rear end view on an enlarged scale; Fig. 4 is a central longitudinal section through the wagon box; Fig. 5 is a section taken just in front of the front sheet of the wagon box with the doors in closed position; Fig. 6 is a view similar to Fig. 5, showing the doors in the dumping position; Fig. 7 is a rear end view of the wagon having applied thereto a spreading device; Fig. 8 is a top plan view of the spreading device in its operative position, portions of the wagon box being shown in dotted lines; and Fig. 9 is a detail of a modified means for supporting the doors.

For the sake of brevity I have illustrated my invention simply as applied to a dumping wagon and I shall confine the detailed description to this embodiment, for it will be self evident how the principle of my invention is applicable to a dumping bed or bottom at any place or in any apparatus where a dumping device is desired; and therefore I do not intend to limit myself to dumping wagons, alone.

Referring to the drawings, 1 represents a suitably framed wagon box supported upon a front wheeled axle 2 and a rear wheeled axle 3. The front end 4 and the rear end 5 of the box are preferably though not necessarily so shaped as to make the box longer at the middle than at the sides. The bottom of the box is formed by two doors 6 and 7 which are hinged together down the longitudinal center of the box, as indicated at 8. The doors are wide enough to engage with the under edges of the side walls 9 and 10. In the ordinary form of dump wagon the dumping is effected by permitting the doors to swing about the hinge connecting them, the axis of the hinge being fixed; or, where the two doors are each hinged to one side of the box, the doors are permitted to swing about their respective hinges. This arrangement makes it necessary to give a clearance between the bottom of the box and the ground equal at least to the width of one of the doors in order to insure that the doors, when fully dropped, will not strike against or catch in the surface of the ground.

In accordance with my invention I so support the doors that when they swing open their meeting edges rise up into the body of the box, thus leaving only a portion of each door projecting below the bottom of the box and decreasing the amount of clearance which is required between the bottom of the box and the ground. This arrangement permits the bottom of the box to be brought closer to the ground than heretofore and therefore the box may be made deeper than heretofore without increasing

its height above the ground and making it more difficult for a workman to load it. With a deeper box, the length of the box may be decreased without decreasing the capacity, and therefore the wheel base of the wagon may be materially shortened, thus making the wagon easier to handle and improving the traction. Various means may be employed for supporting the doors in this manner. In the arrangement shown I have provided each of the doors with two co-axial trunnions 11 projecting from the ends thereof at equal distances from the hinge and lying parallel with the axis of the hinge. Each trunnion is hung upon the lower end of a link 12 which is in turn pivotally connected at its upper end, as at 13, on the adjacent end of the wagon. The parts are so proportioned that when the doors lie horizontal the links hold them in a position wherein they close the bottom of the wagon box securely. The doors may be swung simultaneously about their respective trunnions, the middle portions rising and the outer edges descending below the bottom of the box so as to provide a discharge opening at each side of the box. In order to permit this relative angular movement between the doors, the trunnions on one door must be permitted to move from and toward the trunnions on the other door and this is brought about by the peculiar arrangement of the links, the links being free to swing from and toward each other as occasion may require. I prefer to place the trunnions between the longitudinal centers of the doors and the axis of the hinge, preferably at distances from the axis of the hinge equal to about one third the width of one of the doors. With this arrangement, when the wagon box is full, a portion of the load is balanced so as to be supported directly upon the trunnions while another portion of the load tends to swing the outer portions of the doors down. Consequently, unless some locking means is provided for the doors they will automatically dump and let the load be discharged at the sides of the box. However, the locking means is not required to sustain the whole of the load but only the overbalancing portion. Thus, in the preferred arrangement with the trunnions spaced from the hinge a distance equal to one third the width of one of the doors, two thirds of the load will be balanced upon the trunnions and only one third tends to open the doors, so that the holding or locking means for the doors is required to support only one third of the load.

Since the hinge rises into the body of the wagon when the doors assume a dumping position, the ends of the wagon must be cut away near the bottom as indicated at 15 and 16, respectively. These openings in the ends of the box are closed by means of flanges 17 upon the ends of the doors, these flanges projecting upwardly on the outside of the end sheets of the box to a point above the openings. The flanges on the ends of the doors are preferably at right angles to the longitudinal axis of the box and therefore, where the ends of the box are inclined from the center toward the sides, I prefer to bend the metal of the end walls outwardly around the openings 15 and 16, as indicated at 18 and 19, to form straight bearing surfaces for engaging with the flanges on the doors and forming a tight joint. Where the rear end of the box is supported directly upon the rear axle as shown, the rear axle is arched at the center as indicated at 20 so as to extend around above the top of the opening 16.

The doors will swing open under the imposed weight of a load, and may be swung closed and held in the closed position in any suitable way. In the arrangement shown, I have provided means which may be viewed as interposed between the two doors themselves or as between one of the doors and the hinge connecting the doors for closing the doors and holding them closed. In the arrangement shown, the hinge is formed by rolling the meeting edges of the doors into short sections of tubes as indicated at 21 and 22 and extending a shaft 23 through the tubular portions. One of the doors, in the arrangement shown, the door 6, is fastened to the hinge shaft so as to turn with it. On the front end of the hinge shaft is fixed an arm 24 which, when the doors are in their closed position, extends into proximity to the trunnion 11 on the adjacent end of the door 7. On this trunnion is mounted a jaw or bell crank lever one arm, 25, of which underlies the arm 24 and the other arm, 26, of which overlies the arm 24. The member 26 is extended past the hinge toward the opposite side of the box and is then extended upwardly so as to form a handle or lever 27 within easy reach of a driver on the seat of the wagon. The doors cannot swing relative to each other without producing a relative movement between the jaw or bell crank lever and the arm 24 and, since the parts are so proportioned that the arm 24 is engaged by both members of the jaw or bell crank lever when the doors are closed, neither door can move without oscillating either the arm 24 or the engaging member relative to the wagon box. Consequently, by providing a suitable catch to hold the lever 27 in the position shown in Fig. 5, the doors will be locked in the closed position. The lever 27 may conveniently project up through an elongated slot 28 in a transverse flange 29 projecting out from the front of the box, this slot having in the end nearest the side 9 a notch 30 into which the lever may drop when it is in its locking position.

Since the lever 27 is comparatively long it may be held against displacement in the notch 30 by its own spring action, if the parts are so proportioned that the lever is under a slight tension which tends to swing its upper end toward the back of the box.

Assuming the parts to be in the positions indicated in Fig. 5, the box being loaded, and that it is desired to dump the contents of the box: The upper end of the hand lever is drawn forward out of the notch and, there being now nothing to support the overbalancing weight in the box, the doors will be swung down into the positions indicated in Fig. 6, the lever 27 being carried toward the opposite end of the slot from that in which the notch 30 is located. The load freely slides down the two chutes thus formed at the sides of the box and, when the box is empty, the doors may be closed by swinging the hand lever back into the position indicated in Fig. 5; the member 26 of the bell crank lever engaging with the arm 24 and swinging it down. On account of the full openings provided for the discharge outlet of the contents of the box, the load will not be heaped so high on the ground as in the case of the usual dump wagons, so that the doors may be closed if desired before the wagon is drawn off the pile.

Instead of mounting the doors on swinging links as I have heretofore explained, stationary supports may be provided at the ends of the box for receiving the trunnions. In Fig. 9 I have shown a fragment of one of such supports, the support consisting of a bar 32 having two elongated arc-shaped slots 33 extending outwardly and downwardly from points near the center. When the doors are in the closed positions, the trunnions lie in the ends of the slots farthest from each other; but as the doors swing open, the trunnions move toward each other, traveling inwardly and upwardly.

It is sometimes desired, instead of discharging the load in a heap, to spread it in the form of a long comparatively shallow layer. For this purpose I have provided detachable spreaders as shown in Figs. 7 and 8, each spreader consisting of a curved plate 35 wider at the rear end than at the front end. The rear end of each plate is provided with an upwardly extending wall or flange 36. The rear ends of the two spreading members may be detachably connected together by a suitable chain or link 37. Each of the spreading members is provided with one or more hooks 38 which may be hooked into pockets 39 on the side walls of the box near the lower ends thereof. When the two members of the spreader are coupled together by the link or chain and are placed beneath the box with the hooks engaging the pockets on the box, they are in position to receive the load as it is discharged from the wagon. In order that the load may not be discharged too rapidly, I provide stops 40 on the spreading members, these stops being so arranged that they will engage with the free edges of the doors and arrest the doors before they are fully opened. Consequently the load will be gradually discharged upon the spreaders and, as the wagon moves forward, will gradually fall from the spreaders into a thin comparatively uniform layer.

I claim:

1. In combination, a box, two doors forming the bottom of the box and hinged together along the longitudinal center of the box, each of said doors having at its ends an upwardly projecting flange lying in proximity to the outside of the box, and supports for said doors arranged to permit them to swing about axes parallel with the axis of the hinge, and the end walls of the box having their under portions cut away to permit the hinge to rise above the position which it occupies when the doors are horizontal.

2. In combination, a box, two doors forming the bottom of the box and hinged together along the longitudinal center of the box, and swinging supporting links pivotally connected to the box at their upper ends and at their lower ends to the doors at some distance from the hinge.

3. In combination, a box, two floating doors forming the bottom of the box and hinged together along the longitudinal center of the box independently of the box, two links hung upon each end of the box, and a connection between the lower end of each of the links and one of the doors at some distance from the hinge.

4. In a wagon, wheeled axles, a box supported on the axles, the rear axle being in the form of an inverted V, two doors forming the bottom of the box and hinged together along the longitudinal center of the box, and means for yieldingly supporting the doors so as to permit them to swing about axes parallel with and at some distance from the hinge from horizontal positions to positions in which the end of the hinge has risen into the space within the raised portion of the rear axle.

5. A dumping bed comprising two doors hinged together, co-axial trunnions arranged at the ends of each door parallel with and at some distance from the hinge, bearing and supporting members engaging with said trunnions and constructed and arranged to permit the doors to swing about the axes of the trunnions, and means interposed between one of the trunnions and the hinge for swinging the doors in one direction.

6. A dumping bed comprising two doors hinged together, coaxial trunnions arranged at the ends of each door parallel with and at some distance removed from the hinge,

bearing and supporting members engaging with said trunnions and constructed and arranged to permit the doors to swing about the axes of said trunnions, and coöperating lever members between said doors for swinging them positively in one direction.

7. A dumping bed comprising two doors hinged together, coaxial trunnions arranged at the ends of each door parallel with and at some distance removed from the hinge, bearing and supporting members engaging with said trunnions and constructed and arranged to permit the doors to swing about the axes of said trunnions, an arm rigidly connected with one of said doors and projecting toward one of the trunnions on the other door, and a lever carried by the latter trunnion and adapted to engage with said arm to swing the doors.

8. A dumping bed comprising two doors hinged together, co-axial trunnions arranged at the ends of each door parallel with and at some distance removed from the hinge, bearing and supporting members engaging with said trunnions and constructed and arranged to permit the doors to swing about the axes of said trunnions, an arm rigidly connected with one of said doors and projecting toward one of the trunnions on the other door, and a lever carried by the latter trunnions and adapted to engage with said arm to swing the doors, said arm and said lever being so proportioned that the arm engages with the lever at a point in proximity to the last mentioned trunnion and both the arm and the lever lie substantially parallel with the doors when the doors occupy horizontal positions.

9. A dumping bed comprising two doors hinged together, coaxial trunnions arranged at the ends of each door parallel with and and at some distance removed from the hinge, bearing and supporting members engaging with said trunnions and constructed and arranged to permit the doors to swing about the axes of said trunnions, an arm rigidly connected with one of said doors and projecting toward one of the trunnions on the other door, a lever carried by the latter trunnions and adapted to engage with said arm to swing the doors, said arm and said lever being so proportioned that the arm engages with the lever at a point in proximity to the last mentioned trunnions and both the arm and the lever lie substantially parallel with the doors when the doors occupy horizontal positions, and a holding device for said lever.

In testimony whereof, I sign this specification in the presence of two witnesses.

DWIGHT GERBER.

Witnesses:
GEO. E. THOMAS,
C. H. BROWN.

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