A. P. LEE.

MOVABLE LOADING HOPPER.

APPLICATION FILED JAN. 8, 1914.

1,176,224.

Patented Mar. 21, 1916.

4 SHEETS—SHEET 1.

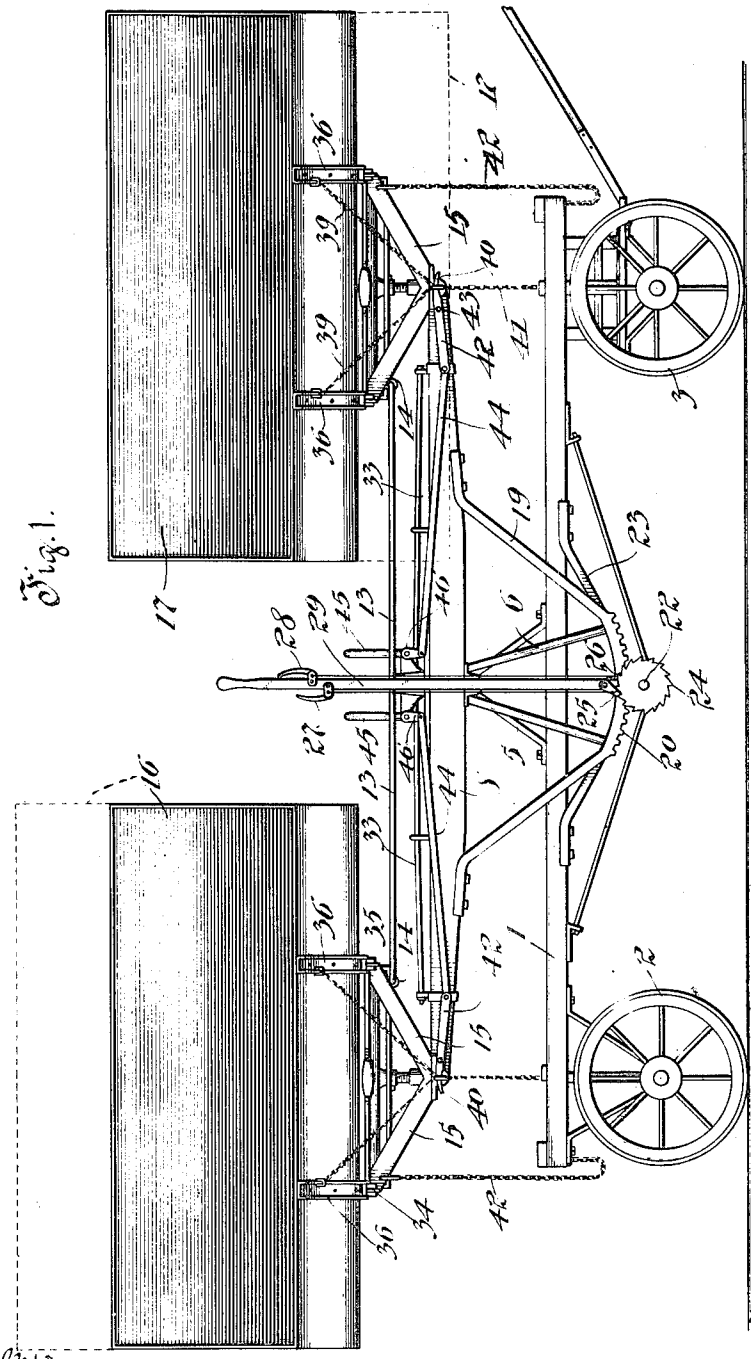

Fig. 1.

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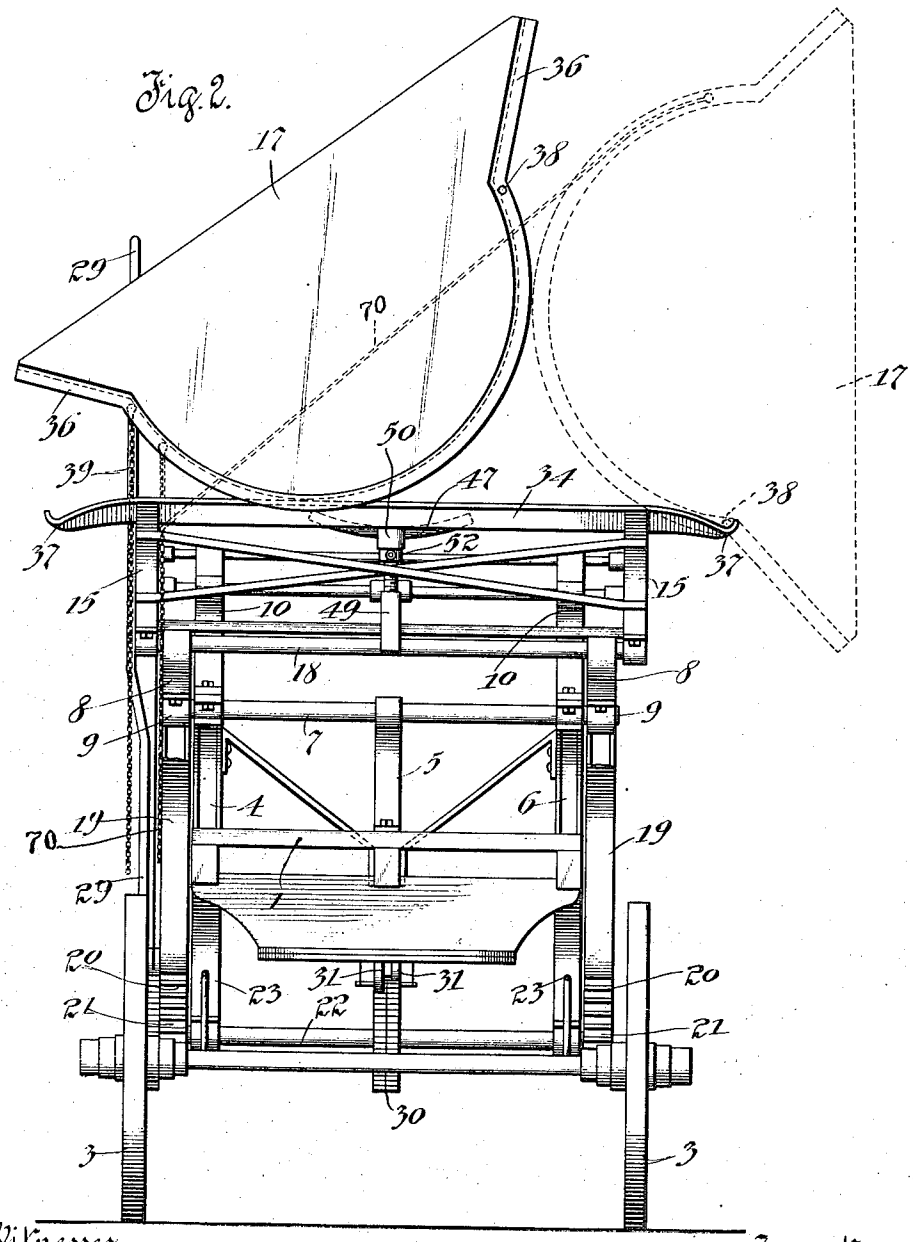
Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

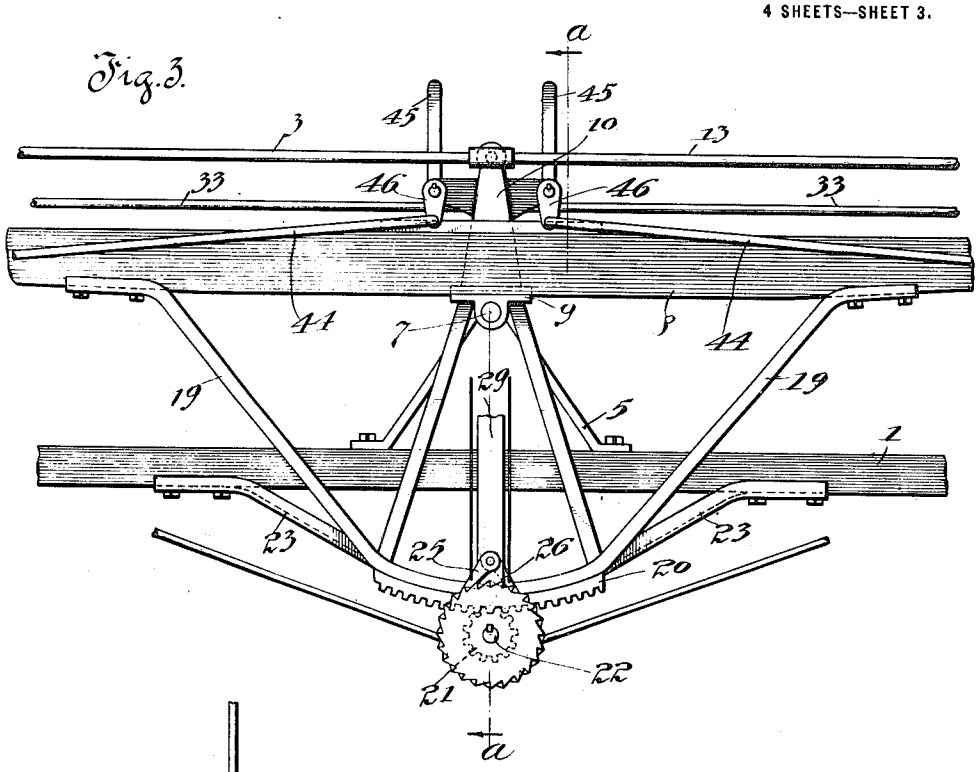
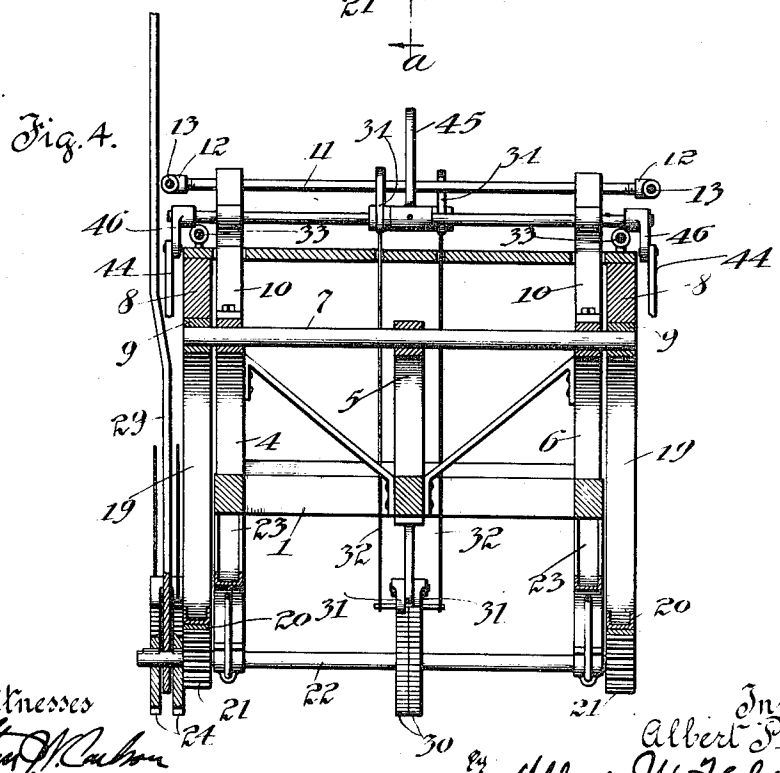


Fig. 4.



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4 SHEETS—SHEET 4.

Fig. 5.

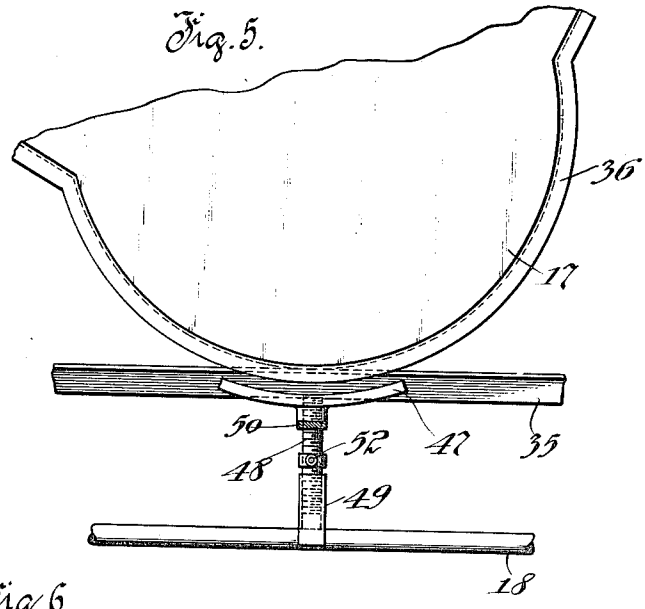
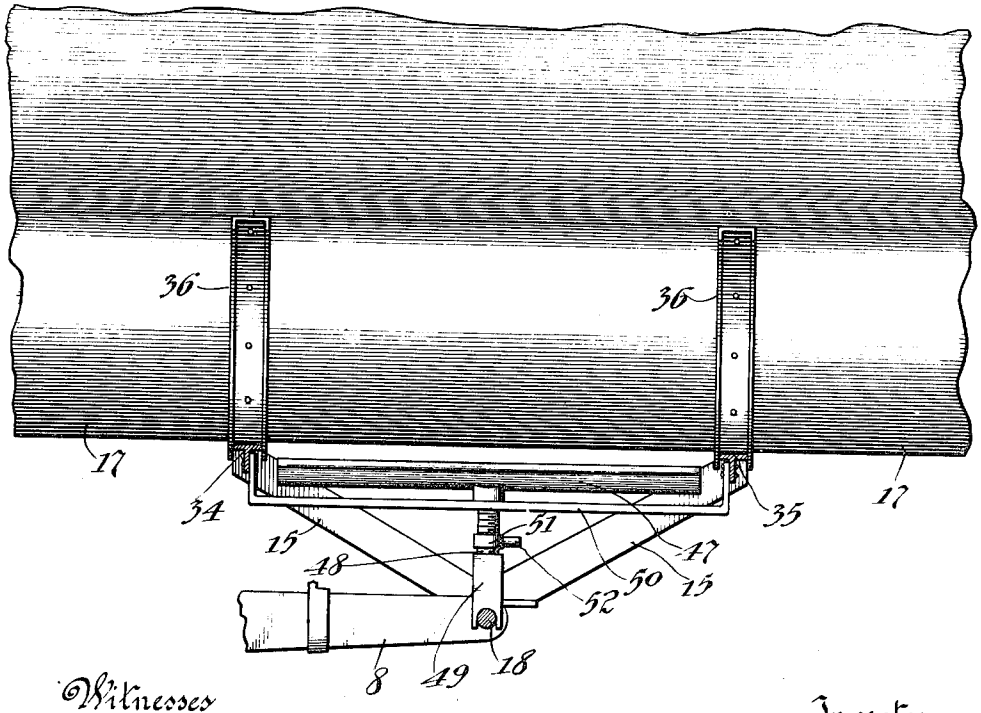


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALBERT P. LEE, OF CHICAGO, ILLINOIS.

MOVABLE LOADING-HOPPER.

1,176,224. Specification of Letters Patent. Patented Mar. 21, 1916.

Application filed January 8, 1914. Serial No. 810,964.

To all whom it may concern:

Be it known that I, ALBERT P. LEE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Movable Loading-Hoppers, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to movable loading hoppers and has for its object the provision of a new and improved device capable of use for loading and unloading.

My invention consists primarily of a vehicle having one or more hoppers, which hoppers are operable to occupy one or another limiting position, thus to travel preferably from a loading to an unloading position.

My invention contemplates in one of its forms certain features whereby the hopper may be reversible if desired, so as to change its loading or unloading positions from one to the other side of the vehicle.

My invention in one of its forms also contemplates the provision of means whereby the hopper may be raised or lowered upon the vehicle to accommodate for proper loading and unloading.

My invention also contemplates means whereby after the hopper has been moved to its unloading position it may be slightly elevated to withdraw the snout of the hopper from the deposited material.

I will explain my invention more in detail by referring to the accompanying drawings, illustrating the same in which:

Figure 1 is a side view of a vehicle constructed in accordance with my invention; Fig. 2 is an end view thereof; Fig. 3 is an enlarged detail view illustrating the mechanism for shifting the hopper carrying framework; Fig. 4 is a sectional view on lines *a*—*a* of Fig. 3; Fig. 5 is an end view of the mechanism provided for hopper reversing purposes, and Fig. 6 is a view partially in section illustrating an end elevation of the structure illustrated in Fig. 5.

Referring more particularly to Fig. 1, I show a vehicle consisting of the truck portion 1 mounted upon suitable wheels 2, 3. The truck portion is also shown more clearly in Fig. 2 as carrying a plurality of struts 4, 5 and 6 adapted to support a shaft 7. Upon this shaft 7 a pair of tilting beams 8 are mounted, which tilting beams for this purpose are each provided with a bearing 9 suitably fastened to said tilting beams. Surmounting the struts 4 and 6 are posts 10 which pivotally support a rod or pipe 11. This rod is provided at its opposite extremities with a T 12, from which T pipes or rods 13, 13 extend in opposite directions whose extremities pivotally rest in sockets 14, 14 provided therefor in the frameworks 15 for supporting the hoppers 16 and 17. These frameworks 15, 15 are pivotally connected by shafts 18 mounted in the tilting beams 8, 8. It will be seen now that the frameworks 15, being pivotally supported upon the tilting beams 8 and being also associated with the posts 10 by means of the rods 13, that these frameworks 15 will at all times occupy a substantially vertical position if the vehicle stands in a horizontal position. The tilting bars 8 are each provided with a framework 19, which carry at their lower extremity a segmental gear 20 adapted to mesh with pinions 21, 21, which pinions are carried by a shaft 22 supported in brackets 23 carried by the truck body 1. A shaft 22 also carries a ratchet wheel 24 adapted to be engaged by pawls 25 and 26 controllable respectively by the hand holds 27 and 28 mounted upon the rocking bar 29, which rocking bar is also pivotally mounted upon the shaft 22. It will be seen thus that by operating the handle 29 and releasing one or the other of the pawls, that the shaft 22 may be rotated to thereby cause a gradual tilting of the tilting beams 8, thus elevating one hopper 16, for instance, and lowering the other, or vice versa, as the case may be. The shaft 22 also carries a pair of ratchets 30 adapted to be engaged by the pawls 31, 31 respectively, which through the agency of rods 32, 32 controlled by handles 34, 34, may be withdrawn from engagement with their ratchet wheels 30. The purpose of these ratchet wheels 30 is to hold the gear wheels 21 in any position set so that the tilting bars 8 maintain whatever position is given to them through the actuation of the actuating lever 29. When both pawls 31 are in engagement with the teeth of their respective ratchets 30, then of course the shaft 22 is locked against rotation in either direction. The rods 33 are provided merely to give rigidity to the structure. The frameworks 15 each carry rails 34 and 35 respectively, upon which the hoppers 16 and 17 are

adapted to roll, these hoppers being provided with channels 36 for that purpose.

Referring more particularly to Fig. 2, it will be seen that these rails terminate in fingers 37 adapted to engage pins 38 mounted upon the hoppers 17 to prevent the hoppers from entirely leaving the rails when these hoppers are moved into their limiting positions for unloading, as shown more clearly in Fig. 2. The hopper shown in full lines in Fig. 2 is supposed to be in the loading position. When in this position the hopper is held by means of chains 39, shown more clearly in Fig. 1, which chains are held in place by fingers 40, to thus prevent the hopper 17 of Fig. 2 from rolling to the right. When the hopper is filled, then the finger 40 is released from its engagement with the chains 39, whereupon the hopper either due to its own over-balanced condition, or with the help of a slight push, rolls into the position shown in dotted lines in Fig. 2, to be held by the fingers 37 and the chains 70. Chains 42, 42 are provided to limit the upward and downward movement of the rocking bars 8. In order to actuate the fingers 40 it may be stated that these fingers form part of arms 42, which arms are pivoted at 43. These arms are linked to a further arm 44 under the control of a lever 45 pivoted at 46. Now whenever the right hand lever 45 of Fig. 1, for instance, is moved in a contra-clockwise direction, it naturally moves the arm 42 in a contra-clockwise direction about its pivot 43, thus elevating the finger 40 and permitting the chains 39 to slide away from engagement with said finger 40. As has already been stated, the hoppers are so constructed that they roll either of their own initiative from the loading to the unloading position.

Now it may be desirable instead of having the loading position to the left of the vehicle, as shown in Fig. 2, to have the loading position to the right of the vehicle. In order to accomplish this, I reverse the position of the hopper 17 upon the rails and this is done by means of the trough 47 pivotally carried upon a screw threaded stud 48, which finds screw threaded engagement with the screw threaded socket 49. This socket is carried by the shaft 18 and the stud 48 travels loosely through the bridge 50. The stud 48 has a collar 51 provided with an aperture 52 so that when a bar is inserted into this aperture the stud 48 may be rotated to elevate the trough 47, which thereupon engages the hopper 17 and thereupon lifts the same clear of the rails 34, 35. Under these conditions the hopper 17 and the trough 47 may be rotated about the stud 48 into the reverse position, at which time the stud may be again lowered to permit the hopper to rest upon the rails 34, 35. During this reversal, of course, the chains must be loosened and attached again when the hopper is placed in its reversed position.

It will thus be seen that I have provided a structure in which a hopper may move from one limiting position to the other for loading and unloading purposes, and in which the structures carrying the hoppers may be raised or lowered. A chain 70 shown more clearly in Fig. 2 limits the movement of the hopper when discharging. From what has been described it is thought the nature of this stationary loading mechanism will also be apparent.

Having however thus described my invention, it will be clear that it is susceptible of many and various modifications without departing from its spirit.

Having however thus described one form which my invention may take, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising a tilting framework, a hopper carried at each extremity of said framework, and means for tilting said framework to bring said hoppers alternately into charging and discharging position.

2. A device of the character described comprising a tilting framework, a hopper carried at each extremity of said framework, means whereby when said framework is tilted said hoppers move along parallel lines, and means for tilting said framework to bring said hoppers alternately into charging and discharging position.

3. A device of the character described comprising a tilting framework, a hopper supporting framework pivotally mounted at each extremity of said framework, a hopper carried upon each hopper supporting framework, and means for tilting said framework to bring said hoppers alternately into charging and discharging position.

4. A device of the character described comprising a tilting framework, a hopper supporting framework pivotally mounted at each extremity of said framework, a hopper carried upon each hopper supporting framework, means whereby said hopper is adapted to roll upon its associated framework from side to side thereof, and a vehicle body for supporting said structure.

5. A device of the character described comprising a tilting framework, a hopper supporting framework pivotally mounted at each extremity of said framework, a hopper carried upon each hopper supporting framework, a vehicle body for supporting said structure, and means carried by said vehicle body for tilting said tiltable framework.

6. A device of the character described comprising a tilting framework, a hopper supporting framework pivotally mounted at each extremity of said framework, a hopper carried upon each hopper supporting

framework, a vehicle body for supporting said structure, and means carried by said vehicle body for tilting said tiltable framework, said means including a pawl and ratchet, means to actuate said pawl, and power transmitting mechanism interposed between said pawl and ratchet and said body.

7. A device of the character described comprising a tilting framework, a hopper supporting framework pivotally mounted at each extremity of said framework, a hopper carried upon each hopper supporting framework, a vehicle body for supporting said structure, a segmental gear carried by said tiltable framework, a pawl and ratchet mounted upon said vehicle body for tilting said framework, a gear interposed between said ratchet and said segmental gear, and means for actuating said pawl.

8. A device of the character described including a vehicle body, a tiltable framework carried by said body, a hopper supporting framework at each extremity of said tiltable framework, a dumping hopper upon each hopper supporting framework, and means for holding said hoppers in a loading position.

9. A device of the character described including a vehicle body, a tiltable framework carried by said body, a hopper supporting framework at each extremity of said tiltable framework, a dumping hopper upon each hopper supporting framework, and means for holding said hoppers in a loading position, said means including a holding finger mounted upon said framework, and a chain extending from said hopper to coöperate with said finger.

10. A device of the character described including a vehicle body, a tiltable framework carried by said body, a hopper supporting framework at each extremity of said tiltable framework, a dumping hopper upon each hopper supporting framework, and means for holding said hoppers in a loading position, said means including a holding finger and a flexible connection extending from said hoppers.

11. A hopper supporting framework having rails, a hopper adapted to roll on said rails, and means associated with said framework for raising said hopper clear of the rails to thereby permit rotation of said hopper into a reverse position.

12. A hopper supporting framework having rails, a hopper adapted to roll on said rails, and means associated with said framework for raising said hopper clear of the rails to thereby permit rotation of said hopper into a reverse position, said means including a trough adapted to engage the bottom surface of said hopper and support the same during the rotation thereof.

13. A device of the character described comprising a hopper supporting framework, a hopper adapted to roll on said framework, and means associated with said framework for raising the hopper clear of its runway on said framework to thereby permit rotation of said hopper into an alternative position.

14. In a device of the character described the combination with a framework having a runway, and a hopper adapted to roll on said runway from a charging to a discharging position, said runway having at its extremity an inclined portion down which said hopper rolls thereby to facilitate the movement of said hopper into its complete discharge position.

15. In a device of the character described the combination with a framework having a rail, and a hopper adapted to roll on said rail from a charging to a discharging position, said rail having at its extremity an inclined portion down which said hopper rolls thereby to facilitate the movement of said hopper into its complete discharge position.

16. A truck having a tiltable hopper supporting framework, a rolling hopper mounted upon said framework and adapted to roll from one limiting position to another, and means for tilting said framework so as to raise and lower the same to thereby change the position of said hopper from a charge receiving to a discharge position.

In witness whereof, I hereunto subscribe my name this 31st day of December A. D., 1913.

ALBERT P. LEE.

Witnesses:
HAZEL ANN JONES,
A. LYDA JONES.