A. FERNANDEZ.

REFUSE COLLECTION VEHICLE.

APPLICATION FILED JAN. 12, 1920.

1,379,007.

Patented May 24, 1921.

5 SHEETS—SHEET 1.

Fig. 2.

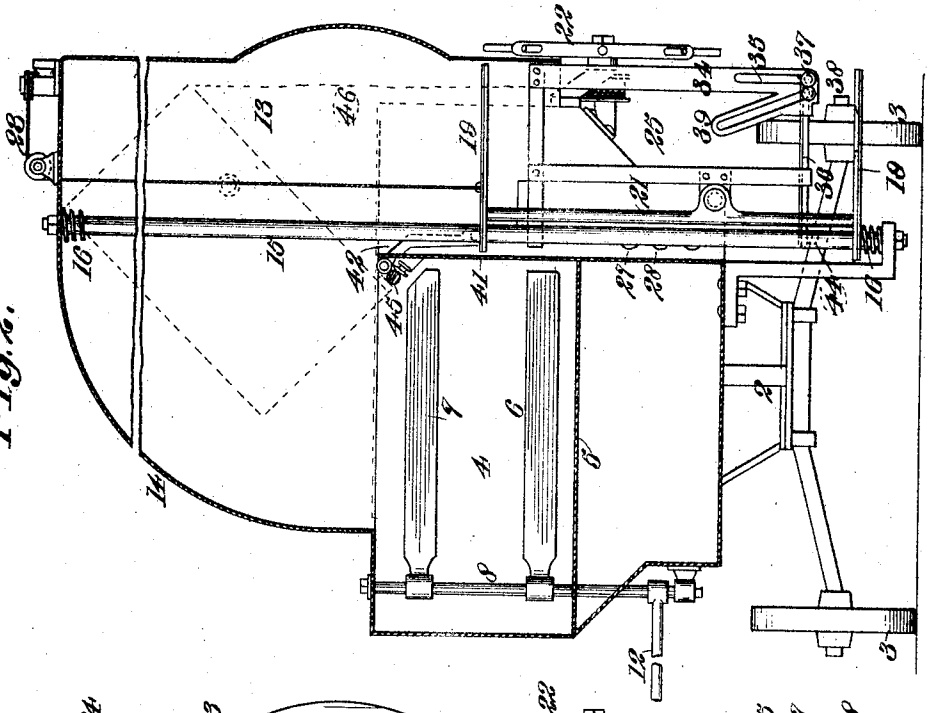
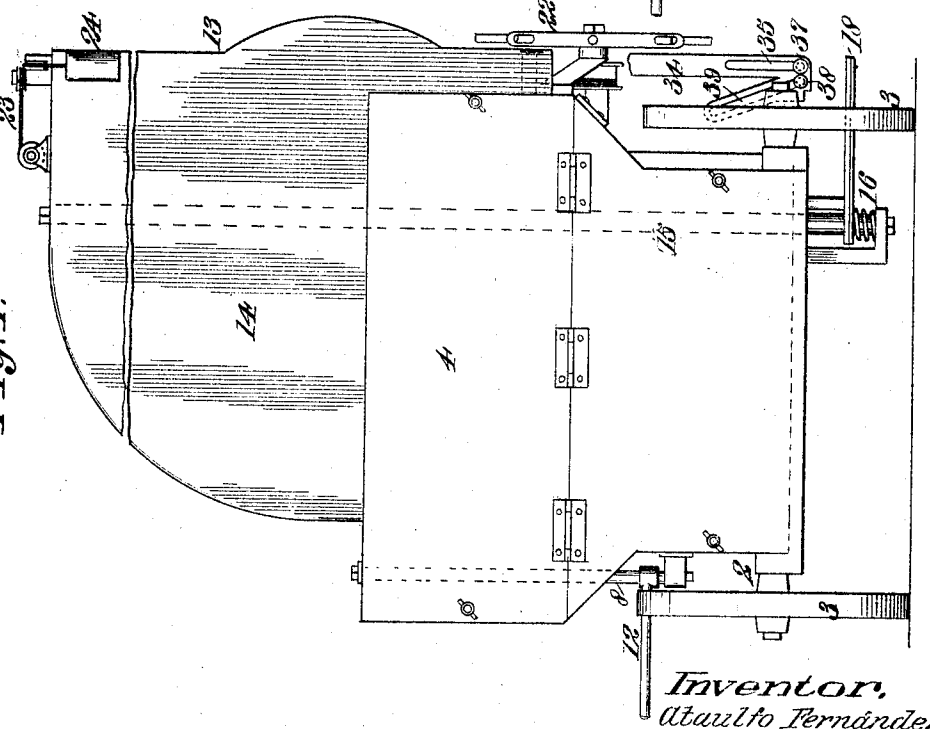


Fig. 1.



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Fig. 3.

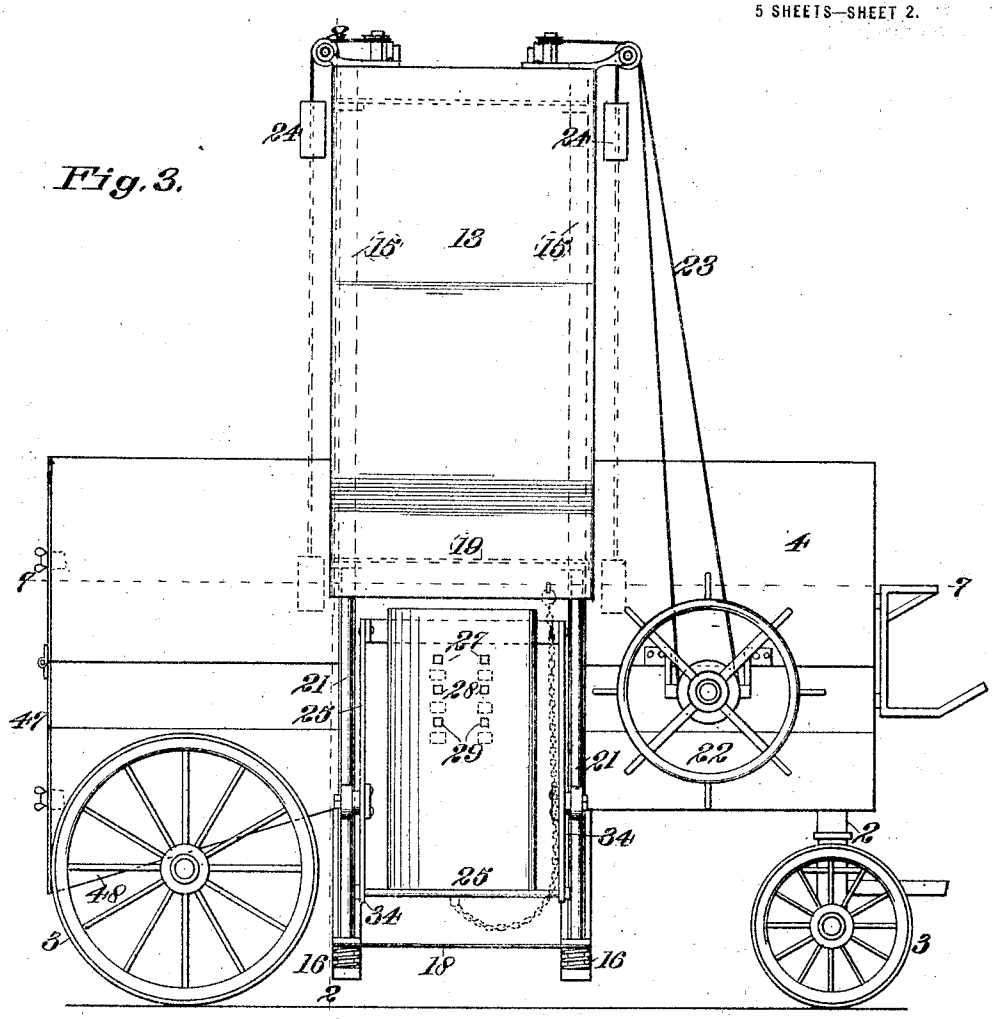


Fig. 4.

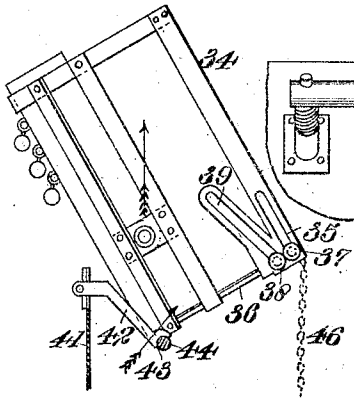


Fig. 5.

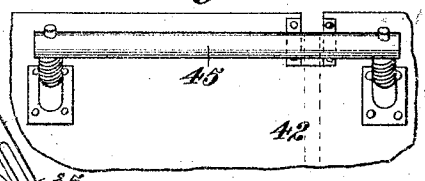


Fig. 6.



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5 SHEETS—SHEET 3.

Fig. 7.

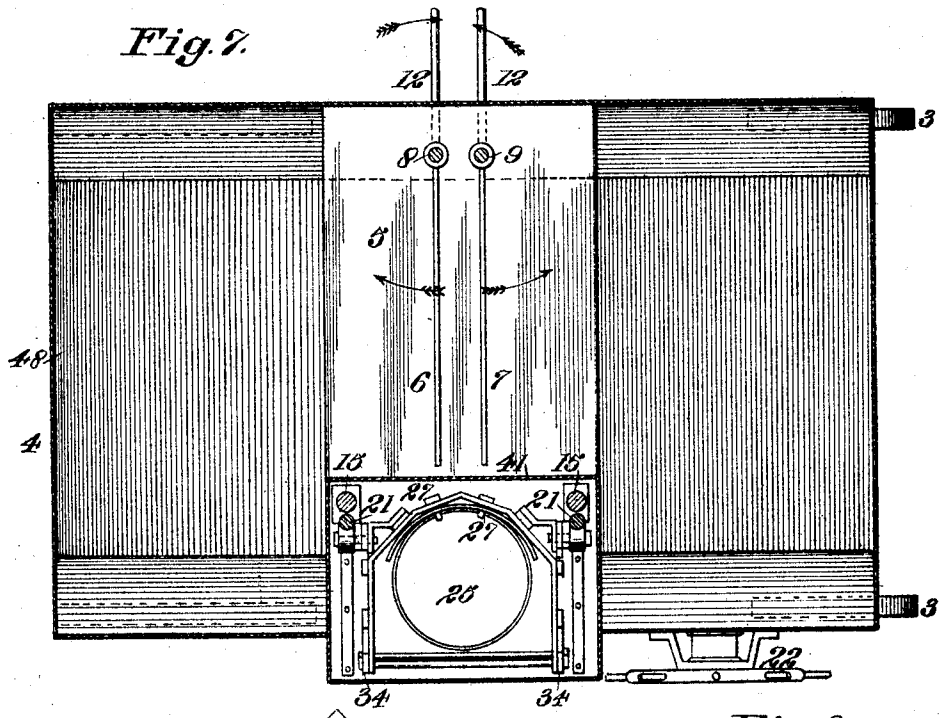


Fig. 9.

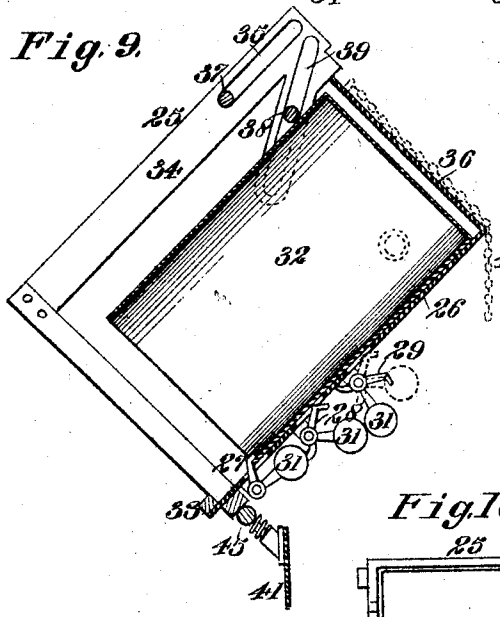


Fig. 8.

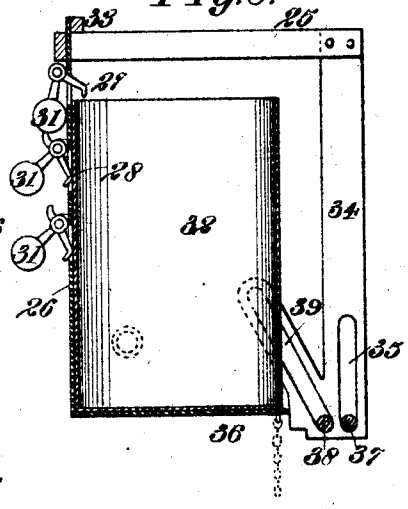
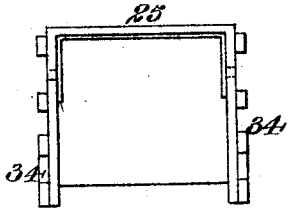


Fig. 10.



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5 SHEETS—SHEET 4.

Fig. II.

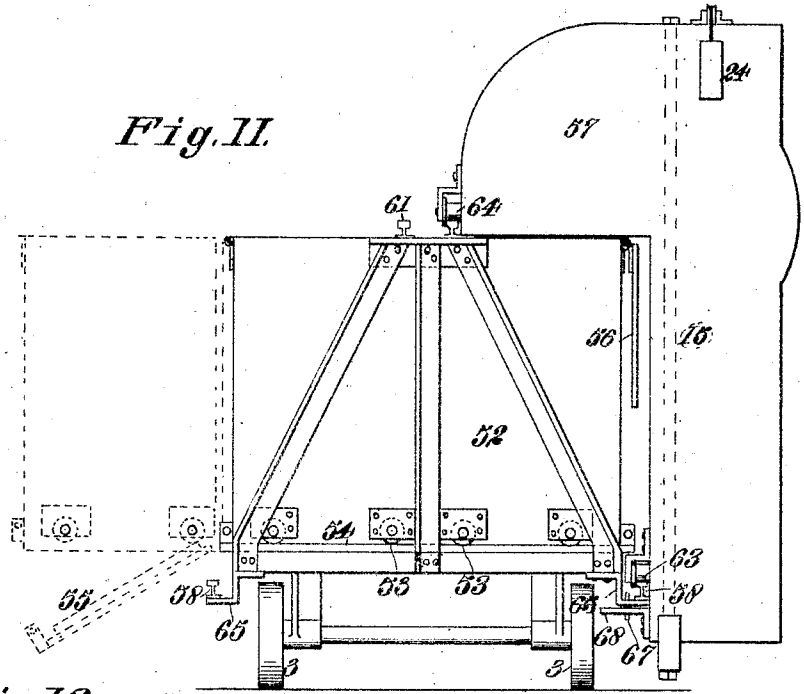
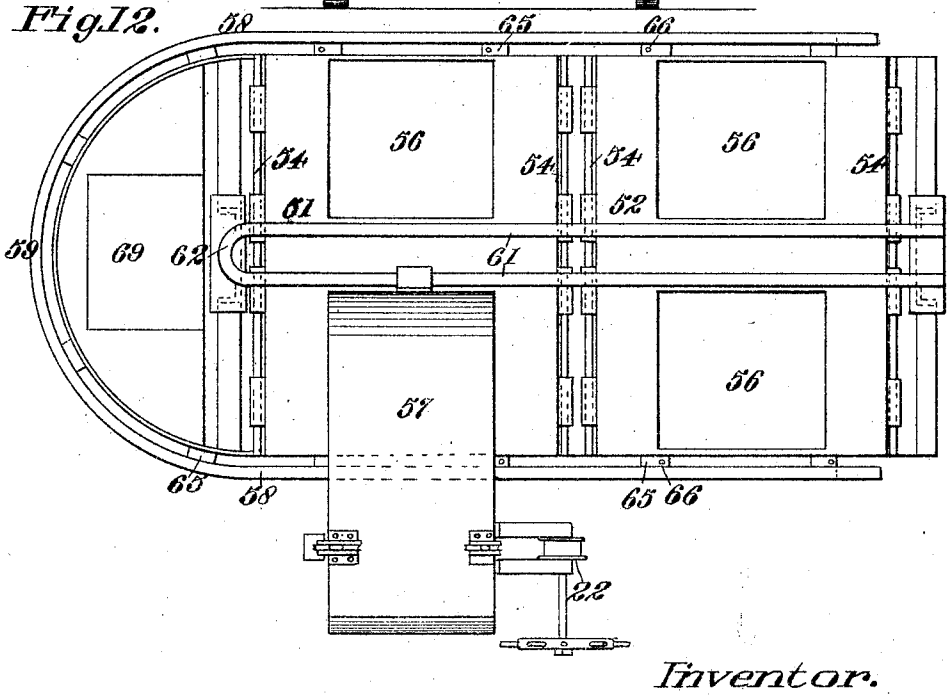


Fig. 12.



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5 SHEETS—SHEET 5.

Fig. 13.

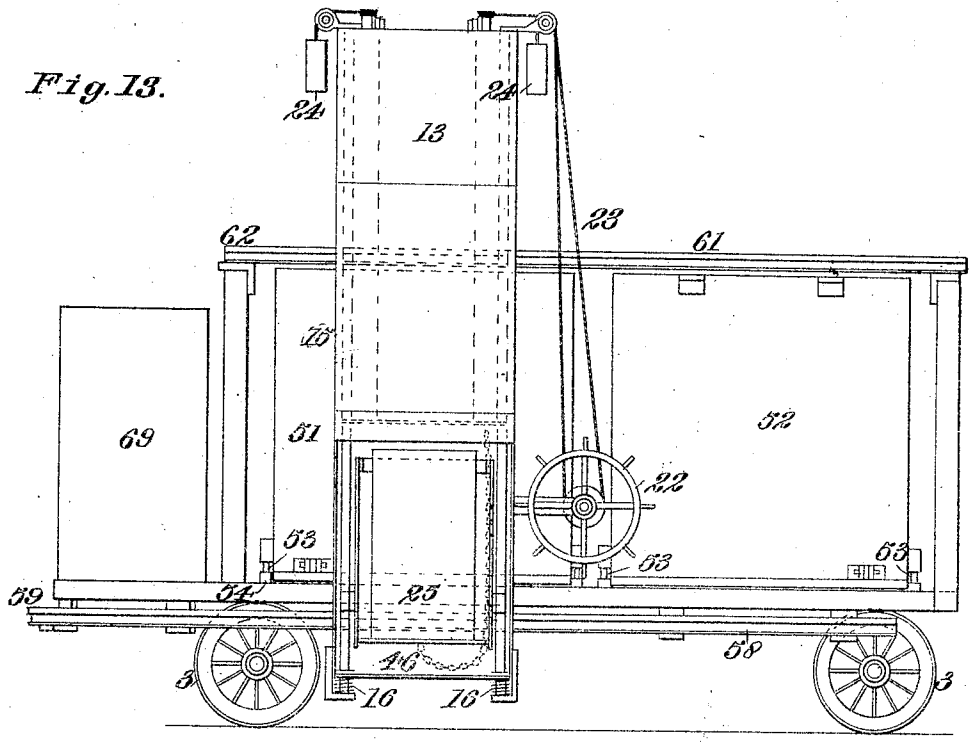


Fig. 14.

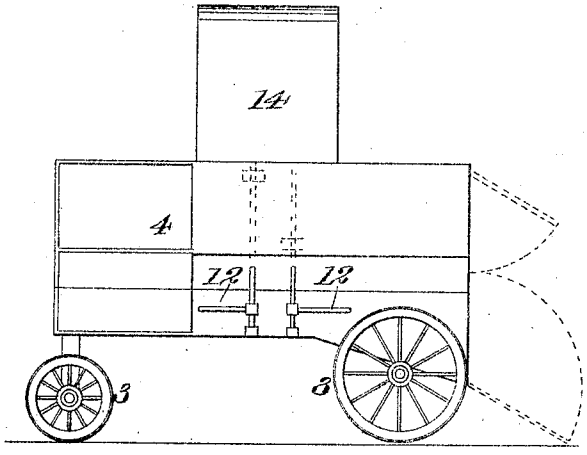
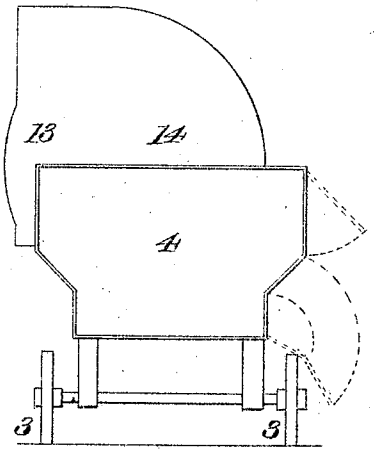


Fig. 15.



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UNITED STATES PATENT OFFICE.

ATAULFO FERNÁNDEZ, OF SAN FRANCISCO, CALIFORNIA.

REFUSE-COLLECTION VEHICLE.

1,379,007. Specification of Letters Patent. Patented May 24, 1921.

Application filed January 12, 1920. Serial No. 350,817.

To all whom it may concern:

Be it known that I, ATAULFO FERNÁNDEZ, a citizen of Cuba, and a resident of the city and county of San Francisco, State of California, have invented a certain new and useful Refuse-Collection Vehicle, of which the following is a specification.

The invention relates to a vehicle, which may be horse drawn or power driven, for use in the collection of refuse which is usually assembled in cans such as garbage, ashes, street sweepings, or other refuse.

An object of the invention is to provide a collection vehicle having a closed storage body, so that the cans may be emptied into the body without causing a scattering of any of the contents due to wind, agitation or other causes. The general scattering of refuse into the air and on the pavement which is now prevalent with the open collection wagons is entirely avoided.

Another object of the invention is to provide a refuse collection vehicle having means for raising the full cans and dumping them into the body.

A further object of the invention is to provide a can elevating and dumping means that is adapted to receive and properly hold cans of various sizes and shapes.

Another object of the invention is to provide a collection vehicle having a laterally moving elevator so that the material may be discharged into the body at different places, to properly distribute the load.

The invention possesses other advantageous features, some of which, with the foregoing, will be set forth at length in the following description where I shall outline in full those forms of my invention which I have selected for illustration in the drawings accompanying and forming part of the present specification. In said drawings I have shown one embodiment of my invention and a modification thereof, but it is to be understood that I do not limit myself to such forms, since the invention, as expressed in the claims, may be embodied in a plurality of other forms.

Referring to said drawings:

Figure 1 is a rear elevation of one form of collection vehicle of my invention.

Fig. 2 is a vertical transverse section through the vehicle taken on the line 2—2, Fig. 3.

Fig. 3 is a side elevation of the vehicle shown in Fig. 1.

Fig. 4 is a detail of the can carrier.

Fig. 5 is a fragmentary elevation showing the can bumper.

Fig. 6 is an end elevation of the can bumper.

Fig. 7 is a horizontal section of the vehicle, taken on the line 7—7 of Fig. 3.

Fig. 8 is a detail in section of the can carrier in vertical position, showing a can therein.

Fig. 9 is a detail in section of the can and can-carrier in dumping position.

Fig. 10 is a plan view of a modified form of can-carrier for accommodating a rectangular can.

Fig. 11 is an end view of a modified form of vehicle having a larger capacity than the vehicle shown in Fig. 1, the discharging position of one of the storage bins being shown in broken lines.

Fig. 12 is a top view of the vehicle shown in Fig. 11.

Fig. 13 is a side elevation of the vehicle shown in Fig. 12.

Fig. 14 is a side elevation of a vehicle indicating one form of discharging means.

Fig. 15 is an end view of a vehicle indicating another form of discharging means.

I shall first describe the smaller type of vehicle shown in Figs. 1, 2 and 3 and then proceed to the larger type of vehicle shown in Figs. 11, 12 and 13.

The smaller type of vehicle comprises a suitable frame 2 provided with wheels 3, the nature of the frame and wheels depending upon the means employed for moving the vehicle. Mounted on the frame is a closed body 4, preferably made of metal, which comprises a storage bin or receptacle for the material collected. The bin is preferably narrowed at the bottom to facilitate the discharge of the contents and is provided intermediate its ends with a horizontal transverse baffle wall or floor onto which the material is dumped from the cans and from which it is distributed throughout the bin or body by the horizontally disposed distributer blades 6 and 7, arranged at different levels above the floor 5. The blades are secured respectively to rotatable vertical shafts 8 and 9 which are provided adjacent their lower ends with handles 12, so that

the blades may be readily operated to distribute the material.

Arranged at one side of the body and preferably at the longitudinal center thereof and transversely alined with the floor 5 is an elevator structure adapted to raise filled cans from a low level and dump their contents onto the floor 5. The elevator structure is arranged in a housing 13, preferably made of metal, and the housing is provided at its upper end with a hood 14 which overlies the body and provides space for turning over the filled can to discharge its contents. The housing makes a tight joint with the body or bin, so that no material from the cans may pass out into the air. The housing is closed except at the side adjacent the bottom, where an opening is left to permit the can to be placed on the elevator.

Arranged in the housing and suitably supported on the vehicle frame are two vertically disposed metallic posts or guides 15 on which the elevator moves vertically. Spiral springs 16 surrounding the posts at the top and bottom lessen the jar of the elevator as it reaches its extreme upper and lower positions. Mounted for vertical movement on the guide posts 15 is an elevator frame 17, including upper and lower horizontal plates 18—19 and vertically disposed connecting posts 21, the plates being provided with apertures through which the guide posts extend. The upper plate 19 forms a transverse wall in the housing when the elevator is in its low position, thereby sealing the bin and the lower plate 18 performs the same function when the elevator is raised. The bin is, therefore, substantially sealed at all times, thereby practically preventing the escape of odors or material.

The elevator is raised and lowered by any suitable means, such as the windlass 22, around which passes a cable 23 which is secured to the elevator. Counterweights 24 which are preferably of slightly greater weight than the empty elevator, are provided to lessen the effort necessary to raise the elevator. The windlass is preferably mounted on the vehicle frame adjacent the elevator housing.

Arranged on the elevator and pivoted to the side rods 21 thereof is a can-carrier frame 25 which is made of suitable shape to receive the can. In Fig. 7 the can-carrier is shaped to receive a cylindrical can and Fig. 10 shows a carrier for a rectangular can. The carrier is pivoted intermediate its upper and lower ends to the elevator frame and comprises an open frame having a floor on which the full can is placed. In operation the elevator is raised and the can turned over to discharge its contents and means are provided for preventing the can from becoming disengaged from and sliding out of the carrier during the dumping operation. Pivoted to the carrier frame and arranged behind the rear wall 26 thereof, are one or more dogs 27, 28 and 29, disposed at different heights. Each dog is provided with a counterweight 31, so that the dogs normally extend through apertures in the rear wall of the carrier frame. The dogs are provided with hooked ends and are prevented from being raised above proper can-retaining position by contact of the counterweight 31 with the wall 26. Two vertical rows of dogs are preferably provided at opposite sides of and adjacent the vertical center of the rear wall. The function of the dogs is to overlie the upper edge of the can 32 and prevent the can from falling from the carrier frame when said frame is inverted. A plurality of dogs placed at different heights are provided for engaging the upper edges of cans of various sizes. The smaller sized can will be engaged by dog 29, the next larger by dog 28 and so on. Those dogs which are not in use are pressed through the aperture in the rear wall by the can. The can-carrier is provided at the top of the rear wall with a cross bar 33 which acts as a stop for the maximum height can that may be inserted in the carrier, and prevents such maximum can from sliding out of the carrier when it is inverted.

Means are also provided for preventing the can from tilting out of the can-carrier when it is inverted and this means is constructed to operate in conjunction with cans of a variety of sizes. Arranged at the front of the can-carrier are two vertically disposed members 34, each being provided at their lower ends with vertically extending slots 35, which extend below the level of the floor 36 of the carrier. Disposed in these slots is a loose retaining bar 37 which when the carrier is inverted slides along the slots to the position indicated in Fig. 9. This bar 37 acts to retain maximum width cans in the carrier by sliding into contact with the side thereof. Cans of smaller and variable width are held from tilting by the sliding retaining bar 38, sliding in slots 39 which are inclined to the axis of the can, so that as the carrier is inverted, the bar 38 slides down into contact with the side of the can, the inclination of the slots providing for contact with cans of different width.

Means are provided for inverting the carrier as it reaches its upper position, to discharge the contents therefrom. Pivoted to the rear wall 41 of the elevator housing, which wall terminates at the top of the body, is a depending lever 42 having a socketed or bifurcated lower end 43. Secured to the lower rear edge of the carrier is a cross-bar 44, which, as the elevator rises, moves into the socket 43 of the lever 42, which lever then causes the cross-bar 44 to move in an arc about its pivot, as shown by the arrow

in Fig. 4 and tilts the carrier about its pivot. The further upward movement of the elevator tilts the carrier frame sufficiently to displace the center of gravity of the carrier and filled can to the other side of its pivot, so that the carrier tips over into an inclined inverted position, as shown in Fig. 9, discharging the contents of the can. A spring mounted bumper rail 45, disposed on the rear side of the wall 41, takes the blow of the falling can and carrier. The jar given the can as the carrier strikes the rail is ordinarily sufficient to dislodge all material therein, but the can may be bumped several times by pulling on the chain 46, secured to the bottom of the carrier. The chain depends into the elevator housing and its lower end is accessible through the opening therein and may also be used to swing the carrier back into vertical position on the carrier prior to lowering the elevator. Downward movement of the elevator will also cause the carrier to move from its inclined inverted position to its normal position.

The body of the vehicle may be opened for emptying in any desirable manner. In Fig. 1 I have shown the lower portion 47 of the rear wall of the body hinged to form a door which may be swung open to discharge the load, and the inclined bottom 48 of the body assists the discharge. In Fig. 14, the whole rear end of the body opens and in Fig. 15, the sides are hinged to permit side discharge.

The vehicle shown in Figs. 11, 12 and 13 is similar in many respects to that shown in the former figures, but is made for a larger carrying capacity. Mounted on the vehicle frame are two bins 51—52 which are provided with rollers 53 which engage transverse tracks 54 on the frame, so that the bins may be moved transversely of the frame for the purpose of discharging the contents. Each bin is provided with a hinged bottom, formed in two halves 55, and by moving a bin laterally to the position indicated in broken lines in Fig. 11, the bottom 55 may be released and a part of the contents emptied. Shifting the bin over the other side of the frame and releasing the other half bottom will cause the complete discharge of the bin.

Each bin is provided with two hatchways normally closed by the hatches or covers 56. The elevator housing 57 with its contained elevator and can-carrying device is formed as a unit, independent of the bins, and is movable from one hatchway to another, so that both bins may be properly filled. The elevator and can-dumping mechanism is the same as in the vehicle shown in Fig. 1 and requires no further description. The vehicle frame is provided with a lower trackway disposed below the level of the bins, comprising longitudinal track sections 58 joined by the semi-circular track section 59. Supported above the bins is an upper trackway comprising longitudinal track sections 61 parallel to the sections 58 and a connecting semi-circular track section 62, concentric with track section 59. The elevator housing is provided at its lower end with rollers 63 engaging the lower track and at its overlying portion 14 is provided with a roller 64 engaging the upper track, so that the elevator structure may be moved to bring the opening in the bottom of the hood 14 into registry with any of the hatchways. The covers 56 are preferably hinged and the desired cover is opened before the elevator is moved over the corresponding hatchway. The lower track is supported on brackets 65, several of which are provided with apertures 66, through which a pin 67 may be dropped into an aperture in the bracket 68 on the elevator housing, to position the housing and hold it against movement. At the rear of the vehicle, within the curved portion of the lower track, is a bin 69 in which large objects of refuse may be placed or in which spare cans may be carried.

I claim:

1. A refuse collection vehicle, comprising a body, an elevator associated with said body, a can carrier mounted on said elevator, and a plurality of dogs adapted to engage the upper edge of a can on the carrier, arranged on the carrier at vertically spaced points.

2. A refuse collection vehicle, comprising a body, an elevator associated with said body, a can-carrier mounted on said elevator, and a counterweighted dog pivoted to the carrier and adapted to engage the upper edge of a can on the carrier.

3. A refuse collection vehicle, comprising a body, an elevator associated with said body, a can-carrier mounted on said elevator, and provided with a rear wall, and a counterweighted dog pivoted to said rear wall and extending through an aperture therein.

4. A refuse collection vehicle comprising a body, an elevator associated with said body, a can-carrier mounted on said elevator and adapted to be inverted to invert the can thereon, and a bar on the carrier arranged to slide at an angle to the axis of the can into contact with the side of the can as the carrier is inverted.

5. A refuse collection vehicle, comprising a body, an elevator associated with said body, a can-carrier pivoted to said elevator, a bar on the bottom of said carrier and below the pivot and a lever adapted to be engaged by said bar as the elevator approaches its upper position, to invert the carrier.

6. A refuse collection vehicle, comprising a body, an elevator associated with said body, a can carrier pivoted to said elevator,

means for inverting the carrier as the elevator approaches its upper position, and a yieldable bumper rail against which the inverted carrier strikes.

7. A refuse collection vehicle comprising a closed body, a transverse floor in said body above the main bottom thereof, means for discharging material onto said floor and means above said floor for distributing the material in the body.

8. A refuse collection vehicle, comprising a vehicle frame, a closed body mounted on said frame, a trackway arranged on said frame, and extending from one side around to the other, an elevator housing movable on said trackway, and an elevator in said housing.

9. A refuse collection vehicle, comprising a vehicle frame, a closed body mounted on said frame, a trackway on said frame around the base of the body from side to side, a trackway on said frame above the body and extending from side to side, an elevator housing movably mounted on said trackways and an elevator in said housing.

10. A refuse collection vehicle, comprising a vehicle frame, a closed body movably mounted on said frame, said body being provided with a plurality of normally closed hatchways, trackways on said frame, an elevator housing movable on said trackways into registry with said hatchways, and an elevator in said housing.

11. A refuse collection vehicle, comprising a vehicle frame, transverse tracks on said frame, closed bodies mounted on said tracks, each body being provided with a normally closed hatchway, and an elevator mounted on the frame and movable into registry with said hatchways.

12. A refuse collection vehicle, comprising a vehicle frame, transverse tracks on said frame, a plurality of closed bodies mounted on said trackways, each body being provided with a plurality of normally closed hatchways, a trackway extending around the vehicle below the bodies, a trackway on the frame above the bodies, an elevator housing mounted on said trackways, and having its upper portion extending over said bodies and adapted to be moved into registry with any hatchway and an elevator in said housing.

In testimony whereof I have hereunto set my hand at San Francisco, California, this 2nd day of January, 1920.

ATAULFO FERNÁNDEZ.

In presence of—
H. G. PROST.