United States Patent

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[54] **COLLECTION UNITS**
10 Claims, 8 Drawing Figs.

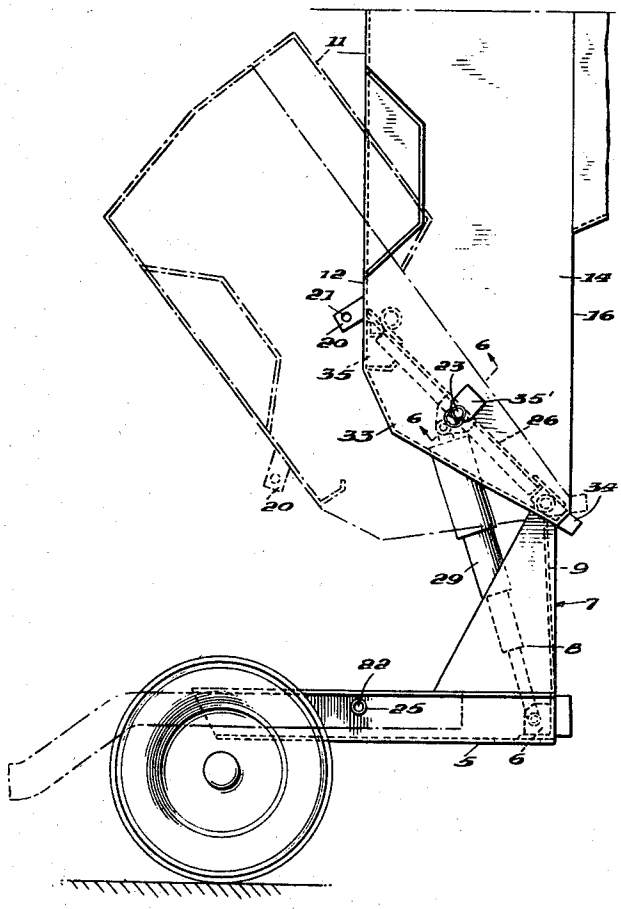
[52] **U.S. Cl.** **214/508,** 214/83.3; 298/23
[51] **Int. Cl.** **B60p 1/28**
[50] **Field of Search** 214/508, 509, 510, 503, 83.3; 100/218; 298/1B, 23MD, 10

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ABSTRACT: A residential collection and compaction unit mounted on a vehicle to be mobile and comprising a receptacle into which refuse can be dumped as collected from house-to-house or other points of accumulation and to be moved to a collection vehicle, such as a packer body. The receptacle of the collection unit is provided with means for compacting the refuse therein and utilizes the same power device both for compacting and for dumping the body. The body may be provided, if desired, with a sump for collecting liquids.



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SHEET 1 OF 4

Fig. 1.

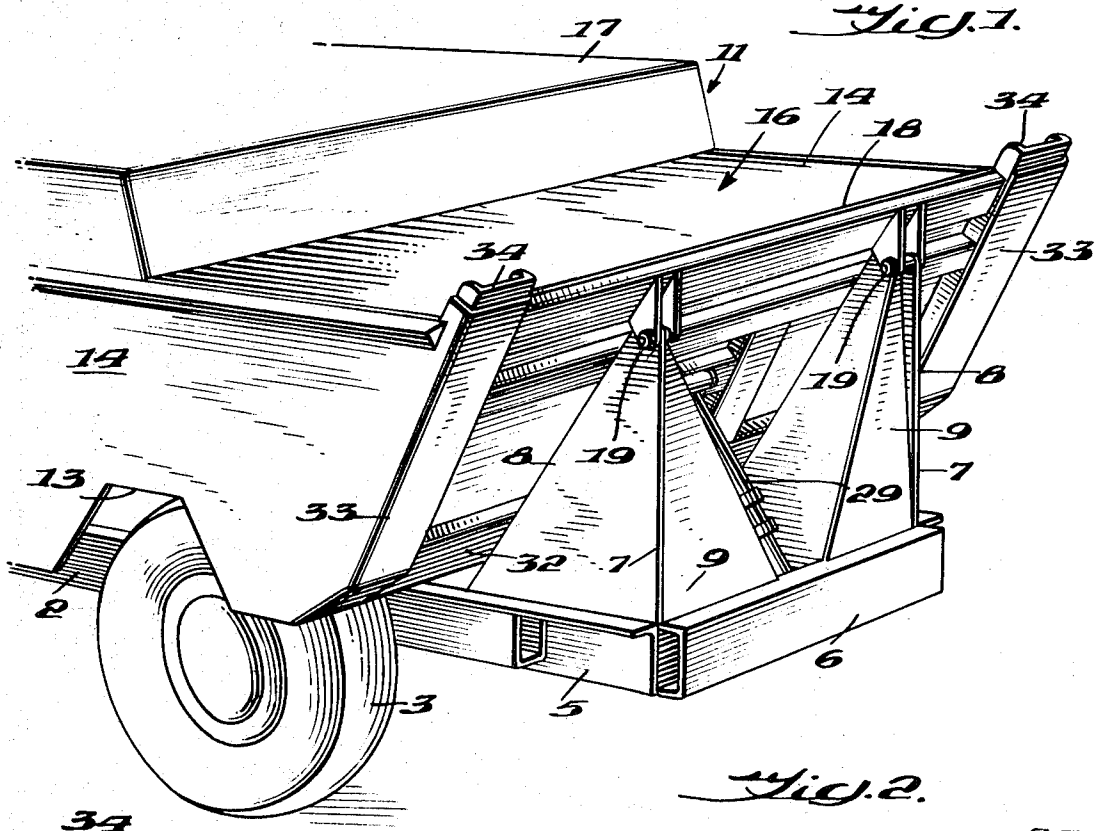
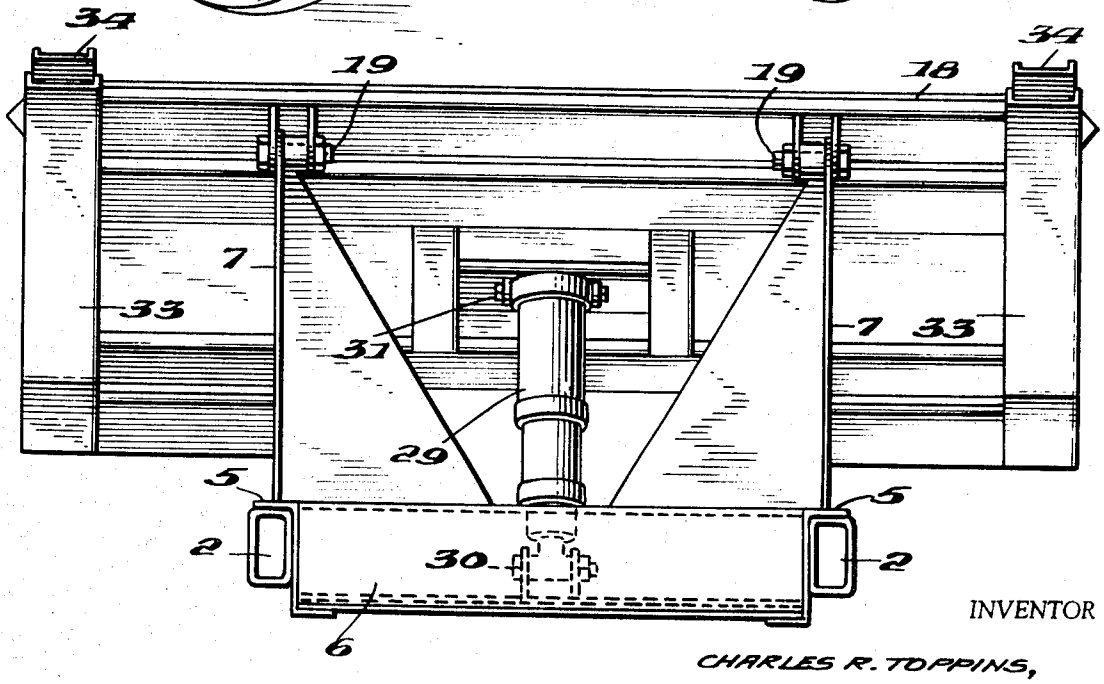


Fig. 2.



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Fig. 3.

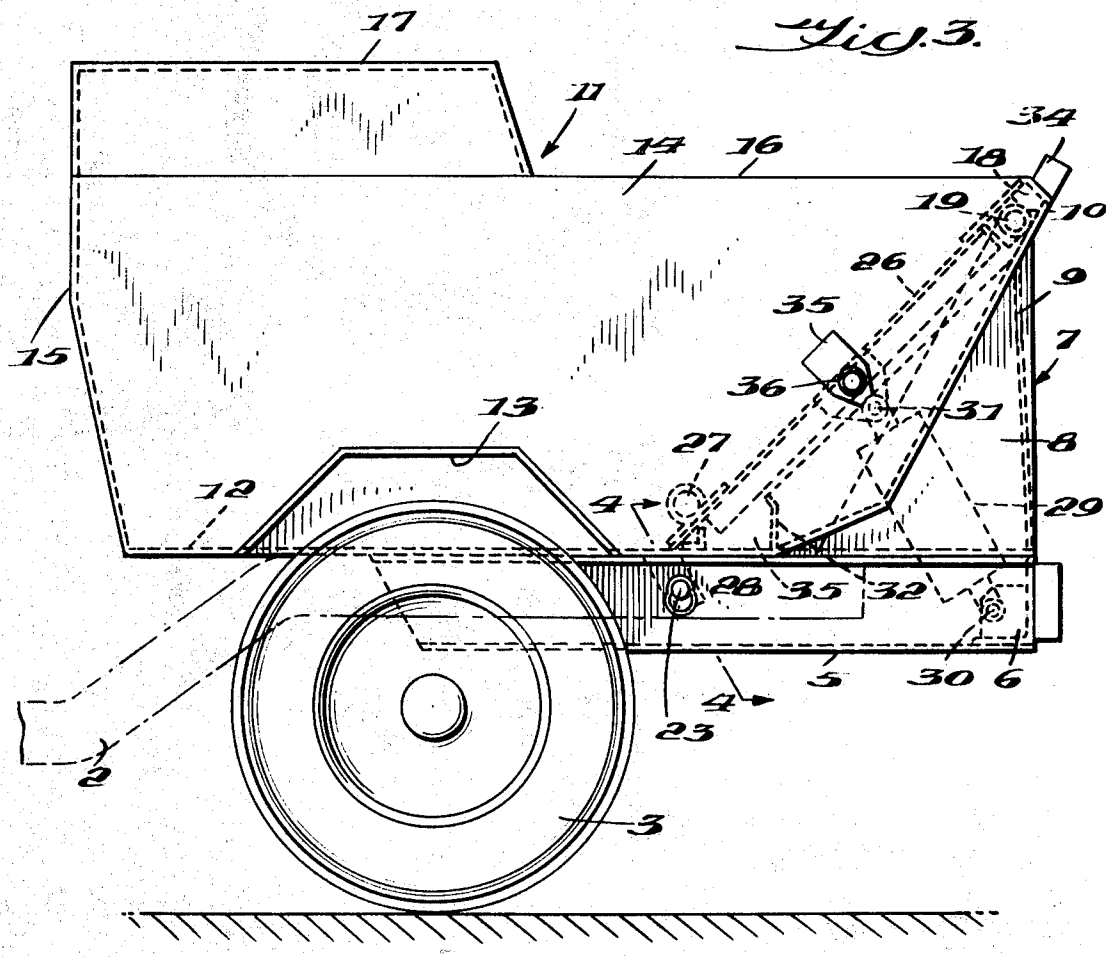
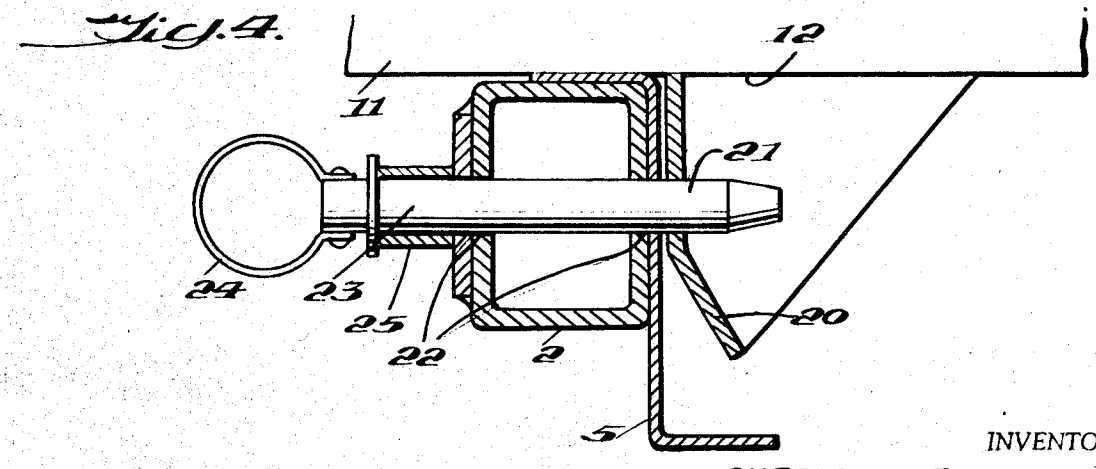


Fig. 4.



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Fig. 5.

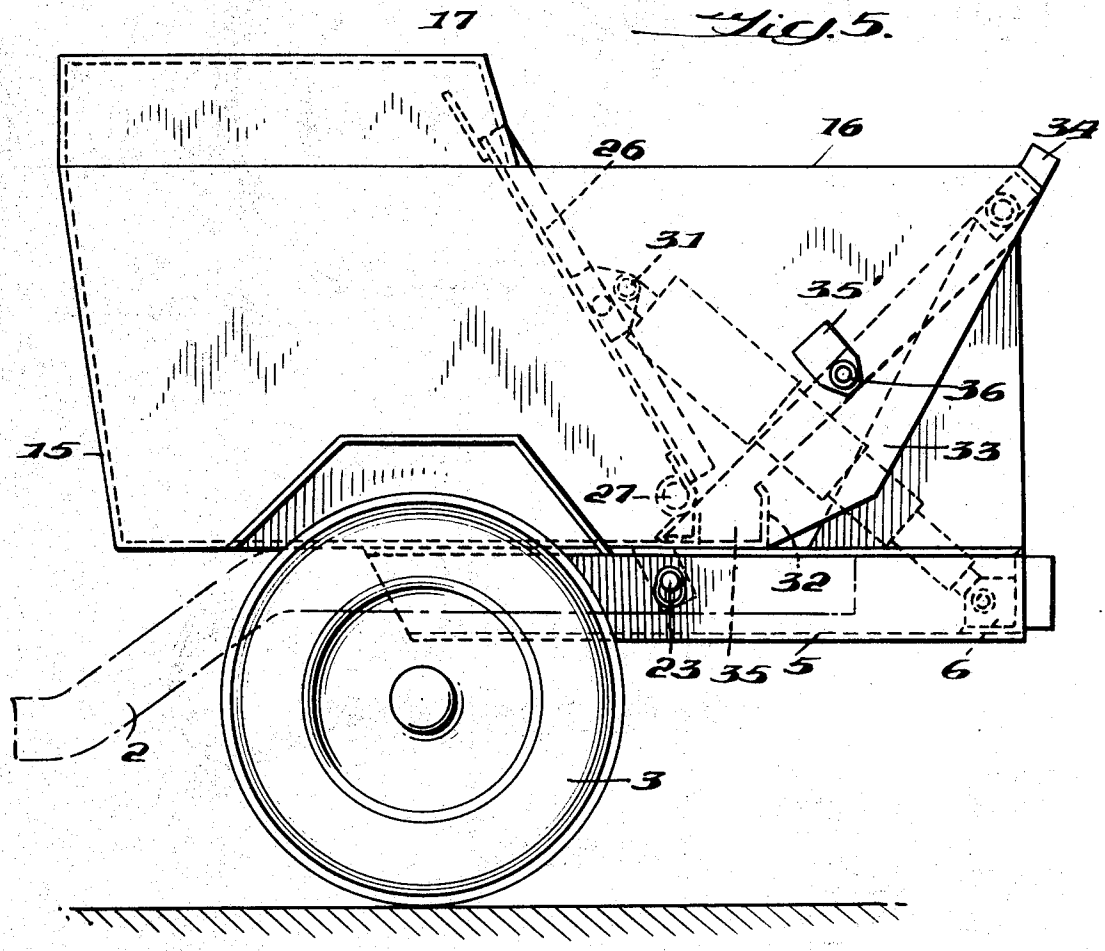
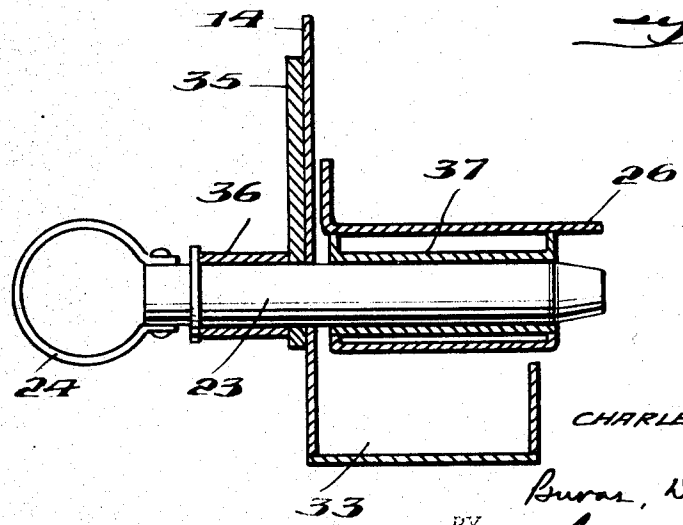


Fig. 6.



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Fig. 7.

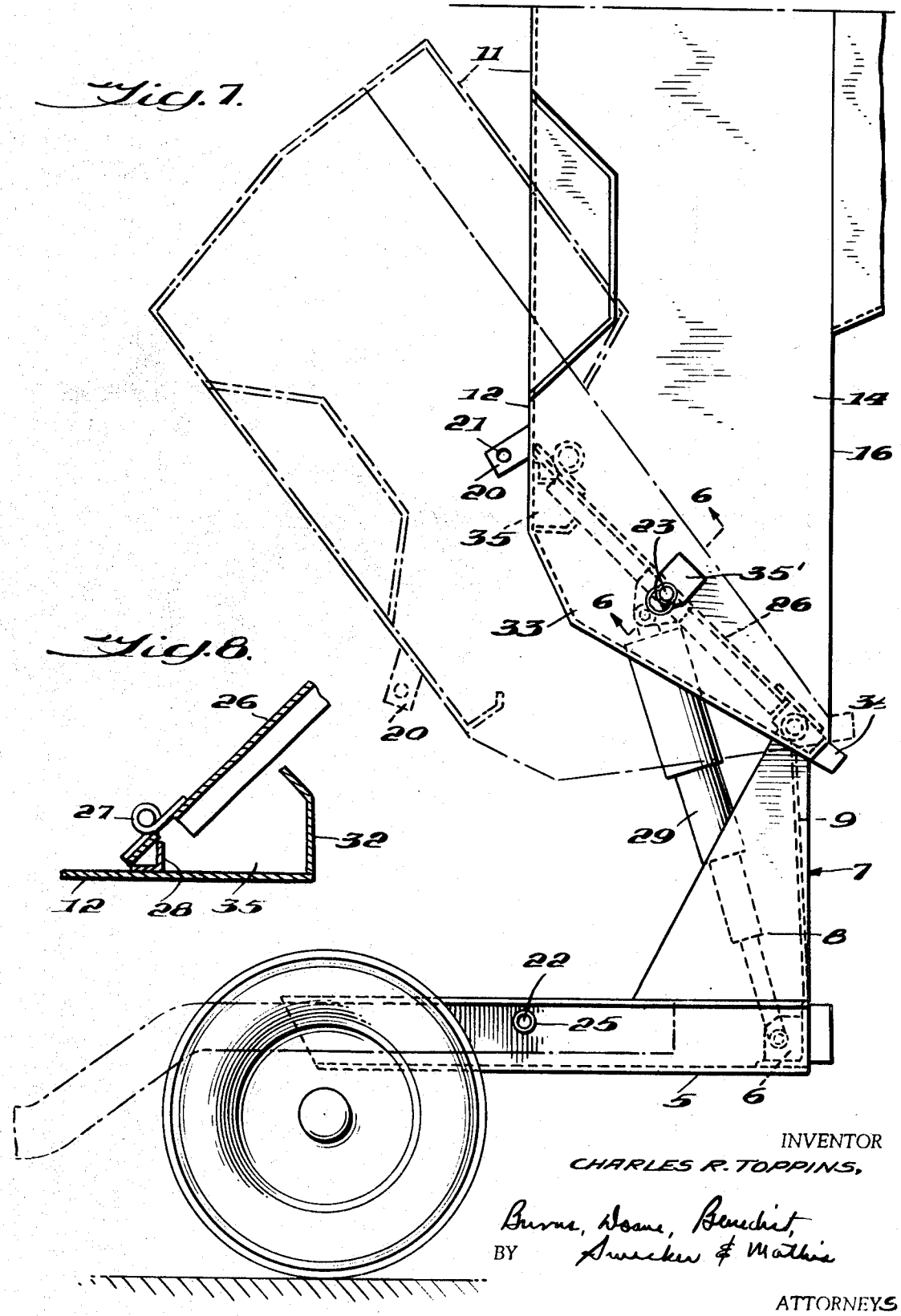


Fig. 8.

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COLLECTION UNITS

SUMMARY OF THE INVENTION

This invention relates to improvements in Collection Units adapted to be moved from house-to-house or other points of accumulation of refuse to receive the refuse and to convey the same to a collection vehicle for dumping into the packer body thereof.

It has been the practice heretofore to collect refuse in relatively large collection vehicles having packer bodies thereon which operate along the streets. Refuse containers at the respective points of accumulation, such as from house-to-house, are dumped into one of the packer bodies at the street. In some instances, these containers must be carried bodily out to the street for dumping, which is a laborious and time-consuming operation, but this requires the large collection vehicle to stop at each house or place of business for dumping of the containers therein.

It has also been proposed and used to some extent that a small vehicle, with a dump body thereon, be operated through the respective driveways for backyard pickup of the refuse and transporting it to the street for emptying its payload into a hand-loading container which, in turn, dumps into the packer body, of a truck or directly into the rear of the packer body. This refuse body, as used heretofore, although somewhat larger in capacity than the average refuse can, nevertheless was very limited in capacity, especially for handling lightweight materials. There was no provision for packing the refuse materials in the dump body thereof. Consequently, it required dumping at frequent intervals, and often at each house or place of business, which was both time-consuming and wasteful of labor.

One object of this invention is to improve the construction of collection vehicles of the character described and to provide for the packing of the refuse therein so as to permit the body to collect refuse at several points before dumping the refuse at the collection vehicle.

Another object of the invention is to provide a movable wall section on the body capable of packing the refuse in the body and to utilize a single source of power, both for actuating the packing section and for effecting the dumping action.

Still another object of the invention is to provide a sump receptacle on the body which will collect and prevent the discharge of entrapped liquid until the dumping and then to discharge the liquid with the refuse into the receiving container of the collection vehicle.

These objects may be accomplished, according to one embodiment of the invention, by providing a collection body mounted on a motor vehicle capable of movement from point-to-point of accumulation of refuse such, for example, as at the back doors of private homes or at the ends of long driveways. The body is pivotally supported on a subframe mounted on the chassis of the vehicle for swinging movement relative thereto. In one position, the body rests on the chassis frame and is capable of collecting refuse therein. In another position, the body is lifted on its pivotal support for dumping the refuse to be deposited into a container of a collection vehicle. One wall of the body is mounted for swinging movement to compact the refuse, being moved back and forth by a suitable power device, such as a hydraulic cylinder. By proper control of the movement of the wall, this power device can be utilized selectively for packing action and for dumping the body. A sump may be provided on the body, if desired, for collecting liquid entrapped in the refuse and for discharging it into the collection container.

BRIEF DESCRIPTION OF DRAWINGS

This embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a perspective view showing the collection unit on a vehicle;

FIG. 2 is a rear elevation of the body and frame;

FIG. 3 is a side elevation of the rear portion of the vehicle showing the body thereon in collection position;

FIG. 4 is a detail cross section on the line 4–4 in FIG. 3;

FIG. 5 is a view similar to FIG. 3, illustrating the compaction action;

FIG. 6 is a detail cross section on the line 6–6 in FIG. 7;

FIG. 7 is a view similar to FIG. 3, illustrating the dumping action; and

FIG. 8 is a detail cross section through the bottom portion of the body.

DETAILED DESCRIPTION OF DISCLOSURE

The invention is adapted to be used in connection with a suitable vehicle, as indicated generally by the numeral 1, provided with a chassis frame 2 and wheels 3. The vehicle is self-propelled from the usual source of power, such as an engine, controlled by the operator within the cab 4 and is also usually provided with suitable steering means for directing the course thereof.

The rear end portion of the truck chassis 2 is provided with a subframe 5 rigidly mounted thereon and extending rearwardly therefrom. This subframe 8 includes a pair of side members connected together at their rear ends by a cross member 6 which spaces the side members apart at their rear ends and forms a part of the subframe.

Mounted on the subframe 5 at each opposite side thereof and substantially at the rear end of the subframe are upstanding brackets 7. Each of the brackets 7 comprises an outer face plate 8 extending lengthwise of the subframe side member upon which it is securely mounted and a brace plate 9, the outer edge of which is in abutting relation with the inner face of the plate 8 and rigidly secured thereto as by welding. At the upper ends of the plates 8 and 9, a sleeve 10 is rigidly secured, preferably being welded thereto.

A body is designated generally at 11. This body includes a bottom 12 having wheel wells 13 thereon over the wheels 3. Opposite sidewalls 14 are upstanding from opposite edges of the bottom 12 and are connected together at their front ends by a front wall 15. The body 11 is open at the top throughout the rear portion thereof, as indicated at 16, but has a hood 17 over the top portion thereof at the front to confine the refuse therein in the compacted area and to hold it also during the dumping operation.

The opposite sidewalls 14 are connected together at their rear ends by a cross member 18 which is pivoted at 19 to the sleeves 10 on the brackets 7. These pivotal supports 19 for the body permit the body to be raised and lowered with respect to the chassis frame, swinging about the axes of the pivots 19.

In the lowered position, the body may be held securely by detachable means, to the chassis frame 2 or subframe 5 as, for example, in the manner shown in FIG. 4. In this embodiment of the invention, a guide bracket 20 is secured rigidly to the bottom 12 of the container and extends downwardly therefrom inside the subframe 5, as shown in FIG. 4. This bracket 20 has a perforation 21 in its lowered position in axial alignment with openings 22 in opposite sides of the chassis frame member 2 in position to receive a locking pin 23, which may be inserted therethrough for locking these parts in fixed position with respect to each other. A loop handle 24 on the locking pin serves to insert and remove the latter. A sleeve 25 is provided on the outer side of the chassis frame member 2 to provide additional guiding action for the pin 23.

The body 11 is provided with a tailgate, indicated generally at 26, which serves also as a platen, and which extends transversely across the rear side of the body, forming the rear wall thereof. The tailgate 26 is hinged at 27 on a support bar 28 mounted on the bottom 12 of the body so as to swing from the position shown in FIG. 3 to the position shown in FIG. 5 relative to the body. The upper edge of the tailgate 26 extends to the top edge of the sidewalls 14, overlapping the connecting bar 18, bearing against the latter.

The tailgate 26 is moved by a hydraulic cylinder, indicated generally at 29. This is preferably a telescopic cylinder capable of expanding movement, as indicated in FIGS. 2 and 4, and also in FIG. 7. One end of the cylinder 29 is pivotally sup-

ported at 30 on the connecting cross member 6 and the opposite end of the cylinder 29 is pivotally supported at 31 on the tailgate 26 at the back face thereof.

The bottom 12 of the body has an upstanding sump wall 32 spaced from the hinge 27 rearwardly thereof and extending transversely from side-to-side of the body between the sidewalls 14. At the opposite ends of the sump wall 32, discharge channels 33 are formed, one adjacent each sidewall 14 at the inside face thereof, as shown in FIG. 6, and extending obliquely along the rearward edge of the sidewall to the upper rear corner thereof, with a discharge spout 34 at said corner for directing the liquids from the sump 35 behind the wall 32 out of the body.

Each of the sidewalls 14 has a bracket 35' mounted thereon, with an opening therethrough and through the wall. A sleeve 36 surrounds the opening and extends outwardly from the bracket 35' for receiving therethrough the locking pin 23. A sleeve 37 on the tailgate 26 adjacent the lateral edge thereof is in position to also receive the inner end portion of the locking pin 23, as shown in FIG. 6, when the pin is inserted therethrough in the position of the parts for dumping of the body, as illustrated in FIG. 7.

This collection unit is adapted to be used particularly where material must be picked up from the back door or at the end of a long driveway for conveyance of a transport packer vehicle, although of course it can be used wherever its application seems desirable. Many suburban areas provide for backyard pickup of refuse and by using a unit of this type for collection of the refuse at one or many residences before transporting it to a single collection vehicle, a material saving in manpower is effected. For example, one or two men can be dispensed with who otherwise would be needed on the collection packer.

The collecting position of the unit is shown in FIGS. 1 and 3, wherein the body 11 rests upon the chassis frame 2 of the vehicle, being held in place by the pivotal support 19 and the locking pins 23 engaging the brackets 20 on opposite sides of the chassis frame. At desired intervals, the refuse can be packed in the body 11 by operation of the hydraulic cylinder 29 and the combined tailgate and packer 26, moving forward to the position shown in FIG. 5, thereby compressing the material underneath the hood 17. The hood 17 holds the material in the body during this operation.

When it is desired to dump the refuse from the body 11, the pins 23 can be withdrawn from the brackets 20 and the openings in the chassis frame 2, as shown in FIG. 4, and inserted through the sleeves 36 and 37 on opposite sides of the body. This will disengage the front end portion of the body from the chassis frame while locking the tailgate and platen 26 in its rear position, as shown in FIG. 3. When the parts are thus locked in position, the manipulation of the hydraulic cylinder 29 will act through the tailgate and platen 26 to lift the body 11 about the pivots 19 on the standards 7, as shown in FIG. 7, until these reach a dumping position.

The parts are so related that the material can be dumped directly into a collection container of a front end loader or into the collection receptacle of a rear end packer body and, in either event, will be transferred from this unit to the collection vehicle for transport to the point of disposal. After thus discharging the container 11, the latter will be lowered again to the position shown in FIG. 3 when the pins 23 will be shifted back to the positions shown in FIG. 4, thereby locking the body in place on the chassis frame, ready for refilling in the manner described.

Any liquid that is entrapped in the refuse will be collected in the sump 35, which will maintain a liquid level within the bottom of the container and prevent this liquid from escaping through the crack at the hinge edge of the platen 26. In dumping, as shown in FIG. 7, the liquid will be directed through the discharge channels 33 and the spouts 34 into the receptacle for the refuse and thus will not contaminate the area, especially a residential area where the transfer may be made.

The collection unit can be used in picking up in narrow areas and by being provided with packer means, it will receive and hold substantial volumes of refuse. The same cylinder or cylinders that are used for dumping can be used for packing, according to this invention, without requiring separate cylinders for the purpose.

While the invention has been illustrated and described in one embodiment, it is recognized that variations and changes may be made therein without departing from the invention set forth in the claims.

I claim:

1. A collection unit adapted to be mobile, comprising a receptacle having a bottom and surrounding walls, means adjacent the upper edge of one of said walls for pivotally supporting the receptacle for dumping movement over said one wall for discharging the contents therefrom, means pivotally connecting said one wall with the receptacle adjacent the bottom thereof, and means for moving said one wall relative to the receptacle to compact material therein.

2. A collection unit according to claim 1, including means for actuation of said moving means to cause dumping movement of the receptacle.

3. A collection unit adapted to be mobile, comprising a receptacle having a bottom and surrounding walls, means for pivotally supporting the receptacle for dumping movement over one of the walls for discharging the contents therefrom, means for moving said one wall relative to the receptacle to compact material therein, and means for locking the movable wall against movement relative to the receptacle during actuation of the moving means and thereby causing dumping movement of the receptacle.

4. A collection unit according to claim 1, including means for locking the receptacle against dumping movement during packing movement of the one wall and for locking the one wall against compacting movement during dumping movement of the receptacle.

5. A collection unit adapted to be mounted on a vehicle, comprising a receptacle having a bottom and surrounding walls, means pivotally supporting one of the walls for swinging movement into the receptacle in a compacting movement, power means connected with said one wall and acting thereon, means pivotally mounting the receptacle on the vehicle for swinging movement to a dumping position, and means for locking the one wall against movement and for transmitting movement of the power means to the receptacle to move the latter to a dumping position.

6. A collection unit according to claim 5, wherein the locking means for the one wall is replaceable to lock the receptacle on the vehicle against swinging movement relative thereto.

7. A collection unit according to claim 5 including standards mounted on the vehicle and upstanding behind the receptacle and having the receptacle pivot means mounted thereon adjacent the top of the receptacle.

8. A collection unit according to claim 5, including means forming a sump in the receptacle and having channels in communication therewith extending upwardly to the top of the receptacle for discharging liquid therefrom.

9. A collection unit adapted to be mounted on a vehicle and to be moved from place to place, comprising a supporting frame, upstanding standards mounted on the rear end of said frame and spaced apart transversely thereof, a body having a bottom, sides and front wall, means pivotally mounting the body on the standards, a platen forming a tailgate for the body, means hinging the platen to the bottom for swinging movement forwardly relative to the body, a power cylinder operatively connecting the platen and the supporting frame, means for locking the platen to the body for swinging movement of the body by the hydraulic cylinder while the platen is locked to the body.

10. A collection unit according to claim 9, including sump means in the bottom, and channels extending diagonally upward from the sump means substantially to the top of the body.