Feb. 19, 1963 G. R. DEMPSTER ETAL 3,078,121

END GATE FOR COMPACTION-TYPE BODIES

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Fig. 1.

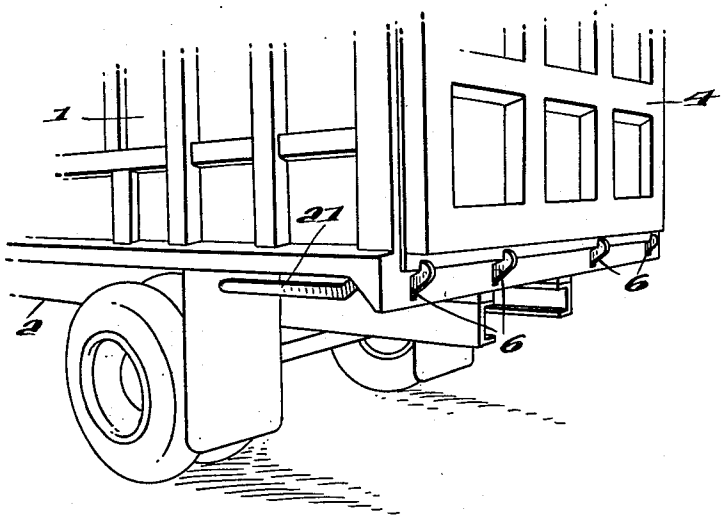
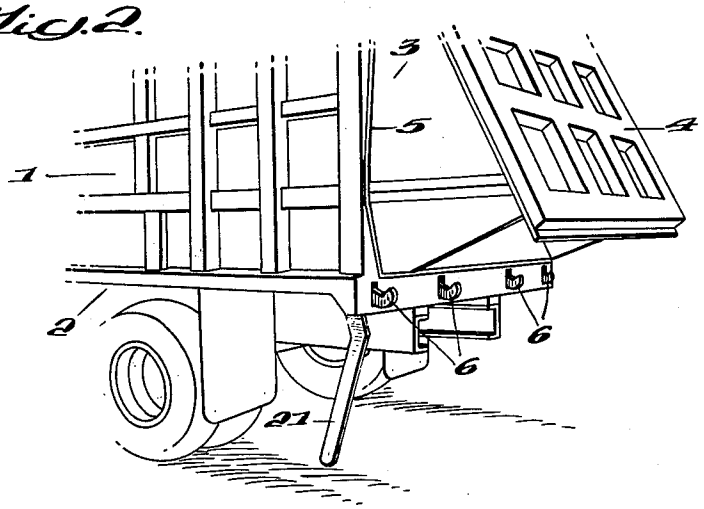


Fig. 2.



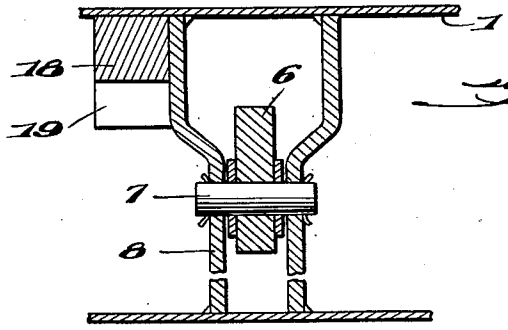


Fig. 3.

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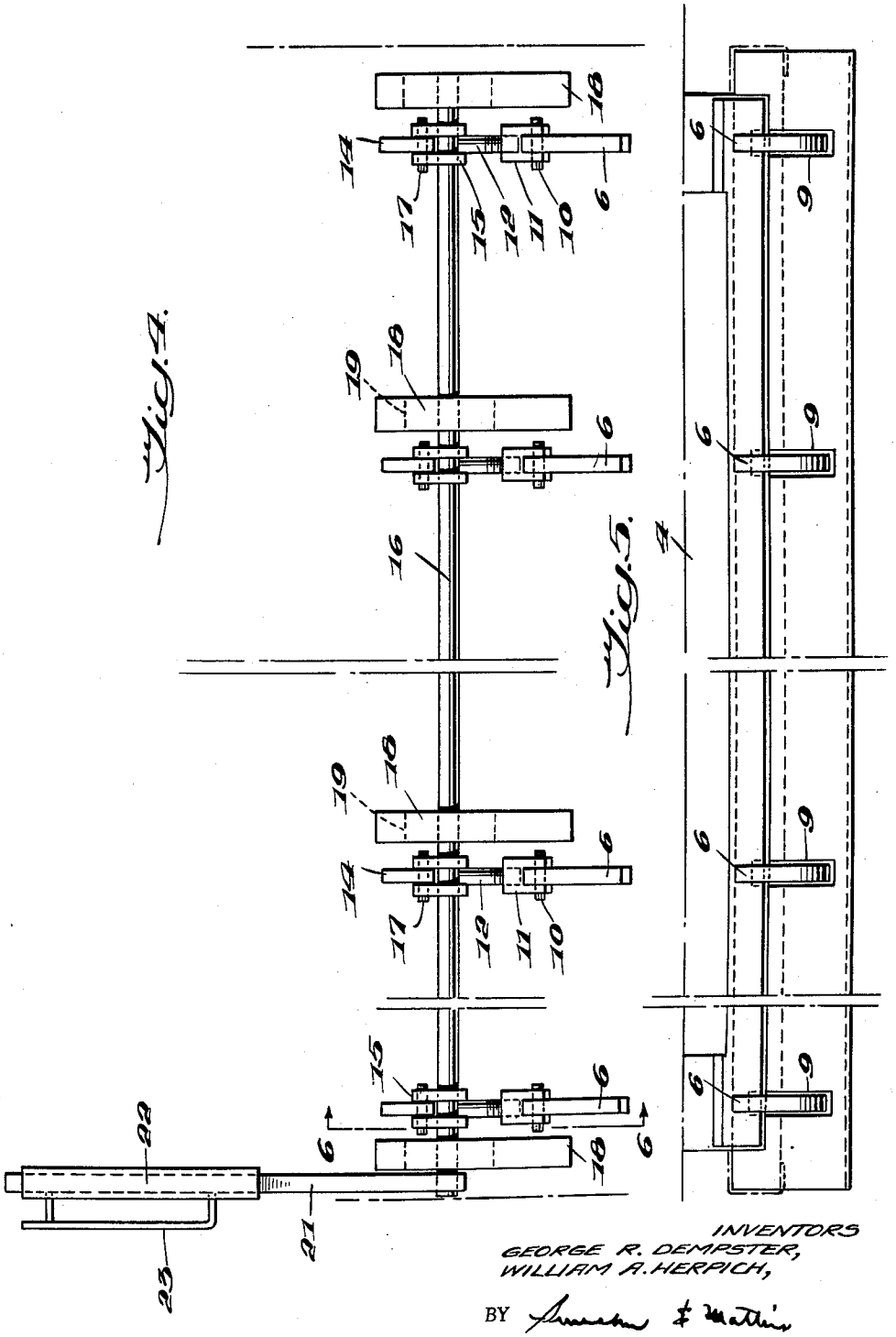


Fig. 4.

Fig. 5.

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Fig. 6.

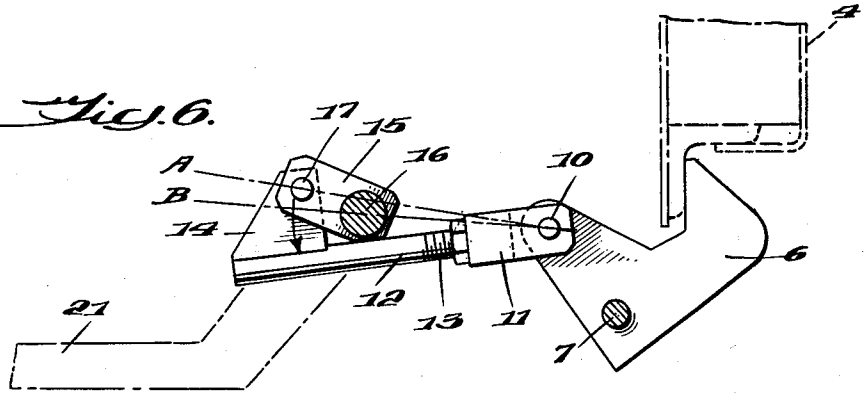


Fig. 7.

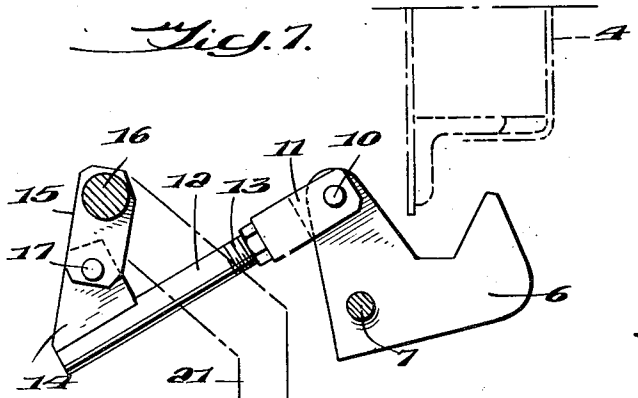
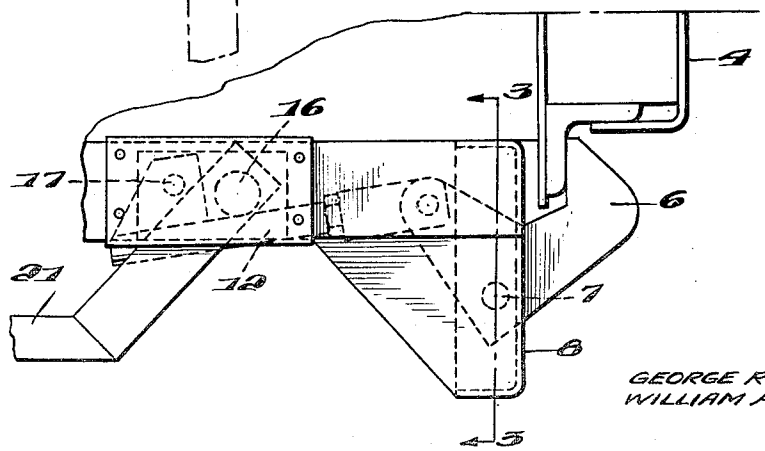


Fig. 8.



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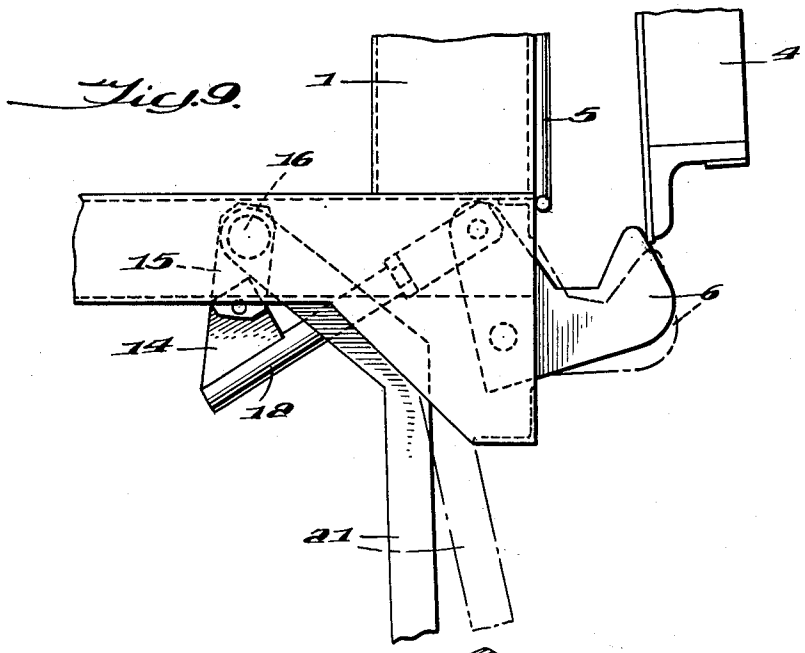
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Fig. 9.



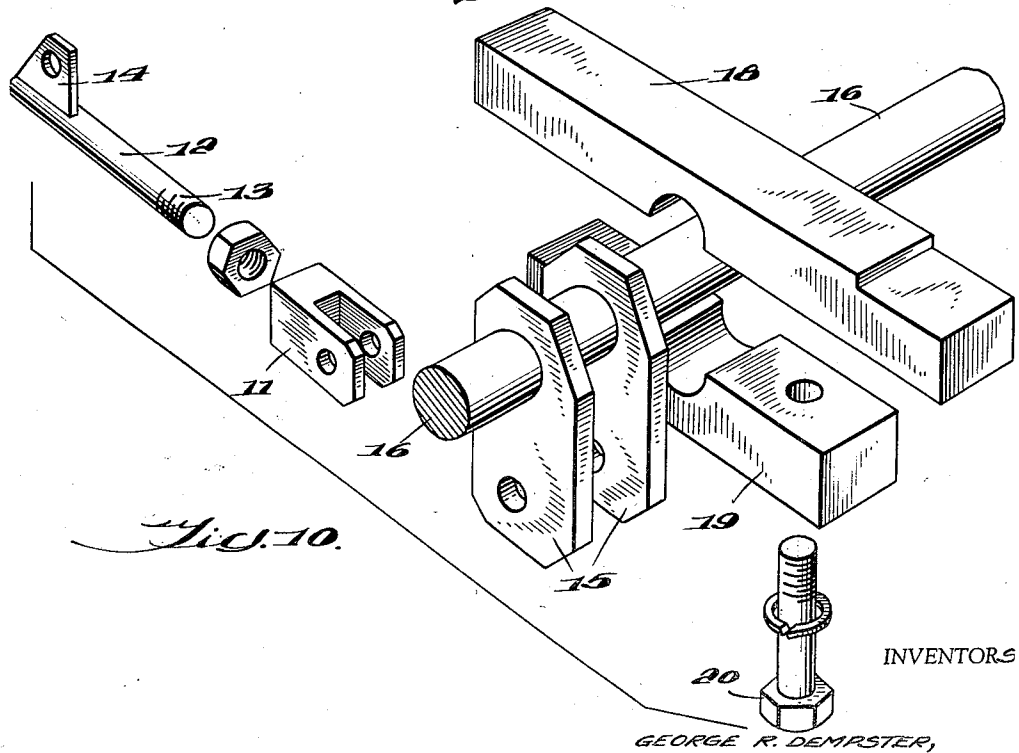


Fig. 10.

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3,078,121

END GATE FOR COMPACTION-TYPE BODIES

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2 Claims. (Cl. 296—56)

This invention relates to improvements in compaction-type bodies and more particularly to such bodies as are used for containing refuse that is compacted therein and is discharged through the rear portions thereof.

A body of this type is provided usually with a pivotally suspended rear door against which the packer head functions in compressing the refuse therebetween. The door is usually latched closed, so as to be capable of being released and to be opened for discharging the refuse through the rear end of the body. The action of the packer head on the refuse creates an extreme pressure against the suspended rear door and against the latch mechanism for retaining the door in closed position.

The latch mechanism provided heretofore for holding the door closed has been unsatisfactory because it is difficult to retain the latch means in closed relation and because of the danger that the latch means would not securely fasten the door and hold it closed.

One object of this invention is to improve the character of the latch means for retaining the door of a compaction body in closed relation.

Another object of the invention is to provide for equally distributing the pressure over the surface of the suspended rear door and to effect the actuation of multiple latches as a unit by a single actuating means which is located at the side of the body and away from the discharge area.

Still another object of the invention is to provide a cam-type over-center latch which locks the rear door effectively in closed position by one motion and wherein the pressure from within the body will tend to maintain the latch in closed positioned and to tighten the holding relation thereof on the door.

A compaction-type body having a hinged door at the rear end thereof usually is provided with a sealing gasket at the face of the body opposite to the door. When the refuse is discharged by being pushed through the open end of the body past the door, the latter is free to swing back against the end of the body with considerable force, which action has heretofore caused considerable damage to the gasket due to the slamming action of the door.

A still further object of the invention is to provide latch means which will function also for preventing the heavy door from slamming shut against, and causing damage to the gasket material which surrounds the rear opening of the compaction-type body for retaining liquid refuse therein.

These object may be accomplished, according to one embodiment of the invention, by providing a multiple latch assembly disposed at the rear end of the body beneath the discharge opening thereof in position for latch engagement with the free lower edge of the hinged rear door. The latch assembly includes cam-type over-center latches which lock the rear door closed by one motion such that when the latches are moved to closed positions, the latch actuating means is moved to overcenter positions, whereby pressure against the latch in such over-center position causes the latch to tighten on the free edge of the door. Thus, additional latch holding devices are not required. A reversed motion of a single lever, attached to all of the latches, releases these simultaneously.

The single lever, multiple latch assembly is designed so that, when the lever is hanging free in its natural balanced position, the latches move up into the path of

the free edge of the door. When the door closes by gravity after discharge of the refuse, its free edge portion will strike the latches and the latter will prevent the heavy door from slamming shut and causing damage to the gasket material which surrounds the rear opening for retention of the liquid refuse. The latch lever can be moved by hand to free the latches from the path of the door and allow the latter to close, after which the latches are moved into locking engagement therewith by actuation of the lever.

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

FIG. 1 is a perspective view of a portion of a motor vehicle having compaction-type body to which the invention is applied, and showing the latch means and discharge door in closed position;

FIG. 2 is a similar view, showing the latch means and discharge door in open position;

FIG. 3 is a vertical cross section through the latch mounting means, taken on the line 3—3 in FIG. 8;

FIG. 4 is a top plan view, showing the latch means detached;

FIG. 5 is a rear elevation of a portion of the vehicle body and door, with the latch means in closed position;

FIG. 6 is a detail cross section through a portion of the latch means, with the latter in closed position;

FIG. 7 is a similar view, showing the latch means in open position;

FIG. 8 is a detail side elevation of a portion of the body and latch means in closed position;

FIG. 9 is a similar view, showing the latch means and door in open position; and

FIG. 10 is a disassembled perspective view, showing some of the parts of the latch means.

The invention is shown as applied to a compaction-type body, generally indicated by the numeral 1, and mounted on a motor vehicle chassis 2. The compaction-type body 1 usually has an opening near the front thereof, to receive the refuse which is compressed in the body by a packer head operated by a hydraulic cylinder or other suitable power means.

At the rear end of the body 1, the latter is provided with a discharge opening 3, normally closed by a door 4, hinged at the upper edge thereof to the body 1 in a conventional manner. A rubber gasket 5 surrounds the discharge opening 3 between the door 4 and the edge portion of the body 1 to retain liquid refuse in the body when the door is closed.

The door 4 is adapted to be latched in closed position over the discharge opening 3 and to be held closed effectively, not only to retain the refuse within the body, but also to oppose the compacting action of the refuse between the packer head and the door. This extreme pressure against the suspended rear door requires a distribution of the action of the latch means substantially throughout the width of the door at its lower edge. A multiple latch assembly is provided to accomplish this result.

The latch assembly comprises a plurality of latches 6 spaced apart at intervals along the width of the door, as illustrated in FIGS. 1, 2, 4 and 5. Any suitable or desired number of latches may be used for this purpose, according to the holding action required.

Each of the latches 6 is pivotally supported at 7 on a fulcrum pin mounted in supporting brackets 8 suspended from the bottom portion of the compaction body 1, as shown in FIGS. 3 and 8. The bracket assembly 8 has slots therein, indicated at 9 in FIG. 5, through which the latches 6 project in position to engage the lower edge of the door 4.

Each of the latches 6 is of bellcrank shape, one arm of which is adapted to engage the edge of the door and the

other arm therof is pivotally connected at 10 with a clevis 11. A latch bar 12 has adjustable screw threaded connection 13 with the clevis 11 at one end thereof, and the opposite end of the latch bar 12 is provided with a wing 14.

The wing 14 engages between plates 15 mounted on a torque bar 16 extending transversely beneath the body. The wing 14 and plates 15 are pivotally connected together at 17. The adjustable screw threaded connection of each latch bar 12 with the clevis 11 permits and adjustment of the action of the torque bar 16 on the respective latches, whereby the several latches may be adjusted, as needed, to equalize the holding force thereof on the free edge of the door and assure that all of these will apply uniform holding relation to the door when the latter is closed. This not only assures of secure latching of the door, but it also prevents the possibility of damage thereto due to warping or otherwise.

The torque bar 16 extending transversely of the body 1 is journaled within a plurality of split bearings mounted on the bottom portion of the body. The split bearings comprise an upper bearing section 18 and a lower bearing section 19 secured together as by bolts 20 (see FIG. 10).

At one end, the torque bar 16 has fixed thereon a lever 21. The lever 21 preferably is provided with a weight 22 thereon and may have a hand grip portion 23 to facilitate movement of the lever.

In operation, the latches 6 normally hold the door closed, as shown in FIGS. 1, 6 and 8, in which position the lever 21 is moved upward directly beneath the body. In this position, the axis of force, indicated at A in FIG. 6, extending between the axes of the pivots 10 and 17, is on the opposite side of the axis B extending between the pivot 10 and the torque rod 16 from the latch bar 12.

When the latch 6 is moved to a closed position, the center of the pin 17, which locks the latch bar to the lever assembly, passes over the line B through the centers of the lever fulcrum and the pin 10 that connects the latch bar 12 with the latch 6. Pressure of the door and refuse acting against the latch 6 in this over-center position causes the latch to tighten and thereby holds the door securely and effectively in latched position. Additional mechanical latch holding means is not required.

When the lever 21 is moved in a counterclockwise direction from the position shown in FIG. 1 to the position shown in FIG. 2, all of the latches 6 are released quickly and simultaneously. The lever 21 hangs in a vertical position when the door 4 is open, as viewed in FIG. 9. As soon as the lever has moved the axis of the pin 17 past the axis B in FIG. 6, the over-center position is now released and no longer effective whereby the rear door pushes the latches open and permits the discharge of the load.

After the door 4 has passed over the latches of the assembly, the latter will return to its balanced position with the nose portions of the latches 6 normally standing in the path of the lower edge of the door, as shown in FIG. 9. When the door closes, after discharge of the refuse, its lower edge portion will come to rest against the several latches. The latter will prevent effectively the heavy door from slamming shut against and causing damage to the gasket material 5 which surrounds the rear opening of the body.

To latch the door when in this position, it is only necessary to swing the lever 21 fully open, as shown in dotted lines in FIG. 9. Then the door 4 will pass over the several latches and the latter will rise behind the lower edge portion of the door and retain the door closed. The door then can be locked effectively by swinging the lever 21 to its retaining position, as illustrated in FIG. 1.

The latch assembly is economical and yet simple and effective. Individual parts are replaceable, even without the necessity for replacing the entire assembly, in the event that some one part should become worn or damaged.

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, as set forth in the claims.

We claim:

1. In a compaction-type body having a discharge opening and a door mounted on the body substantially to close said opening and movable relative thereto, gasket means mounted on the body adjacent the opening in position for sealing engagement with the door when the latter is moved substantially to closed position, the combination therewith of a latch assembly for holding the door closed, said latch assembly comprising a latch in position to engage an edge portion of the door, a torque member pivotally mounted on said body spaced from said latch, adjustable linkage means connecting said latch and said torque member, a lever connected to said torque member to move said latch in response thereto, a handle on said lever to facilitate movement of said lever, and a weight on said lever to move said lever so as to move said latch into the path of the door after opening thereof.

2. In a compaction-type body having a discharge opening and a door mounted on the body substantially to close said opening and movable relative thereto, gasket means mounted on the body adjacent the opening in position for sealing engagement with the door when the latter is moved substantially to closed position, the combination therewith, of a latch assembly for holding the door closed, said latch assembly comprising a plurality of latches pivotally mounted on the body, said latches being movable on an axis to an operative position to engage and hold the door firmly in a closed position and to an inoperative position to release the door for moving the door to an open position, a torque member pivotally mounted on said body spaced from said latch, adjustable linkage means connecting said latch and said torque member, a lever connected to said torque member to move said latches in response thereto, said connecting means arranged to lock said lever in a position wherein said latches are in engagement with an edge portion of the door, a handle on said lever to facilitate movement of said lever from the latching position, and a weight on said lever to counterbalance said latches into the path of the door after opening thereof.

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