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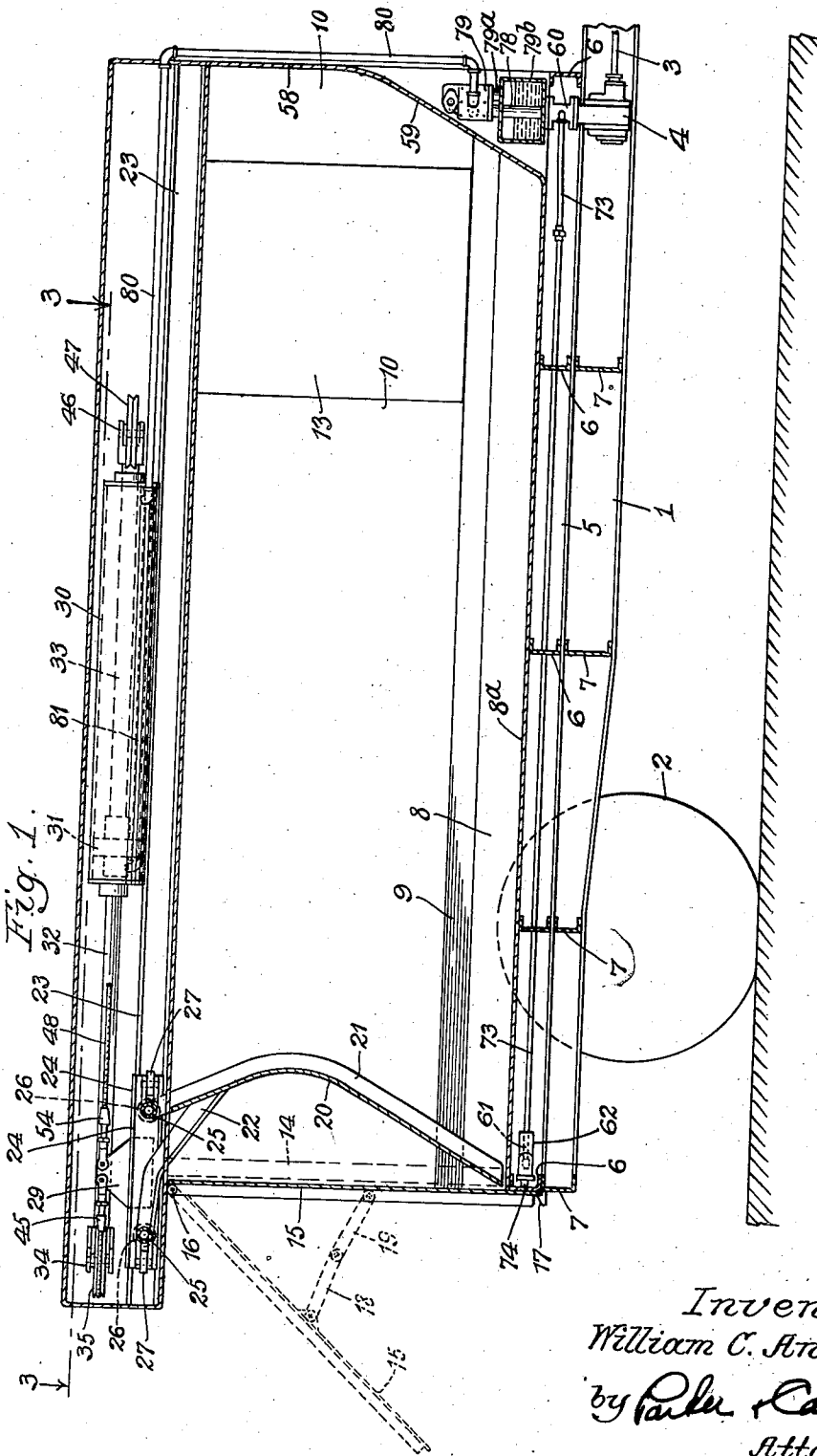
W. C. ANTHONY

2,408,284

REFUSE BODY

Filed Dec. 16, 1944

3 Sheets-Sheet 1



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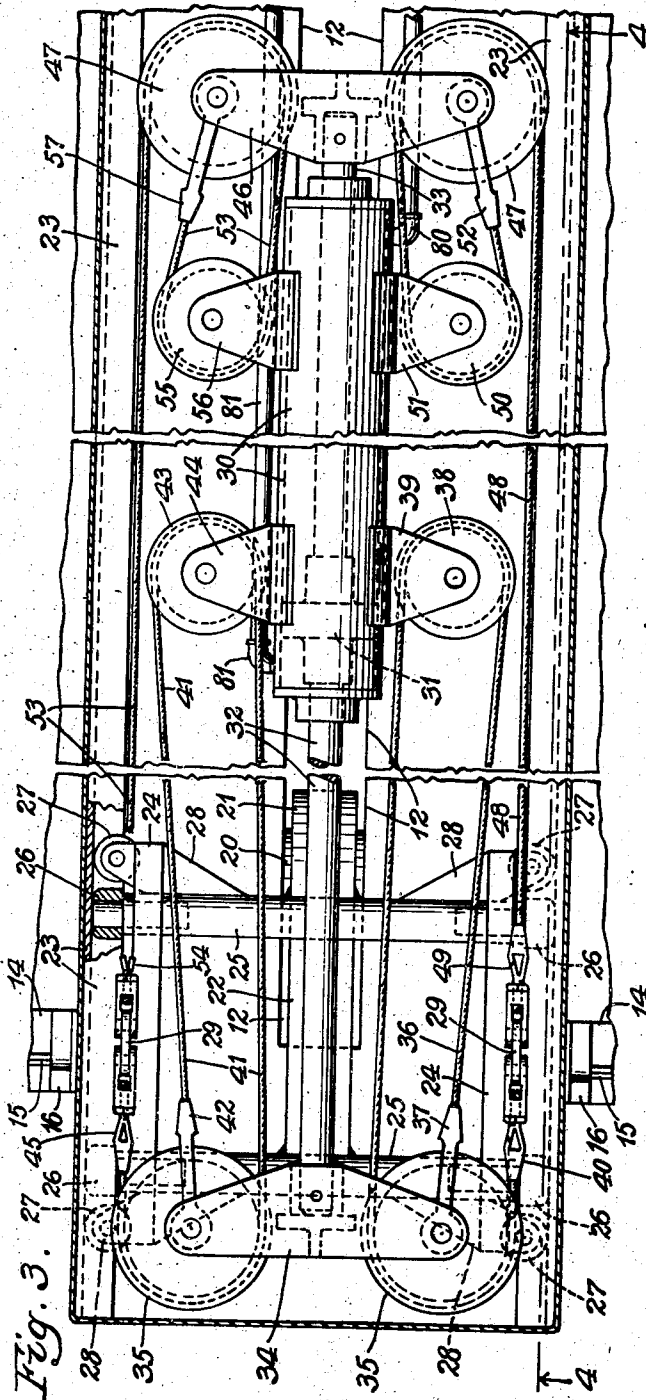
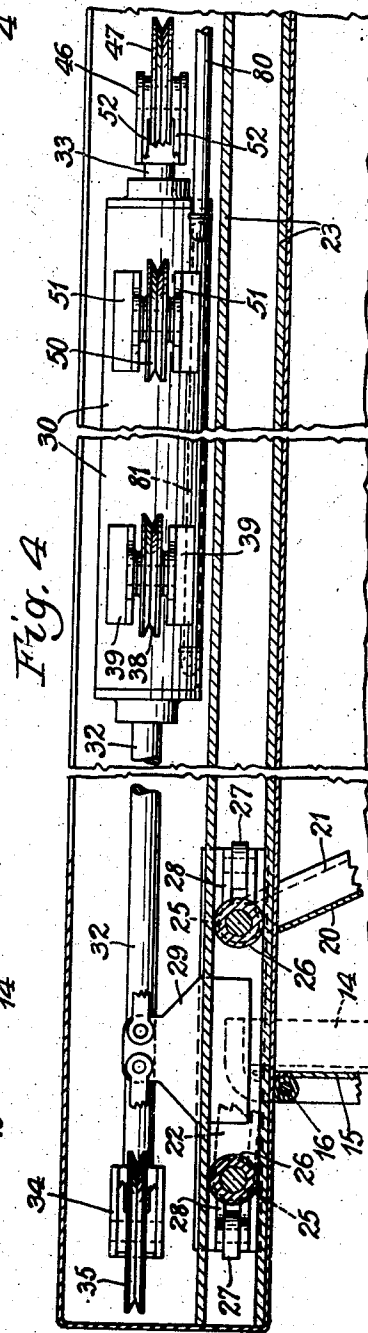
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,408,284

REFUSE BODY

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22 Claims. (Cl. 214-67)

1

This invention relates to a refuse or garbage body and it has for one object to provide a packing means in said body for moving and packing the contents of the body while it remains in the body.

Another object is to provide means for discharging the load positively from the body.

A further object is to provide a combined packing and discharging means.

A still further object is to provide automatic means for preventing excess loading of the packing means during packing and for causing additional pressure or loading to be exerted by the packing means during unloading or discharging.

Another object is to provide a refuse or garbage body so arranged that it may pack its contents adequately, that it may discharge the contents positively and to produce a structure having these purposes and objects with a minimum over-all height.

A still further object is to accomplish the results indicated in connection with a body which is not to be tipped bodily.

Other objects will appear from time to time in the course of the specification and claims.

The invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a longitudinal vertical section through one form of the device, with parts omitted;

Figure 2 is a rear end view, with parts omitted and parts broken away;

Figure 3 is a sectional plan view of the propelling mechanism on an enlarged scale, taken at line 3-3 of Figure 1;

Figure 4 is a vertical sectional detail on an enlarged scale of one end of the propelling mechanism, taken at line 4-4 of Figure 3; and

Figure 5 is a sectional view through the safety device.

Like parts are indicated by like symbols throughout the specification and drawings.

As shown, the body is mounted on a vehicle which will ordinarily be an automotive vehicle such as a motor truck, although it might be mounted on a trailer or other vehicle. The mechanism is operated hydraulically and for that reason there should be associated with the vehicle in some manner a means for driving a pump which circulates the fluid for operating the hydraulic mechanism.

Only so much of the vehicle is shown as to indicate the location of the body. Thus the vehicle may include frame members 1 supported

2

by wheels 2. An engine is associated in some manner with the vehicle to drive a shaft 3 by means of which a pump 4 is driven. The pump circulates pressure fluid to operate the mechanism. The body is preferably formed with frames or sills 5 which may include transverse members 6. Ordinarily the chassis frame will include one or more transverse members 7.

As indicated in Figure 2, the body is preferably provided with a central portion somewhat lower than the side portions. Any suitable form of enclosing or encasing means may be used for the body. The lower portion is defined by walls 8, 8, which are provided with any desired form of bracing and has a bottom plate member 8a. The body is expanded outwardly above the wheels as at 9 and is provided with upwardly extending sides 10 which may curve inwardly, as at 11, 11. The walls or top members 11 are not continuous and provide a longitudinal slot or opening 12 through which the mechanism to be described below may extend. Preferably one or more openings are left in the side of the body walls, and these are provided with movable covers 13. In the particular form here shown, the covers slide. They might be hinged or bodily removable. When the members 13 are open, they permit the introduction of material into the body.

At its rear end the body is preferably open and about the rear end opening a reinforcing frame 14 may be provided. A gate or door 15 is hinged, as at 16, at its upper end, although other forms of gates might be used. A latch means 17 is provided for holding the door closed and members 18 and 19 may be provided for holding the door in the open position.

Means are provided for moving the contents of the body rearwardly as the body is gradually filled and for packing the contents to some degree as it moves rearwardly. These means include a blade 20 which, as shown in Figure 2, is preferably of curved cross section. Reinforcing members 21 of any desirable shape are joined to the blade 20 and serve to stiffen it. One or more reinforcing members 22 may also be applied to the blade, as shown in Figures 1 and 2.

The means for moving the blade will now be described. Along the top of the body and placed oppositely of the slot or opening 12 is a pair of channel members 23, 23. A dolly or truck is mounted to run in the channels 23 and comprises side members 24, 24 and transverse members 25. The dolly side members 24 may be of angular cross section as shown particularly in Figure 2. Upon each end of each of the dolly

transverse members 25 is mounted a roller 26. As shown in Figure 3 these rollers are not flanged. Additional pairs of rollers 27 are also carried on the dolly. They are mounted in brackets 28 as shown particularly in Figure 3. As shown the brackets are secured to the side frame members 24 and to the transverse or cross members 25 of the dolly.

Extending upwardly from each of the side frame members 24 is a bracket 29. These brackets receive the propelling cables and the cables are preferably joined to them by adjustable means which will be described below.

Fixed upon suitable supports preferably along the top of the body and above the opening 12 is an hydraulic cylinder 30. Positioned for reciprocation within the cylinder is a piston 31. From the right hand face of the piston 31 as shown in Figures 1 and 3 is a piston rod 32. Extending from the left hand side of the piston 31 in Figures 2 and 3 is a piston rod 32. The members 32 and 33 might be separate piston rods both secured to the piston or one continuous piston rod might be supplied and the piston would in that case be fixed to this piston rod. Fixed to the free end of the piston rod 32 is a cross head 34. In the cross head is mounted a pair of sheaves 35, 35. Fixed also to the cross head at or adjacent each side is a cable. Thus a cable 36 is fixed by a connector 37 to one end of the cross head 34. This cable 36 extends about a sheave 38 which is carried by a bracket 39 secured to the cylinder 30. It passes thence about the sheave 35 and is connected to the bracket 29 by an adjustable connector 40. Correspondingly a cable 41 is fixed by a connector 42 to the opposite end of the cross head 34. It passes about a sheave 43 carried upon a bracket 44 from the cylinder 30 and thence it passes about the sheave 35 and is joined to one of the brackets 29 by an adjustable connector 45.

At the opposite end of the assembly a second cross head 46 is mounted upon the piston rod 33 and a pair of sheaves 47 is mounted for rotation in the cross head. A cable 48 is fastened to one of the brackets 29 by an adjustable connector 49. It passes about the sheave 47 and about a sheave 50 mounted on brackets 51 from the cylinder 31 and it is fastened to the cross head 46 by a connector 52. The corresponding cable 53 is secured to the opposite bracket 29 by an adjustable connector 54. It passes about one of the sheaves 47 about a sheave 55 carried in brackets 56 which are secured to the cylinder 30 and at its end it is secured to the cross head 46 by a connector 57.

Means are provided for positively moving the piston in either direction and thus the piston is driven positively to the right or to the left as shown in Figures 1 and 3 and carries with it the dolly and the blade which is fastened to the dolly. As shown particularly in Figure 1 the blade stiffeners 21 and 22 are secured to the dolly and hence move with it and carry the blade 20 with them.

As above mentioned the purpose of the blade and the means for moving it is to convey the load toward the rear end of the body during loading and finally discharge the load during emptying. One end which is ordinarily the forward end of the body is closed by a plate 58 which may have a forwardly directed portion 59 as shown in Figure 1.

Pressure fluid is supplied to the cylinder 30 by the pump 4 which is driven from the shaft 3

from the vehicle engine or any suitable source of power. A control member 60 is connected to the pump 4. Leading from the member 60 is a conduit 61 which carries high pressure fluid to a safety device indicated generally in Figure 1 by the numeral 52 and shown in detail in Figure 5. As there shown the member comprises a valve housing having an inlet connection 63 through which high pressure fluid enters the chamber 64. From this chamber a passage 65 leads to a ball check valve 66 which is provided with an adjustable spring 67 which tends to hold the ball on its seat but permits it to yield upon the occurrence of predetermined pressure. Leading from the chamber 64 is a second passage 68 closed by a ball check valve 69 which is held on its seat by an adjustable spring 70 which is arranged to yield upon the occurrence of a predetermined degree of pressure. Each of the passages 65 and 68 communicates with a chamber 71 which is provided with an outlet conduit 72 through which low pressure fluid passes, and to which a return conduit 73 is secured to carry low pressure fluid back to the member 60.

Positioned within the housing 62 is a piston valve which includes a shaft or rod 74 one end of which projects outwardly from the housing 62 as shown in Figure 5. At its outer end the rod is in contact with a spring 75 which tends to force the valve outwardly from the full line position of Figure 5 to the dotted line position of that figure. The valve is provided also with two enlargements 76 and 77. When the valve is in the inner position as shown in full line in Figure 5 the valve portion 77 blocks the passage 68 and thus only the passage 65 is open. When the valve moves to the dotted line position of Figure 5 under the influence of the spring 75 the valve portion 76 blocks the passage 65 and the valve portion 77 is moved out of the passage 68 and opens that for the movement of high pressure fluid.

When the gate 15 is closed as shown in Figure 1 the valve shaft or rod 74 is contacted by the gate and is held in the closed or full line position of Figure 5. When the gate is open the spring 75 is free to move the valve to the dotted line position of Figure 5.

High pressure fluid is delivered from the pump to the member 60 and passes through that member and through a conduit 78 to a valve housing 79. From that housing two conduits 80, 81 lead to the cylinder 30. One conduit communicates with one end of the cylinder and the opposite conduit communicates with the other end of the cylinder. Valve means not shown are contained in the housing 79. By this valve means pressure fluid is directed, when desired, to one end of the cylinder 30 or to the other and thus serves to move the piston correspondingly to one end of the cylinder or the other. Particular details of the valve means form no essential part of the invention and are not illustrated in full. Any suitable form of valve mechanism may be positioned within the valve housing 79. In general, these means will of course provide for directing fluid pressure to the cylinder 30, when desired, to either end of the cylinder and for permitting return of fluid from either end of the cylinder. A discharge passage 79a is provided to carry fluid from the valve housing 79 to the sump 79b.

Attention has been called to the fact that one degree of pressure is effective on the means for moving the blade 20 when the tail gate is closed

5

and another higher pressure is effective when the tail gate is open. One reason for this arrangement is to provide for safety. Another reason is to provide an arrangement whereby only a low pressure is used in packing the load in the body while a higher pressure is available for moving the load from the body. Once the rear door or gate of the body is open for discharge of the load obviously a higher pressure than that used for packing is advantageous because as a result of packing a load of several feet of material will have been accumulated and packed under the low pressure and a higher pressure may be required to discharge it.

Attention has also been called to the fact that the central portion of the body is lower than the remainder of the bottom of the body. One purpose for this is to provide a body which is as low as possible. By using a low body a low loading height is possible and this simplifies the use of the body and by utilizing the space within the body or between the frame member the body bottom is approximately on a level with the chassis top and the space between the wheels is thus used. Hence the body of a given capacity can be made with a lower overall height in this manner than would otherwise be possible.

The means for driving the blade 12 has been suspended from the top of the body and during packing when the side door or doors 13 are closed the slot in the top of the body is the only opening in the body. The material in the body as the body is filled and packed will not be crowded through the slot in the roof. The operator will watch the operation of the body and will not fill it beyond the point at which the level of material is below the slot in the roof. One advantage of this construction is that there are no slots, curves or openings in the lower portion of the body into which contents of the body may penetrate or leak. Where the packing means or the means for moving the blade such as the member 12 or some other packing blade are supported or carried or moved from below, the contents of the body will inevitably penetrate into the track moving means or openings through which they extend and will inevitably cause jamming and breakage or other unsatisfactory operation. These defects will be avoided by having a body which is entirely closed during packing except at the top where the opening through which the blade moving means penetrate is above the level of the top of the load.

It will be realized that, whereas, I have described and illustrated a practical and operative device, nevertheless many changes may be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish my description and drawings to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting me to my precise showing.

The use and operation of my invention are as follows:

If it be assumed that the body is mounted on a vehicle as shown and if an hydraulic system is connected as shown the valve in the housing 79 will ordinarily be adjusted to introduce pressure to the left hand end of the cylinder 30 to move the piston 31 from the position in Figure 1 to the right hand end of the piston. This movement of the piston will through the cable assembly shown carry the dolly to the right of the body and correspondingly carry the blade to the forward end of the body. That is to say to the right from the

6

position of Figure 1. During this stage of the operation the door or gate 15 will be closed and latched in position. The body is now moved to some point where material is to be introduced into it and one or the other of the door members 13 will be moved to permit material to be introduced into the body. When the material is in the body the door 13 is preferably closed, the pump is driven, the valve in the housing 79 is adjusted to introduce pressure fluid through the conduit 80 and the piston is carried from the right hand end of the cylinder to the position shown in Figure 1 thus carrying the blade 20 and conveying the contents of the body toward the rear. The contents will be packed to some degree. The degree of packing will depend upon the adjustment of the ball check valves 66 and 69. Ordinarily the spring of the check valve 66 which is in operation when the rear gate 15 is closed will be set to yield at a pressure sufficiently low to prevent breakage or damaging of any of its parts for example 400 pounds per square inch. Should that pressure be exceeded the ball check valve 66 will open and high pressure fluid will then pass directly back through the conduit 73 and the piston movement will stop because of this action.

After the load has been moved to the rear and packed as above described the valve in the housing 79 will be reversed and pressure fluid will be introduced through the conduit 81 and the piston will be returned to the right carrying with it the blade which moves thus to its initial position.

The parts will then remain static until further material is introduced into the body. Ordinarily every time material is introduced into the body the blade will be moved to the rear and return to the forward end.

When the body is full or when it has received all the material which it is to receive at a given time or any given cycle of operations it will be moved or driven to a point of discharge. The rear gate 15 will be unlatched and opened and this permits the piston 74 to be moved by the spring 75 to the dotted line position of Figure 5 and thus through the passage 65 and opening the passage 68. With the parts in this position the pump will be driven and the valve within the housing 79 will be set to direct pressure fluid through the conduit 80 to the right hand side of the piston 31. The latter will be moved to the rear to carry the load to the rear and to discharge it. Since at this time the rear gate 15 is open the likelihood of breakage or damage to the blade or its driving mechanism is reduced because the body being open permits discharge of the load. In that position high pressure fluid passes into the passage 68 and should it exceed the pressure at which the spring 70 is set to permit yielding of the ball check valve 69 the ball will be unseated and fluid will pass backward through the outlet conduit 73 to the housing 60 and this will reduce the pressure of fluid flowing to the cylinder sufficiently to prevent movement of the piston and thus to prevent breakage of parts. Should the condition which has caused the pressure to rise be removed the pressure may rise sufficiently to permit the piston to move again in the direction in which it has been moving and thus to continue the movement of the blade 20.

In general the reason for the safety device arises from the fact that sometimes extremely bulky or hard material may be put into the body. When that occurs it may be very difficult to move the blade and should no safety device be present the parts might be broken. The safety device

with the adjustable springs 67 and 70 however allow the assembly to be set so that should the blade not be moving freely enough one or another of the ball check valves will be unseated and the blade and its carrying mechanism cannot be further moved and hence breaking and damaging is prevented. If the pressure does not exceed that for which the springs are set to permit yielding that portion of the system which comprises the conduits leading from the housing 60 to the safety device housing 62 will merely contain fluid which will in effect be static but subject to the pressure on the pressure side of the piston. Fluid only flows through the safety device when pressure rises to a point to cause unseating of one or another of the ball check valves.

I claim:

1. In combination in a refuse body, means defining a refuse receiving container, said container being closed except along a restricted longitudinally disposed area at its top and at its rear, unitary means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for wholly supporting and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body.

2. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, unitary rigid means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for supporting and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body.

3. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, unitary means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for supporting and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and comprising a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body.

4. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for supporting said blade wholly from above and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and comprising tracks positioned above and along the opening in the top of said body and a dolly mounted to move along said body.

5. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, means for packing material in said body and for discharging it therefrom, said means including a blade within said body and means for supporting said blade from above and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and comprising tracks positioned above and along the opening in the top of said body and a dolly mounted to move along said body, said blade being supported wholly from said dolly.

6. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for supporting and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and comprising tracks positioned above and along the opening in the top of said body and a dolly mounted to move along said body, said blade being supported wholly from said dolly and a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body, connections from said piston to said dolly whereby movement of the piston is effective to move the dolly.

7. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for supporting and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and comprising tracks positioned above and along the opening in the top of said body and a dolly mounted to move along said body, said blade being supported wholly from said dolly and a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body, flexible connections from said piston to said dolly whereby movement of the piston is effective to move the dolly.

8. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, unitary means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for supporting and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and comprising a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body and means for supplying pressure fluid to said cylinder.

9. In combination in a refuse body, means defining a refuse receiving container, said means

9

being closed except along a restricted area at its top and at its rear, unitary means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for supporting and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and comprising a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body and means for supplying pressure fluid to said cylinder and means for directing said fluid to one or the other of the ends of said cylinder selectively to move the piston positively in either direction.

10. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and including a hydraulic cylinder, and a safety device positioned in circuit with said fluid supplying means, means in said safety device for by-passing pressure fluid away from said cylinder, said means including a plurality of releases and a controlling member therefor, said control member being actuated by said door when the latter is closed and actuated by a spring biased to move it outwardly when the door is open, said releases being set to yield at different pressure, said control when the door is closed being effective to direct pressure fluid to the release which is set to yield at the lowest pressure and when the door is open to direct pressure fluid to the release which is set to yield at the higher pressure.

11. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and a safety device positioned in circuit with said fluid supplying means, means in said safety device for by-passing pressure fluid away from said cylinder, said means including a plurality of releases and a controlling member therefor, said control member being actuated in one direction by said door when the latter is closed and actuated in another direction by a spring biased to move it outwardly when the door is open, said releases being set to yield at different pressure, said control when the door is closed being effective to direct pressure fluid to the release which is set to yield at the lowest pressure and when the door is open to direct pressure fluid to the release which is set to yield at the higher pressure.

10

12. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, a dolly mounted to move along said body, said blade being supported wholly from said dolly and a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body and a safety device positioned in circuit with said fluid supplying means, means in said safety device for by-passing pressure fluid away from said cylinder, said means including a plurality of releases and a controlling member therefor, said control member being actuated by said door when the latter is closed and actuated by a spring biased to move it outwardly when the door is open, said releases being set to yield at different pressure, said control when the door is closed being effective to direct pressure fluid to the release which is set to yield at the lowest pressure and when the door is open to direct pressure fluid to the release which is set to yield at the higher pressure.

13. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body and comprising tracks positioned above and along the opening in the top of said body, a dolly mounted to move along said body, said blade being supported wholly from said dolly and a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body.

14. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body and comprising tracks positioned above and along the opening in the top of said body, a dolly mounted to move along said body, said blade being supported wholly from said dolly and a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body, and a safety device positioned in circuit with said fluid supplying means, means in said safety device for by-passing pressure fluid away from said cylinder, said means including

11

a plurality of releases and a controlling member therefor, said control member being actuated in one direction by said door when the latter is closed and actuated in another direction by a spring biased to move it outwardly when the door is open, said releases being set to yield at different pressure, said control when the door is closed being effective to direct pressure fluid to the release which is set to yield at the lowest pressure and when the door is open to direct pressure fluid to the release which is set to yield at the higher pressure.

15. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body and comprising tracks positioned above and along the opening in the top of said body, a dolly mounted to move along said body, said blade being supported wholly from said dolly and a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body, connections from said piston to said dolly whereby movement of the piston is effective to move the dolly and means for supplying pressure fluid to said cylinder and a safety device positioned in circuit with said fluid supplying means, means in said safety device for by-passing pressure fluid away from said cylinder, said means including a plurality of releases and a controlling member therefor, said control member being actuated in one direction by said door when the latter is closed and actuated in another direction by a spring biased to move it outwardly when the door is open, said releases being set to yield at different pressure, said control when the door is closed being effective to direct pressure fluid to the release which is set to yield at the lowest pressure and when the door is open to direct pressure fluid to the release which is set to yield at the higher pressure.

16. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body and comprising tracks positioned above and along the opening in the top of said body, a dolly mounted to move along said body, said blade being supported wholly from said dolly and a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body, flexible connections from said piston to said dolly whereby movement of the piston is effective to move the dolly and means for supplying pressure fluid to said cylinder, means for directing said fluid to one or the other of the ends of said cylinder selectively to move

the piston positively in either direction and a safety device positioned in circuit with said fluid supplying means, means in said safety device for by-passing pressure fluid away from said cylinder, said means including a plurality of releases and a controlling member therefor, said control member being actuated by said door when the latter is closed and actuated by a spring biased to move it outwardly when the door is open, said releases being set to yield at different pressure, said control when the door is closed being effective to direct pressure fluid to the release which is set to yield at the lowest pressure and when the door is open to direct pressure fluid to the release which is set to yield at the higher pressure.

17. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, means for packing material in said body and for discharging it therefrom, said means including a blade whose area and shape are substantially those of the cross section of the interior of said body and means for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body and comprising tracks positioned above and along the opening in the top of said body, a dolly mounted to move along said body, said blade being supported wholly from said dolly and a hydraulic piston and cylinder assembly positioned above and adjacent the opening in the top of said body, flexible connections from said piston to said dolly whereby movement of the piston is effective to move the dolly and means for supplying pressure fluid to said cylinder and means for directing said fluid to one or the other of the ends of said cylinder selectively to move the piston positively in either direction and a safety device positioned in circuit with said fluid supplying means, means in said safety device for by-passing pressure fluid away from said cylinder, said means including a plurality of releases and a controlling member therefor, said control member being actuated in one direction by said door when the latter is closed and actuated in another direction by a spring biased to move it outwardly when the door is open, said releases being set to yield at different pressure, said control when the door is closed being effective to direct pressure fluid to the release which is set to yield at the lowest pressure and when the door is open to direct pressure fluid to the release which is set to yield at the higher pressure.

18. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted longitudinally disposed area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, unitary, rigid means for packing material in said body and for discharging it therefrom, said means including a blade, supported wholly from above, whose area and shape are substantially those of the cross section of the interior of said body and means for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and including a hydraulic cylinder, and a safety device positioned in circuit with said fluid sup-

13

plying means, means in said safety device for by-passing pressure fluid away from said cylinder.

19. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, unitary, rigid means for packing material in said body and for discharging it therefrom, said means including a blade within said body and means for wholly supporting and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly outside of the body, and including a hydraulic cylinder, and a safety device positioned in circuit with said fluid supplying means, means in said safety device for moderately packing of the load.

20. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, a gate movably mounted in the rear for closing the same and means for latching said gate closed, unitary, rigid means for packing material in said body and for discharging it therefrom, said means including a blade wholly within said body and means for supporting and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located above and wholly outside of the body, and including a hydraulic cylinder, and a safety device positioned in circuit with said fluid supplying means, means in said safety device for

14

by-passing pressure fluid away from said cylinder, said means including a plurality of releases and a controlling member therefor.

21. In combination in a refuse body, means defining a refuse receiving container, said means being closed except along a restricted area at its top and at its rear, means for packing material in said body and for discharging it therefrom, said means including a blade within said body and means for supporting said blade from above and for moving said blade back and forth within the body throughout substantially the entire length thereof, said means being located wholly above the refuse zone, and comprising tracks positioned above and along the opening in the top of said body and a dolly mounted to move along said body, said blade being supported from said dolly.

22. In combination in a refuse body, means defining a generally closed refuse container, said container provided with a discharging opening at its rear and with a separate filling opening, and a unitary member for packing material in said body and for discharging it therefrom, said member including a blade within said body and means for supporting said blade from above and for moving it back and forth within the container throughout substantially the entire length of said container, said supporting and moving means being supported by the container and positioned wholly above the refuse zone, and comprising tracks supported along the upper part of said body, and a dolly mounted to move along said body, said blade being supported from said dolly.

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