

[54] **COMPACTOR FOR REFUSE OR OTHER COMPRESSIBLE MATERIAL**

3,443,701 5/1969 Hobe 214/82 X

[76] **Inventor: Henry W. Churchman, deceased,**
 late of 2447 Wilson Dr., Wichita,
 Kans. 67204 by Mildred
 Churchman, executrix

Primary Examiner—Robert J. Spar
Attorney, Agent, or Firm—Oltsch & Knoblock

[22] **Filed: Aug. 3, 1972**

[57] **ABSTRACT**

[21] **Appl. No.: 277,814**

A compactor for refuse or other compressible material in which a shiftable discharge blade and a shiftable packer blade are cooperatively located within a housing. The packer blade is shiftable independently of the discharge blade to cause material to be compacted forwardly of the discharge blade. The packer blade is then brought into alignment with the discharge blade and both blades moved as a unit to push the compacted material from the compactor housing.

[52] **U.S. Cl.** 214/82
 [51] **Int. Cl.** **B60p 1/00**
 [58] **Field of Search** 214/82

[56] **References Cited**
UNITED STATES PATENTS

3,252,600 5/1966 Brisson et al. 214/82 X

5 Claims, 9 Drawing Figures

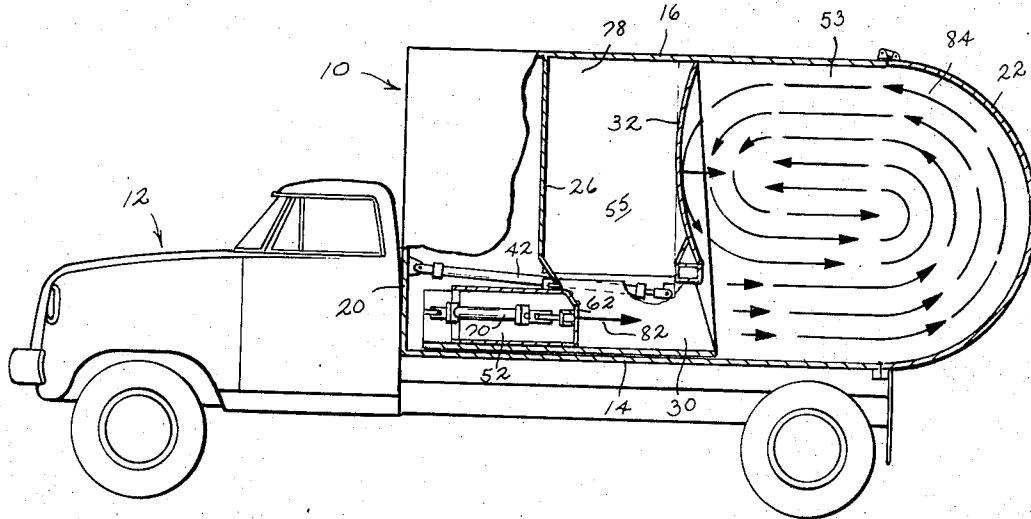


Fig 1
(PRIOR ART)

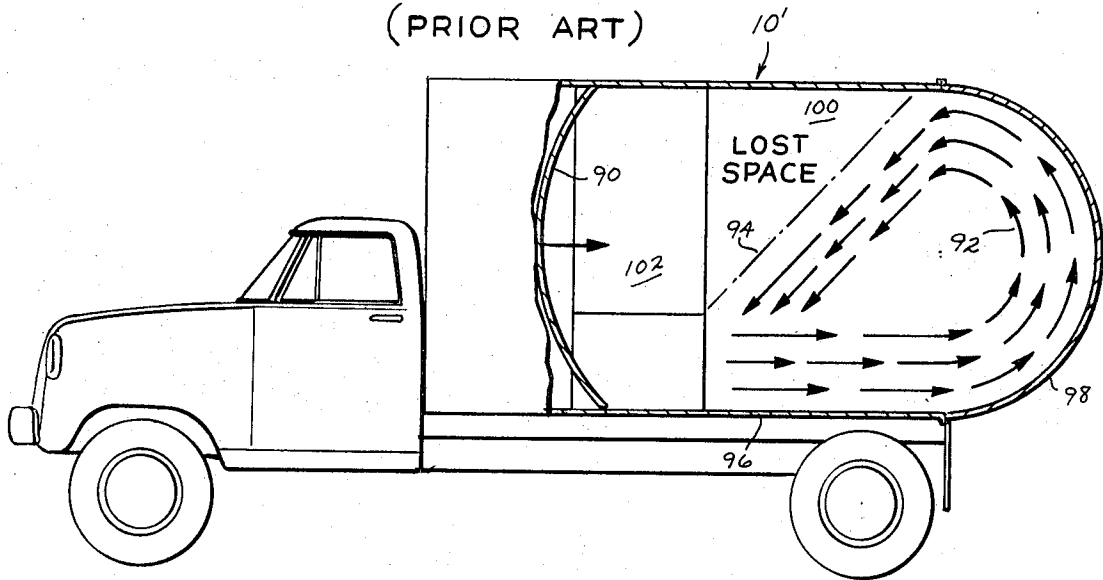


Fig. 2

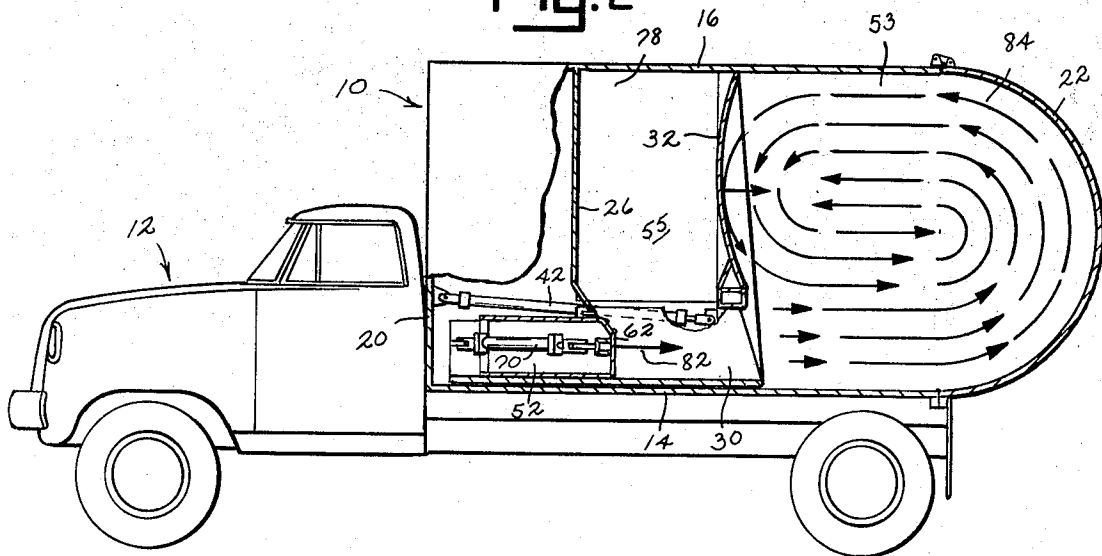


Fig. 3

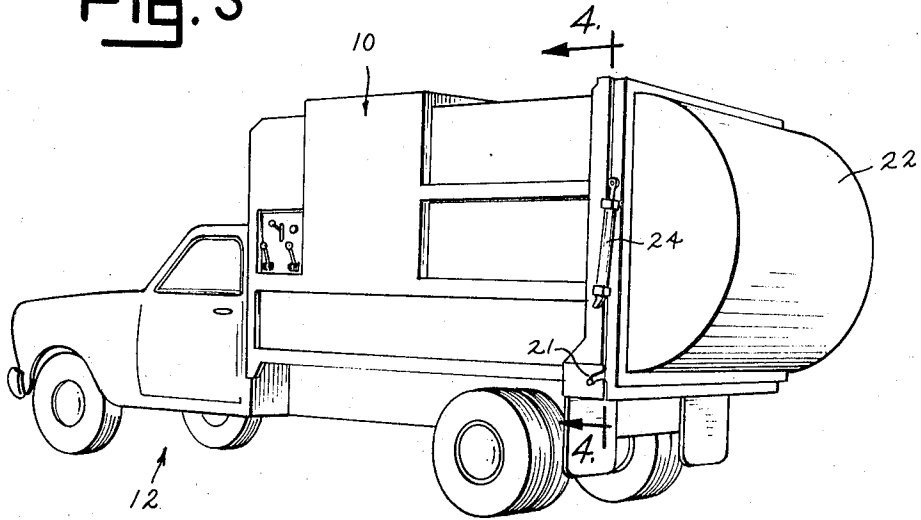


Fig. 4

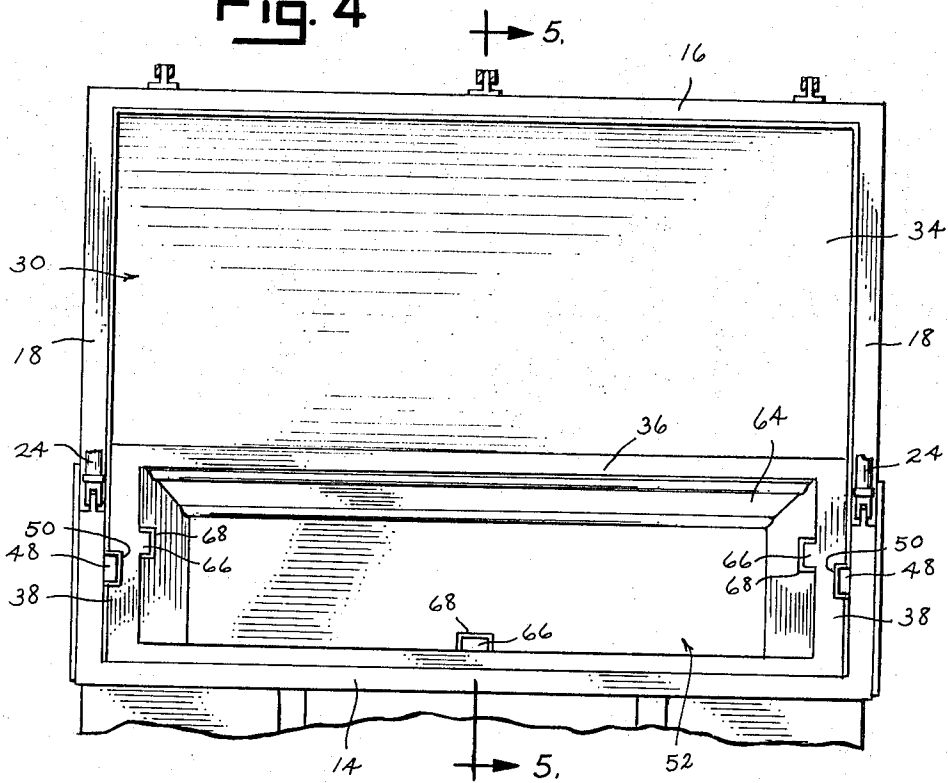


Fig. 5

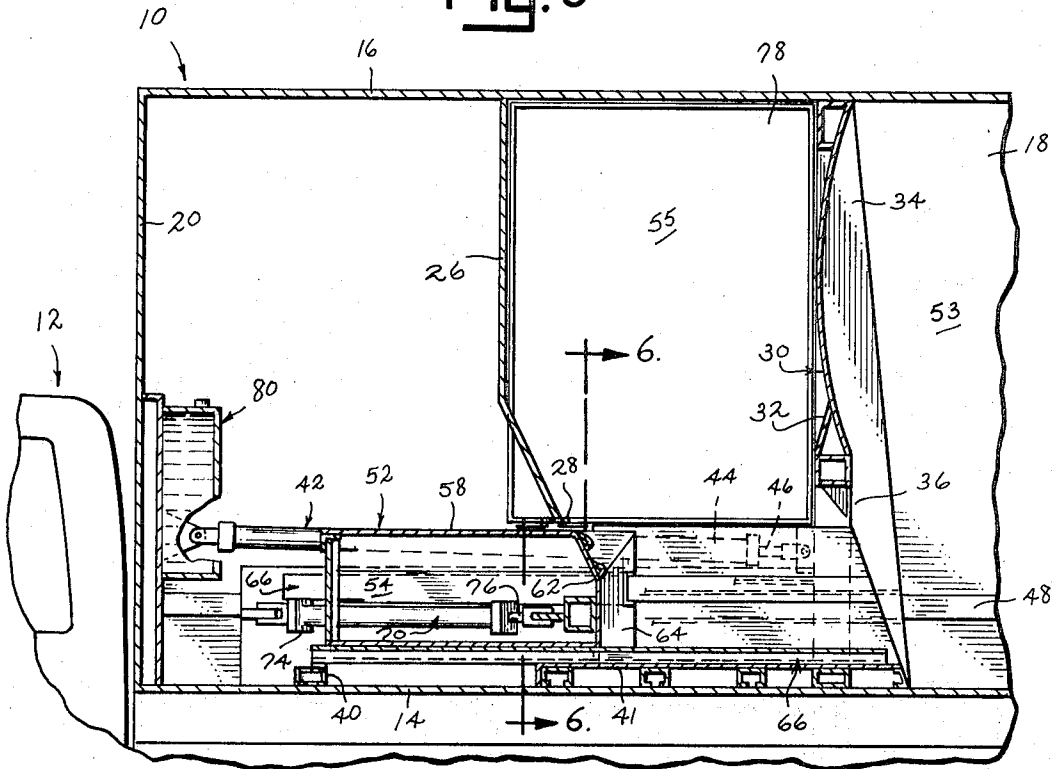
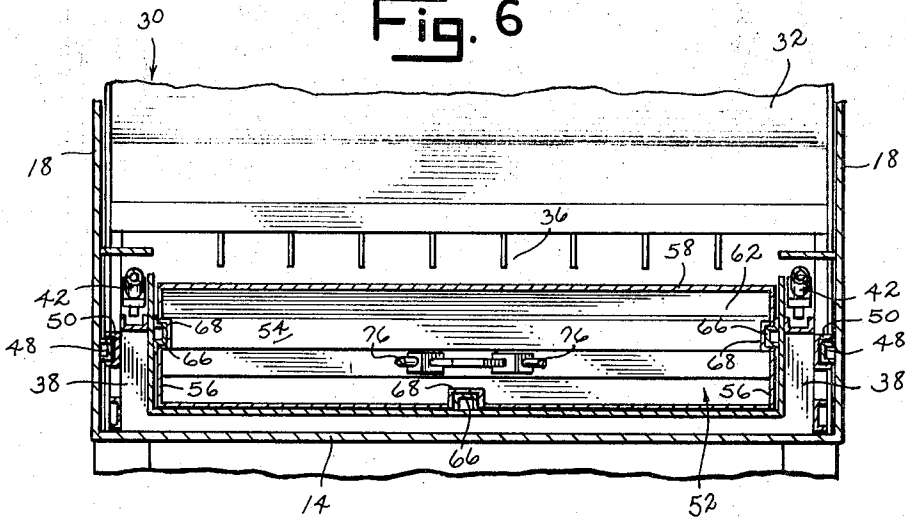


Fig. 6



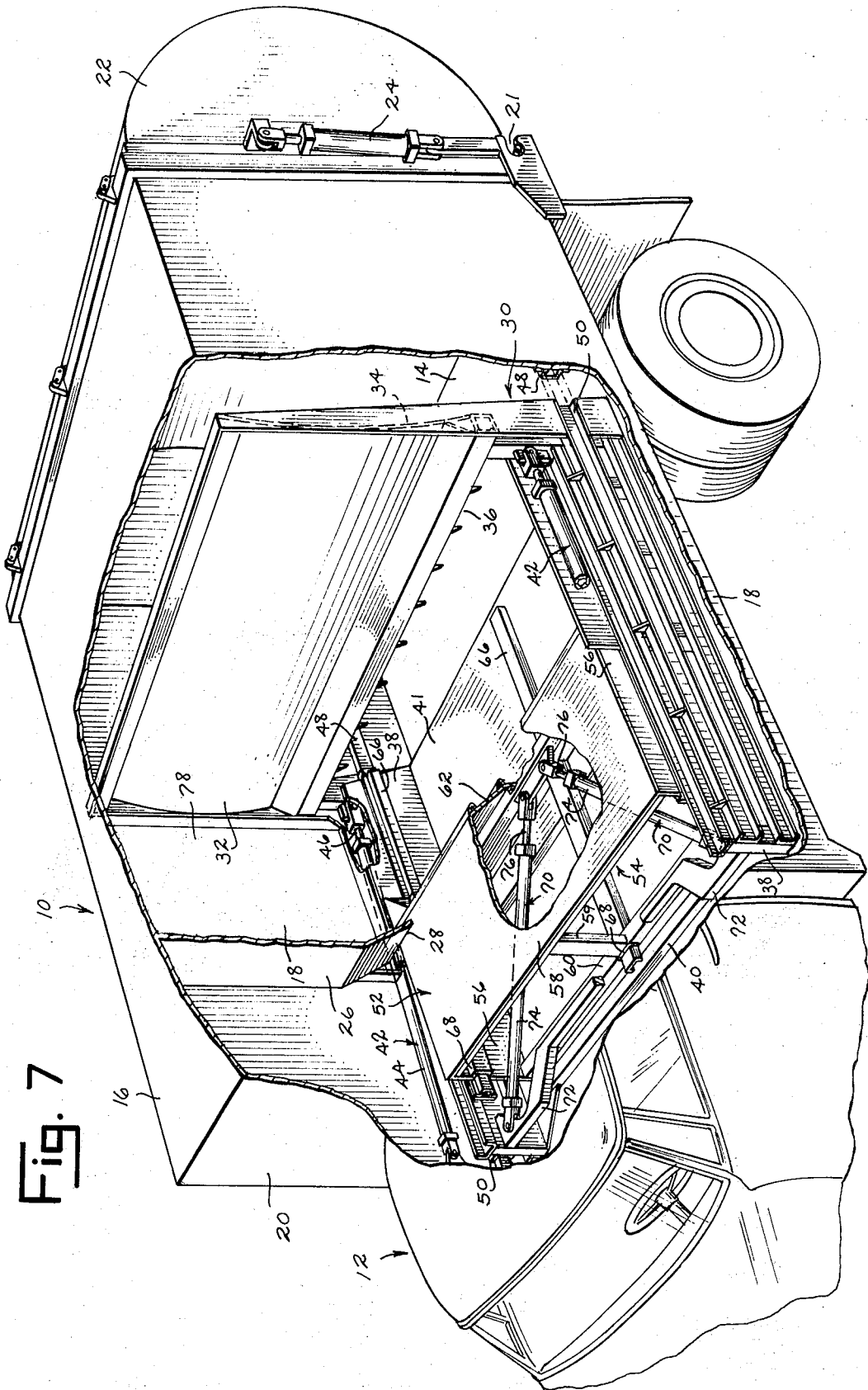
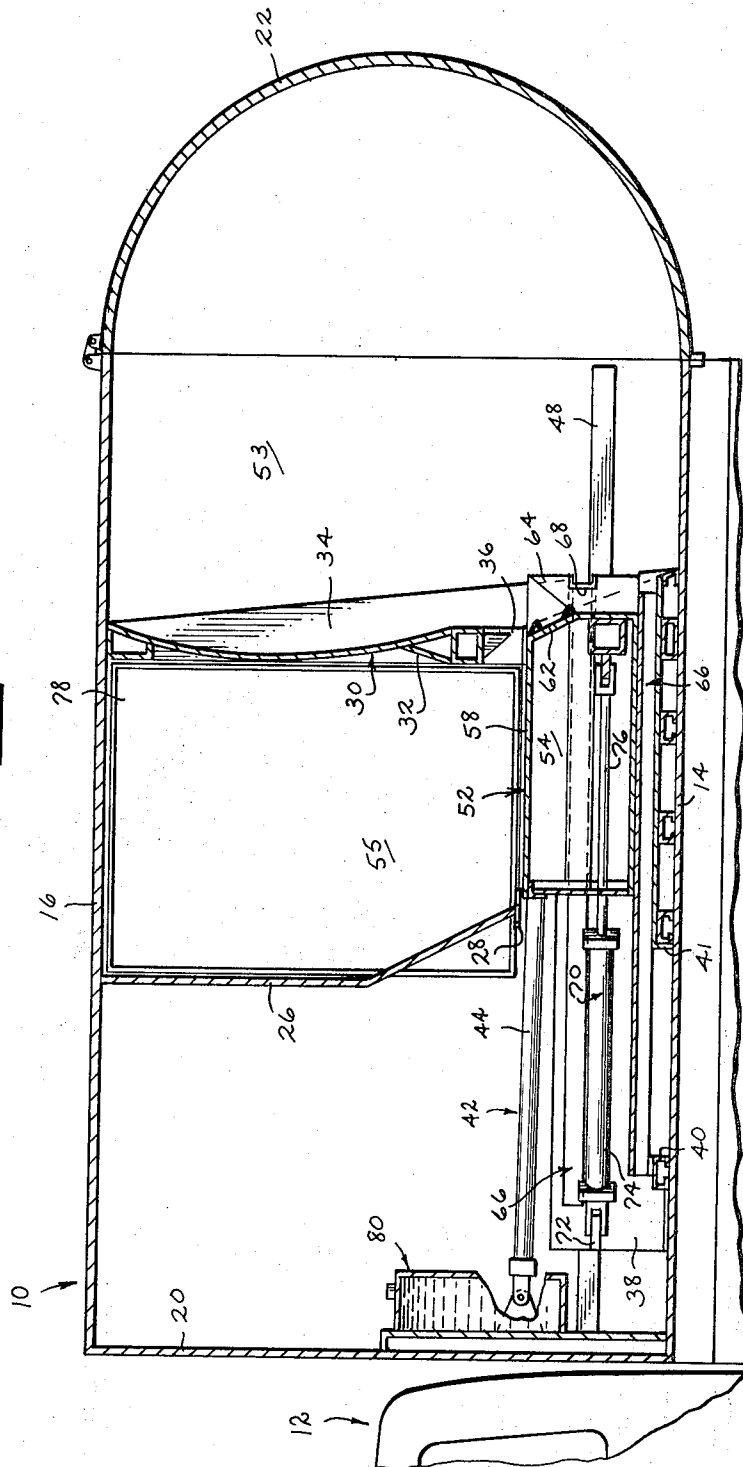


Fig. 8



COMPACTOR FOR REFUSE OR OTHER COMPRESSIBLE MATERIAL

SUMMARY OF THE INVENTION

This invention relates to a compactor for compressible material and will have application to a refuse packer.

The compactor of this invention includes a housing having two longitudinally spaced ends, one of which is open and spanned by a door. A discharge blade and a packer blade are located within the housing between the housing ends. The discharge blade is shiftable between a load position and a discharge position within the housing. The packer blade is shiftable independently of the discharge blade between a load position located rearwardly of the discharge blade and a pack position located at or forwardly of the discharge blade which causes the material as it is placed in the compactor to be pushed into an area within the housing in front of the discharge blade where the material is compacted. When it is desired to unload the compactor, the packer blade is shifted into alignment with the discharge blade and the two blades shifted as a unit into the discharge position for the discharge blade, causing the compacted material within the housing to be pushed through the open end of the housing.

Heretofore it has been a common practice to construct refuse compactors with a single blade which is utilized both for the packing operation and the unloading or discharge operation. The compactor of this invention in utilizing one blade for discharge purposes and a separate blade for packing purposes allows for greater compaction within a unit volume than the single blade prior art compactor units.

Another advantage of the compactor of this invention over prior art compactors is that material products can be introduced into the unit anytime during the packing operation or cycle.

Still another advantage of the compactor unit of this invention over the prior art single blade refuse compactors is that the use of an individual packer blade allows a greater packing pressure to be applied to the product material for a given power input than can be applied to the material when a single large blade is used for both packing and discharging.

Another advantage of the compactor of this invention is that the loading space of the compactor remains constant during the packing cycle, while in the single blade refuse compactors the loading space decreases as the amount of compacted material within the compactor increases.

Accordingly, it is an object of this invention to provide a compactor for compressible material which is of efficient operation.

It is another object of this invention to provide a refuse material compactor in which a maximum amount of refuse can be compacted for a given volume of refuse storage space within the compactor.

Still another object of this invention is to provide a refuse compactor in which the refuse loading area remains of substantially constant volume and which can be loaded during the compacting cycle.

Other objects of this invention will become apparent upon a reading of the invention's description.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of this invention has been chosen for purposes of illustration and description wherein:

FIG. 1 is a side view of a prior art compactor with a portion of the compactor housing removed for illustrative purposes.

FIG. 2 is a side view of the compactor of this invention with a portion of the compactor housing removed for illustrative purposes.

FIG. 3 is a perspective view of the compactor unit of this invention.

FIG. 4 is a sectional end view taken along line 4—4 of FIG. 3.

FIG. 5 is a fragmentary sectional view taken along line 5—5 of FIG. 4.

FIG. 6 is a fragmentary sectional view taken along line 6—6 of FIG. 5.

FIG. 7 is a fragmentary perspective view of the compactor unit of this invention with a portion of the compactor housing removed to show the packer blade of the unit positioned in preparation for loading and compacting.

FIG. 8 is a fragmentary side view of the compactor unit showing the packer blade in its compacting position.

FIG. 9 is a fragmentary side view of the compactor unit showing the discharge and packer blades in a lateral discharge position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment illustrated is not intended to be exhaustive or to limit the invention to the precise form disclosed. It is chosen and described in order to best explain the principles of the invention and its application and practical use to thereby enable others skilled in the art to best utilize the invention.

In the embodiment of the compactor of this invention shown in FIGS. 2—9, the reference numeral 10 refers to a housing which is shown fixedly seated upon the bed of a truck 12. Truck 12 lends mobility to the compactor which, if desired, could be mounted to a suitable fixed foundation or immobile support. Housing 10 of the compactor includes a bottom wall 14, top wall 16, side walls 18, and a front end wall 20. The rear end of housing 10 is spanned by a door 22. Door 22 is hinged to top wall 16 of housing 10 and is shiftable between the closed position shown in FIGS. 2 and 8 and the open position shown in FIG. 9 by means of hydraulic cylinder power units 24. A pin and slot lock 21 or other suitable locking means is utilized to secure door 22 in its closed position during the compacting cycle of the unit. Door 22 has an inner concave configuration whose purpose is well understood in the compactor art. A partition wall 26 is located within housing 10 and extends between side walls 18 and downwardly from top wall 16, terminating in a lower edge 28 which is spaced above bottom wall 14 of the housing.

DISCHARGE BLADE ASSEMBLY

A discharge blade assembly 30 is located within housing 10 and is supported upon housing bottom wall 14 for longitudinal shiftable movement within the housing. Discharge blade assembly 30 includes a blade part 32 having a concave blade front 34. Blade front 34 ex-

tends substantially from one side wall 18 to the other side wall 18 of the housing and from top wall 16 downwardly, terminating in a lower edge 36 which is at the same approximate level as lower edge 28 of partition wall 26. Discharge blade assembly 30 includes spaced side frame members 38 which support blade part 32 and which are connected by transverse frame members 40-41. Transverse frame members 40-41 preferably rest upon bottom wall 14 of housing 10 with frame members 38 being positioned adjacent side walls 18 of the housing.

A pair of hydraulically actuated cylinder power units 42 are positioned on opposite sides of housing 10 and are connected between front end wall 20 of the housing and discharge blade assembly 30, preferably adjacent its blade part 32. Each hydraulic cylinder power unit 42 includes a cylinder part 44 and a piston part 46. Actuation of power units 42 causes the extension and retraction of piston parts 46 thereof and the resulting longitudinal shiftable movement of discharge blade assembly 30 over bottom wall 14 from its load position, illustrated in FIGS. 2, 5, 7 and 8, and its discharge position, illustrated in FIG. 9. To guide the shiftable movement of discharge blade assembly between its load and discharge positions, a pair of guide rails 48 are secured to side walls 18 of the housing. Guide rails 48 fit slidably within longitudinally extending channel members 50 which form a part of side frame members 38 of blade assembly 30.

PACKER BLADE ASSEMBLY

A packer blade assembly 52 is located within housing 10 for longitudinal shiftable movement beneath the lower edge 28 of partition wall 26 and lower edge 36 of discharge assembly blade front 34. Packer blade assembly 52 includes a box frame part 54 having side frame members 56 and a connecting top panel 58. Box frame part 54 of blade assembly 52 includes a transverse frame member 60 which extends between side frame members 56. A blade part 62 having a blade front 64 extends across box frame part 54 and is joined to the top panel 58 and side frame members 56 of the frame part. A vertical support 59 extends between panel 58 and frame member 60. Packer blade assembly 52 fits between side frame members 38 of discharge blade assembly 30 and is shiftable longitudinally within housing 10 relative to blade assembly 30. Discharge blade assembly 30 is provided with guide rails 66 which extend along side frame members 38 and over transverse frame members 40 and 41 of the blade assembly. Side frame members 56, transverse frame member 60 and blade part 62 of packer blade assembly 52 have channels 68 formed therein. Guide rails 66 of discharge blade assembly 30 fit slidably within channels 68 of packer blade assembly 52 and serve to guide longitudinal movement of the packer blade assembly from the load position illustrated in FIGS. 2, 5 and 7 to the pack position shown in FIG. 8 with the discharge blade assembly being held stationary by power units 42.

Top panel 58 of packer blade assembly 52 is constructed so as to pass just under lower edge 28 of partition wall 26 and lower edge 36 of discharge assembly blade front 34 during movement of the packer blade assembly between its load and pack positions. A pair of hydraulically actuated cylinder power units 70 are connected between discharge blade assembly 30 and packer blade assembly 52 for the purpose of shifting

the packer blade assembly between its load and pack positions. Power units 70 are carried by blade assembly 30 and preferably extend between a transverse frame member 72 forming a part of blade assembly 30 and blade part 62 of packer blade assembly 52. Each power unit 70 includes a cylinder part 74 and a piston part 76 which upon extension and retraction cause packer blade assembly 52 to be shifted relative to the discharge blade assembly between its load and pack positions.

Housing 10 of the compactor has a material loading opening 78 formed in at least one and preferably each of its side walls 18. Each loading opening 78 is located between partition wall 26 and blade part 32 of the discharge blade assembly when the blade assembly 30 is located in its load position illustrated in FIGS. 2, 5 and 7. Transverse frame member 41 of discharge blade assembly 30 extends under the lower edge 28 of partition wall 26 when the discharge blade assembly is in its load position and under lower edge 36 of discharge assembly blade front 34. As best shown in FIGS. 5 and 7, blade front 64 of packer blade assembly 52 is located so as to be in substantially continuous blade-defining alignment with partition wall 26 at its lower edge 28 when the packer blade assembly is in its load position. As best shown in FIG. 8, blade front 64 of packer blade assembly 52 is located in substantial blade-defining alignment with blade front 34 of discharge blade assembly 30 at its lower edge 36 when the packer blade assembly is shifted into its pack position. It is to be further noted that top panel 58 of packer blade assembly 52 extends from lower edge 28 of partition wall 26 to lower edge 36 of discharge blade assembly blade front 34 when the packer blade assembly is in its pack position. If desired, sliding or hinged doors (not shown) may be provided to cover openings 78 in housing 10.

A suitable hydraulic pump and power unit, designated generally by the reference numeral 80, is located within housing 10, preferably between partition wall 26 and front end wall 20 of the housing. Hydraulic pump and power unit 80 is connected by suitable conduits (not shown) to power units 42, 70, and, if desired, to door power units 24. Suitable actuator controls which are accessible from either the cab of truck 12 or exteriorly of housing 10 are provided and connected into power unit 80 for the purpose of actuating the power units 42, 70 and 24.

SEQUENCE OF OPERATION OF COMPACTOR UNIT

With discharge blade assembly 30 located in its load position and packer blade assembly 52 located in its load position, as shown in FIGS. 2, 5 and 7, refuse or similar compressible material products are loaded into housing 10 through openings 78 and deposited upon transverse frame member 41 of discharge blade assembly 30, in front of blade part 62 of the packer blade assembly. Cylinder power units 70 are then actuated to cause packer blade assembly 52 to move toward the open end of housing 10 in the direction of arrow 82 in FIG. 2 into its pack position illustrated in FIG. 8. As blade assembly 52 is shifted into its pack position, the refuse resting upon transverse frame member 41 of discharge blade assembly 30 in front of blade part 62 is pushed under lower edge 36 of discharge assembly blade part 32 and into that area 53 of housing 10 be-

tween blade part 32 and door 22. During movement of the packer blade assembly 52 between its load and its pack positions, discharge blade assembly 30 remains stationary.

Additional refuse can be loaded through opening 78 and deposited within housing 10 as packer blade assembly 52 is being shifted between its load and pack positions. Refuse deposited through housing opening 78 while the packer blade assembly is located in its pack position will fall upon top panel 58 of the blade assembly and be retained by partition wall 26 which prevents the added refuse from passing into the front portion of housing 10 where hydraulic power unit 80 is located. As power units 70 cause packer blade assembly 52 to shiftably return to its load position, the top panel 58 of the blade assembly moves relative to the added refuse until the material is able to fall onto transverse frame member 41 of the discharge blade assembly 30, at which time the packer blade assembly 52 can again be shifted into its pack position to cause this added refuse to be pushed into the storage area 53 of housing 10 to the front of blade front 34 of the discharge blade assembly part 32.

As the refuse accumulates in storage area 53 between discharge assembly blade part 32 and closed door 22, it moves in the general circular direction of arrows 84 seen in FIG. 2, first contacting the inner concave surface of locked door 22 and later the concave surface of blade front 34 of discharge assembly blade part 32 as compaction of the refuse takes place. At no time during the compacting operation is it necessary to shift discharge blade assembly 30 from its load position. The relatively small compact area of blade front 64 of packer assembly blade part 52 causes a high compressive force to be exerted upon the refuse as it is urged by the packer blade part into the refuse storage area 53, thus resulting in a high degree of compaction of the refuse within the storage area. If desired, the controls for power units 70 of packer blade assembly 52 can be cycled so that the packer blade assembly is placed in continuous reciprocating motion during loading of the compactor. Also if desired, blade front 64 of packer assembly blade part 62 need not stop at lower edge 36 of blade front 34 of the discharge blade assembly during its compaction cycle. The packer blade assembly can be designed so that when in its pack position its blade front 64 protrudes well beyond the lower edge 36 of discharge blade assembly 30 and into the storage area 53 of housing 10.

Once the storage area 53 between door 22 and discharge blade assembly 30 has been filled with compacted refuse, the shiftably movement of packer blade assembly 52 is stopped with its blade front 64 in substantial blade-defining alignment with blade front 34 of discharge blade assembly 30 which has remained in its loading position. Power units 42 are now actuated to move discharge blade assembly 30 from its load position shown in FIG. 8 into its discharge position shown in FIG. 9, with door 22 being opened, causing the compacted refuse within storage area 53 to be pushed out the open rear end of housing 10. During movement of discharge blade assembly 30 from its load into its discharge position, packer blade assembly 52 which is carried upon blade assembly 30 moves with the discharge blade assembly with its blade front 64 being held immovable relative to the discharge blade assembly and remaining in substantial alignment with blade front 34.

Once the refuse is pushed from housing 10, discharge blade assembly 30 and packer blade assembly 52 are moved by power units 42 and 70 into their respective load positions to begin the compaction cycle again.

During the operational sequence of the compactor, the operator may find that the loading area 55 between partition wall 26 and blade part 32 of discharge blade assembly 30 still contains refuse material at the time the storage area 53 between discharge blade assembly 30 and door 22 becomes filled. When this occurs, truck 12 is driven to the discharge site and door 22 is opened.

The packer blade assembly 52 is then actuated so as to cause all the refuse within loading area 55 to be urged into the storage area 53 with the excess compacted refuse within the storage area falling from the open end of housing 10. After the loading area 55 of housing 10 is empty, the blade front 64 of packer blade assembly 52 is brought into alignment with blade front 34 of discharge blade assembly 30 and the discharge blade assembly moved from its load into its discharge position causing the remaining refuse within the storage area 53 to be pushed out of the open rear end of the housing.

The prior art compactor shown in FIG. 1 includes a one-piece packer blade 90 which is shiftably longitudinally within housing 10' of the compactor. Actuation of packer blade 90 of the prior art compactor causes the refuse material to flow in the general direction of arrows 92 of FIG. 1 and to assume the general position bounded by broken line 94, housing bottom wall 96 and door 98. In the prior art compactor, not only is there wasted or lost space 100 in the storage area, but continued compaction of refuse will cause the loading area 102 in the compactor to be reduced in volume. In the applicant's compactor illustrated in FIG. 2 and heretofore described, the volume of loading area 55 in the compactor remains the same during the compaction cycle.

It is to be understood that the invention is not to be limited to the details herein given, but may be modified within the scope of the appended claims.

What I claim is:

1. A compactor for refuse and other compressible material comprising a housing having two ends and including a bottom wall and two side walls, one of said housing ends being open, a door spanning said open housing end and being shiftably between open and closed positions, a discharge blade means and a packer blade means located within said housing, said discharge blade means including a blade front and having a load position between said housing ends in which said blade front in conjunction with said door when in its closed position defines a material storage area, said discharge blade means being shiftably from its load position toward said open housing end into a discharge position adjacent said open end, said packer blade means including a blade front having an upper edge and further including an integral horizontal panel extending rearwardly of the blade front of the packer blade means at said upper blade front edge, said packer blade means having a load position in which its blade front is positioned spacedly rearwardly of the blade front of said blade discharge means to define a material loading area between said blade fronts and being shiftably from its load position independently of said discharge blade means toward said open housing end into a pack position in which the blade front of said packer blade

7

8

means is located adjacently at or forwardly of the blade front of said discharge blade means with said discharge blade means located in its load position to cause material in said material loading area to be pushed into said material storage area, the blade front of said discharge blade means including a lower edge spaced from said housing bottom wall, said packer blade means horizontal panel being slightly spaced below the lower edge of the blade front of said discharge blade means when said packer blade means is in its pack position, a partition wall located between the two ends of said housing and extending downwardly within the housing and terminating in a lower edge located at substantially the same level as the lower edge of the blade front of said discharge blade means, said partition wall being spaced rearwardly of the blade front of said discharge blade means in all operative positions of the discharge blade means and constituting a part of said material loading area, said packer blade means horizontal panel underlying the lower edge of said partition wall and being only slightly spaced therefrom in all operative positions of said packer blade means to prevent said material from accumulating behind the blade front of said packer blade means during shiftable movement of the packer blade between its load and pack positions, means for shifting said discharge blade means between its load and discharge positions and means for shifting said packer blade means between its load and pack positions, said packer blade means being positionable by its said shifting means with its blade front in general alignment with the blade front of said discharge blade means when said discharge blade means is in its load position, including means wherein said aligned packer blade means shifts with said discharge blade means from its load position into its discharge position with

the blade front of the discharge blade means located at the edge of said open housing end to push said material from said storage area out said open housing end with said door in its open position, said discharge blade means including a frame part supporting said discharge blade means blade front, said means for shifting said discharge blade means extending between said housing and said discharge blade means for moving said frame part over said housing bottom wall, said packer blade means carried by said frame part, said means for shifting said packer blade means extending between said discharge blade means and said packer blade means, and a vehicle, said housing carried upon said vehicle.

2. The compactor of claim 1 wherein said packer blade means is carried by said discharge blade means for shiftable movement with said discharge blade means between its load and discharge positions.

3. The compactor of claim 1 whereby the area of the blade front of said discharge blade means exceeds the area of the blade front of said packer blade means.

4. The compactor of claim 1 wherein at least one of said housing side walls has an opening therein for loading said material into said material loading area, said opening located between said partition wall and the blade front of said discharge blade means in communication with said material loading area.

5. The compactor of claim 1 wherein the combination of the blade front of said discharge blade means when in its load position, said bottom wall and top walls, and said door having a concave inner face define a generally circular guide means for said refuse as said refuse is pushed into said storage area by said packer blade means.

* * * * *

40

45

50

55

60

65