United States Patent [19]

Melos

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[54] **REFUSE HANDLING DEVICE**

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[52] **U.S. Cl.**..... **100/218,** 100/229 A, 100/269 R, 214/304, 214/307

[51] **Int. Cl.**..... **B30b 15/32**

[58] **Field of Search**..... 100/218, 229 A, 269 R; 214/302, 304, 307, 314, 303; 298/23 D, 23 DF; 134/62

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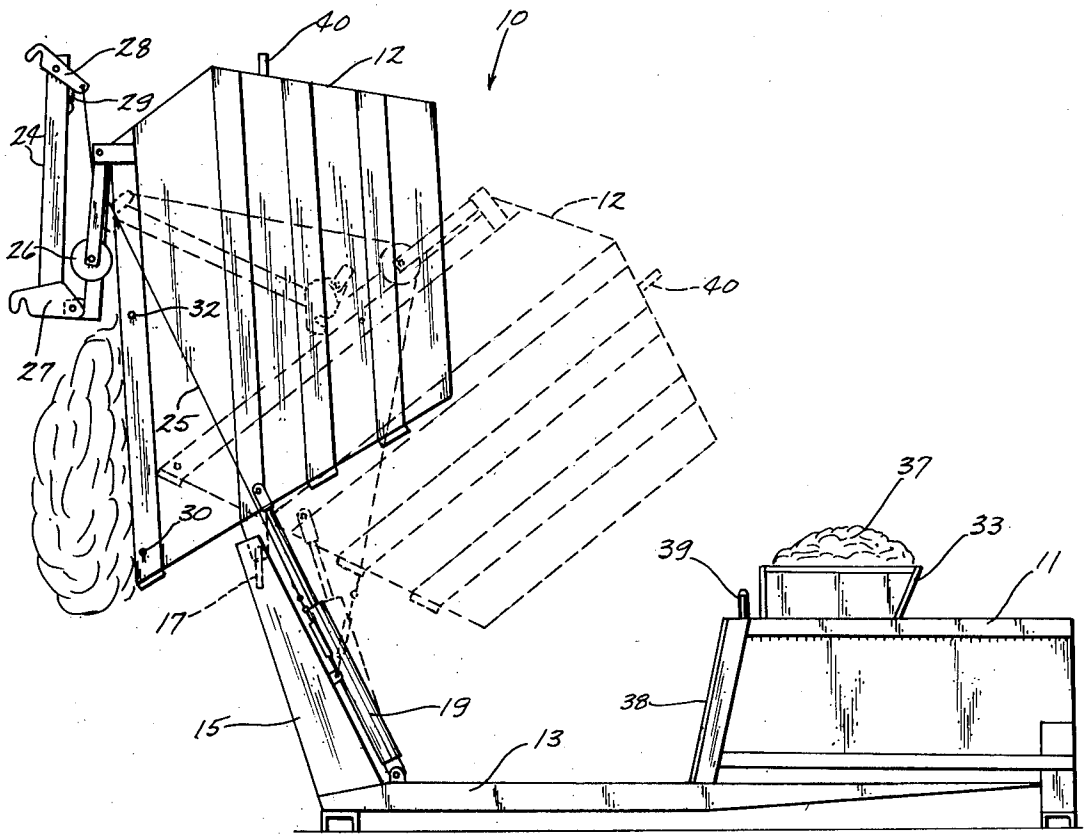
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[57] **ABSTRACT**

A refuse handling device comprising a base frame, a packer unit, and a self-dumping container. The packer unit packs refuse and forces it into the container. The container is connected to upstanding frame members, and upon initial extension of hydraulic rams for dumping the container it moves relative to the frame members to break away from the packer unit. Upon continued extension of the hydraulic rams the container is pivoted to a dumping position. The container has a folding door over its dump opening which is normally latched shut and unlatches and folds open automatically upon extension of the dumping rams. A seal is provided between the packing unit and the container, and guide pins ee provided on the packer unit to help align the container with respect to the packing unit.

3 Claims, 9 Drawing Figures



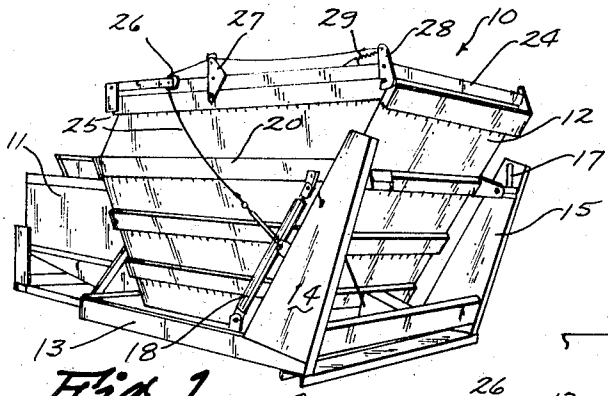


Fig. 1

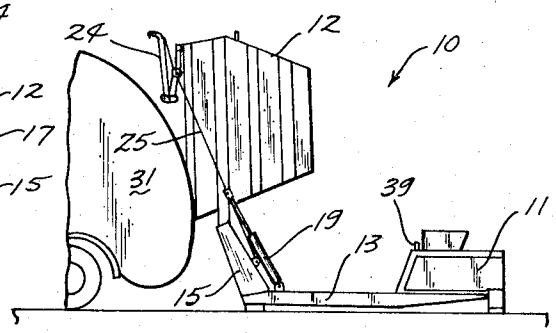


Fig. 9

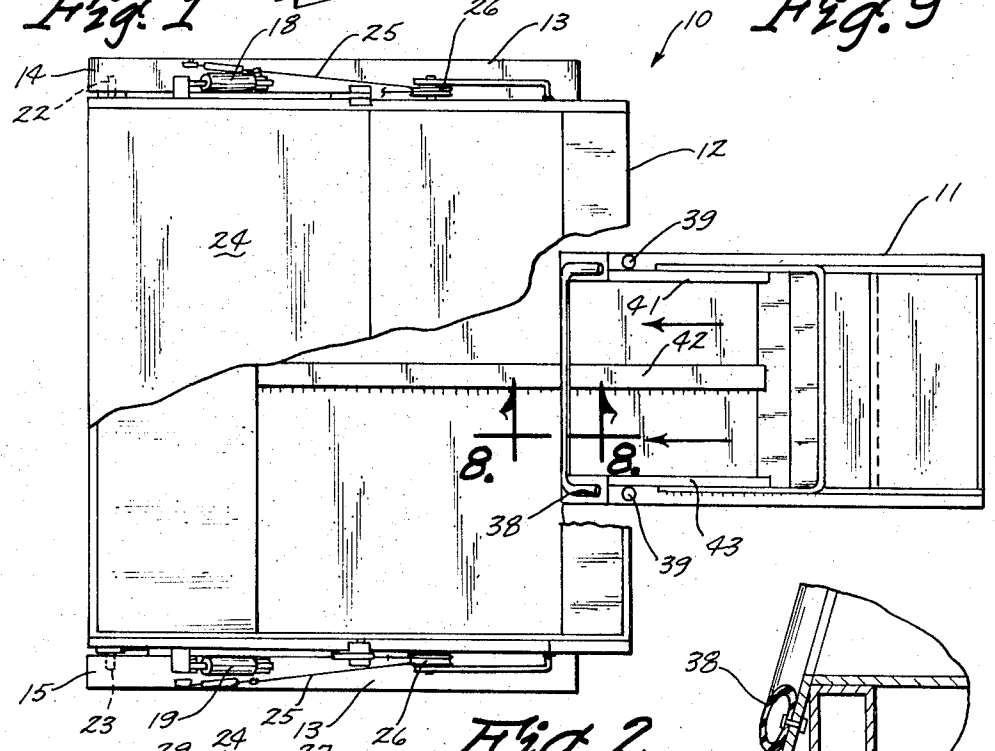


Fig. 2

Fig. 8

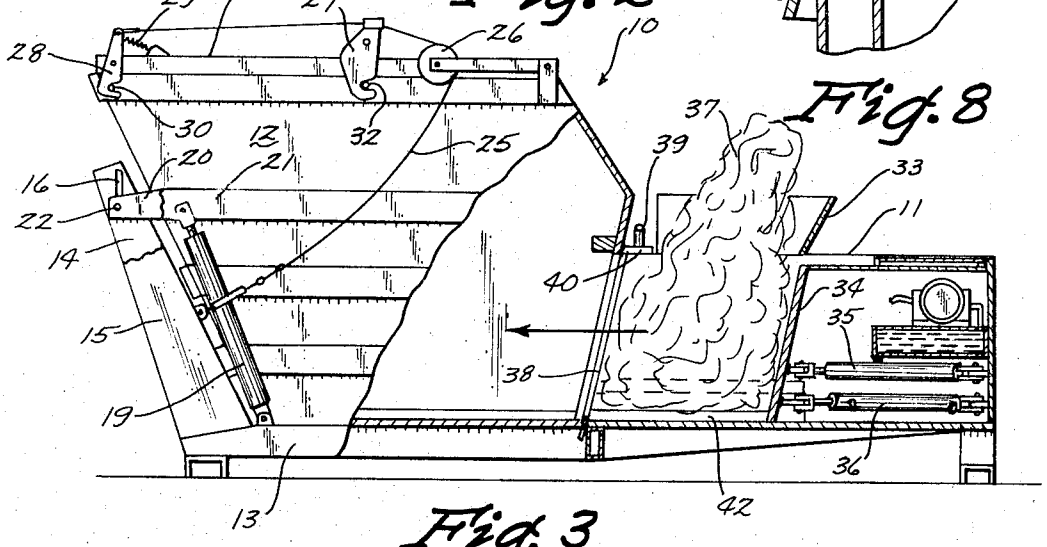


Fig. 3

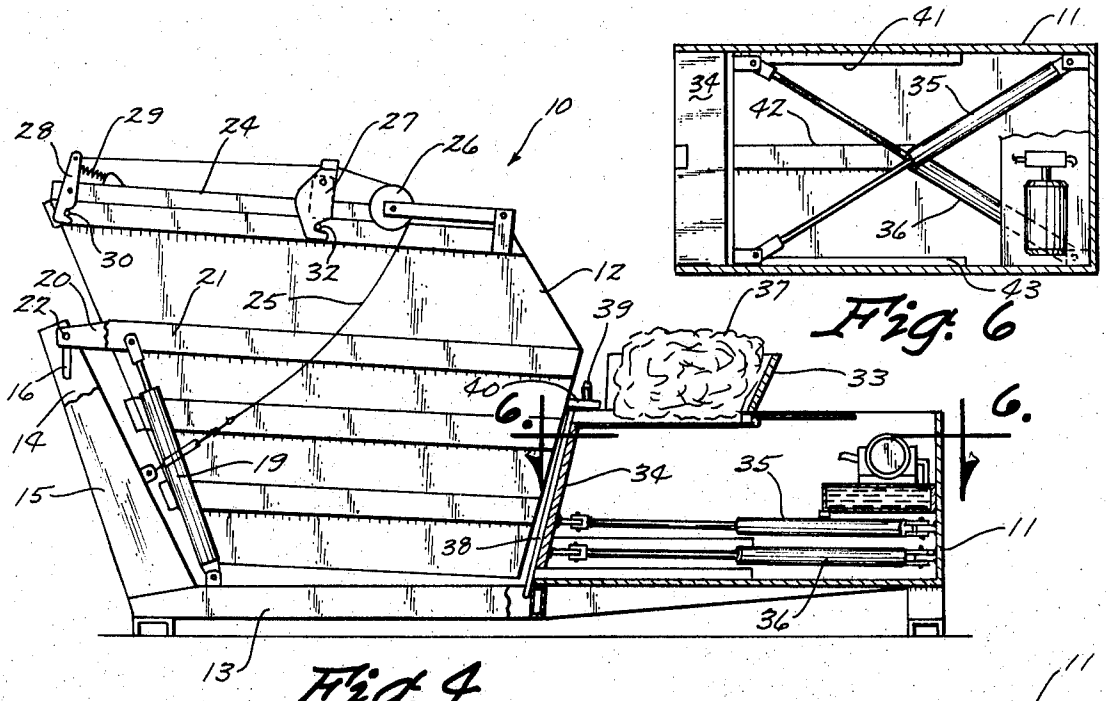


Fig. 4

Fig. 6

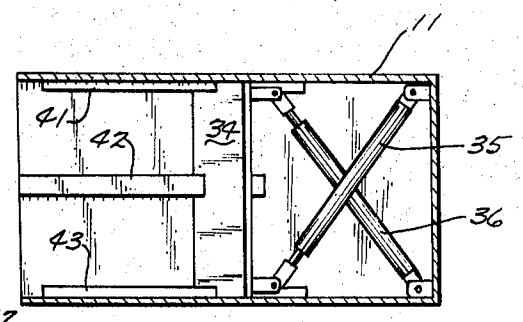
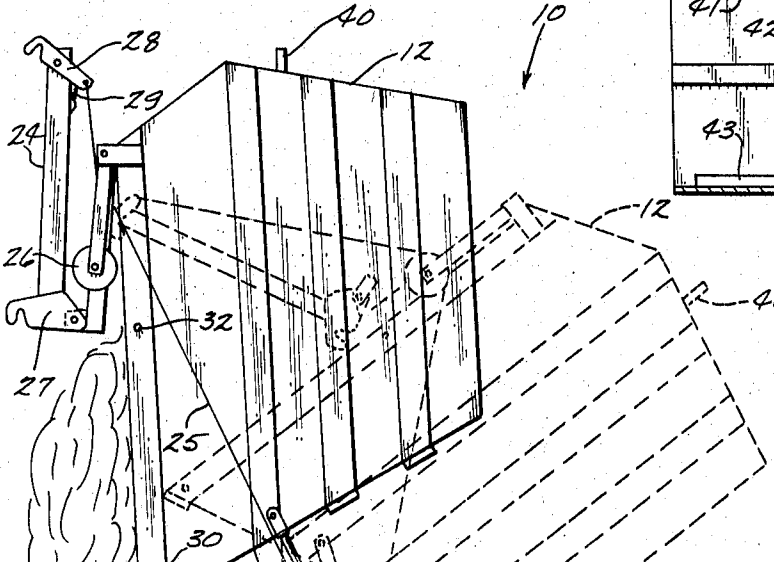


Fig. 7



REFUSE HANDLING DEVICE

BACKGROUND OF THE INVENTION

I. Field of the Invention

This invention relates to refuse handling devices, and more particularly to devices of the type which receive refuse, compact it into a reduced volume, and dump the compacted refuse into a means for transporting it to a disposal site, such as a landfill location.

The need for compaction of refuse has become critical in many areas as an ecology consideration. Further, the compaction of refuse allows for more efficient handling and transportion thereof.

II. Description of the Prior Art

Many devices are presently available for compacting and/or dumping compacted refuse. These devices include both portable and stationary units, and include separate units as well as combination devices. A comprehensive description of several hundred such prior art devices appears in the ninth edition of Sanitation Industry Yearbook, published by RRJ Publishing Corporation of 150 East 52nd Street, New York, N.Y. 10022. Additionally, related types of equipment are described in U.S. Pat. Nos. 3,403,620; 3,541,952; 3,554,120; 3,585,925 and 3,610,139.

The prior art devices are satisfactory to varying degrees. However, there is a continuing need for improved devices in this field.

SUMMARY OF THE INVENTION

According to the present invention, a refuse handling device having advantages and improvements not previously available is provided.

Briefly, a refuse handling device in accordance with this invention has a base frame, a packer, and a self-dumping container. The self-dumping container is connected to the base frame for controlled movement with respect to both the base frame and a packer unit supported by the base frame. The packer unit and the container have matching openings such that the compacted refuse can pass from the packer into the container.

Dumping means, preferably hydraulic rams, are provided for moving the container from a filling position to a dumping position.

The connection between the container and the base frame is such that upon initial operation of the dumping means the container moves away from the packer, and upon continued operation of the dumping means, the container pivots relative to the base frame to a dumping position.

The container includes a latchable cover to prevent the packer from forcing refuse out the dumping opening during packer operation. The cover automatically unlatches upon initial operation of the dumping means.

It is an object of the present invention to provide an improved combination refuse packer and dumper.

It is a further object to provide an improved refuse handling device including a packer unit and a self-dumping container.

The above objects as well as additional advantages are provided by the present invention as will be apparent from consideration of the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a refuse handling device in accordance with the invention.

FIG. **2** is a top plan view thereof, partially cut away.

FIG. **3** is a side elevational view thereof, partially cut away.

FIG. **4** is a side elevational view, partially cut away, showing the device upon initial extension of the dumping means.

FIG. **5** is a side elevational view showing the device in a dumping position.

FIG. **6** is a cross-sectional view taken along the line **6—6** of FIG. **4.**

FIG. **7** is a cross-sectional view taken along the line **6—6** of FIG. **4** with the rams in a retracted position.

FIG. **8** is an enlarged cross-sectional view taken along the line **8—8** of FIG. **2.**

FIG. **9** is a side elevational view showing the device of the invention being unloaded into a rear end loader.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The invention will now be described in detail by reference to the several views of the drawings, which illustrate the preferred form of the invention.

As shown in FIGS. **1 – 5** and **9,** a refuse handling device in accordance with the preferred embodiment of the invention is shown generally at **10.** The device **10** includes a packer unit **11,** a self-dumping container **12,** and a base frame **13.** The base frame **13** includes a pair of upstanding frame members **14** and **15** (FIG. **1**).

The upstanding frame members **14** and **15** have vertically oriented slots **16, 17** formed therein respectively.

One end of each of a pair of hydraulic rams **18, 19** is attached to base frame **13** and the other end of each ram **18, 19** is connected to the container at stiffening members **20, 21** respectively. Stiffening members **20, 21** extend beyond the forward end of container **12** (see FIGS. **1** and **3**) and have pins **22, 23** respectively extending therefrom into slots **16, 17** in upstanding frame members **14** and **15.**

The container **12** has a foldable door **24** which automatically is latched shut when the container is in the filling position. The door opening and latching mechanism on each side of the container is identical, so the mechanism on one side only will be described. As seen in FIG. **4,** a flexible line **25** is anchored to an upstanding frame member and extends over a sheave **26** supported by the back half of door **24,** then over a first latch **27** attached to the forward half of door **24,** and finally to a second latch **28** pivotally connected to the forward edge of door **24** and biased in a latched position by spring **29.** As best seen in FIG. **5,** as the container **12** is tilted, the flexible line **25** causes second latch **28** to open away from its associated pin **30** and then pivots the forward half of the door **24** into a partially open position as shown by dotted lines in FIG. **5.** Continued tilting of container **12** to the full dumping position, shown in full line in FIG. **5,** opens the forward half of door **24** clear of a rear end loader **31** as seen in FIG. **9.** It will be seen that the folding feature of door **24** enables the rear end loader **31** to be positioned very close to the container **12** (FIG. **9**). The back half of door **24** can be opened away from the container **12** (FIG. **5**) to facilitate emptying of stuck material from the container, for example. It will be appreciated that

the middle latch **27** pivots away from its associated pin **32** (FIG. **5**) upon opening of the forward half of door **24.** Upon returning container **12** to the filling position, the door **24** closes by gravity and automatically latches in the position shown in FIG. **4.** Without an automatically latching door, there would be a problem of refuse being pushed out the top of container **12** as packer unit **11** forces material into a full container. This would lead to spills, as is apparent.

The packer unit **11** includes a filling chute **33** (FIGS. **3** and **4**) at the top forward portion thereof. A packing head **34** is mounted for reciprocating sliding movement within the packer unit **11** in response to extension and retraction of packing rams **35** and **36** (FIGS. **3, 4, 6** and **7**). The packing rams **35** and **36** are mounted in an X configuration as seen in FIGS. **6** and **7** to reduce the overall length of the packer unit. Guide rails **41, 42** and **43** on frame **13** (FIG. **7**) guide packing head **34** during the operation of packer unit **11.**

As is apparent from FIG. **3,** for example, refuse **37** is fed into the packer unit when the packing head **34** is retracted. Extension of the rams **35** and **36** to the position shown in FIG. **4** then forces refuse through an outlet in the forward end of packing unit **11** into an opening at the rear of container **12** in registration with the packer opening. As seen in FIGS. **2** and **8,** a flexible sealing strip **38** is provided between the packer unit and the container to minimize spillage and to reduce the noise level of the device.

As seen in FIGS. **2 – 5,** guide pins **39** on either side of the top front of the packing unit engage pin receiving means **40** on container **12** to maintain proper alignment between the packer unit and the container.

The operation of the device will now be briefly described. The device **10** is initially charged with refuse **37** (FIG. **3**). The packer unit **11** is then operated to push refuse into container **12.** Repetition of the filling and packing is continued until container **12** is filled with compacted refuse. Note that during filling of container **12** the pins **22** and **23** are positioned at the bottoms of slots **16** and **17.**

When the filled container is to be dumped, the dumping rams **18** and **19** are extended. Initial extension of these rams causes the pins **22** and **23** to move upwardly in slots **16** and **17** to the position shown in FIG. **4.** Note that this also results in the container **12** being moved slightly away from the sealing strip **38** around the packer outlet opening. This can be seen by comparing the relative positions of container **12** in FIGS. **3** and **4.**

Continued extension of dumping rams **18** and **19** causes the container to pivot as seen in FIG. **5.** Simultaneously, the door **24** is folded back as also seen in FIG. **5.** After the compacted refuse has been dumped, as for example into a rear end loader **31** as seen in FIG. **9,** the rams **18** and **19** retract, returning the container to the position shown in FIG. **3.** The door **24** automatically closes and latches during this step, and the container is guided into position with the help of guides pins **39** cooperating with guide pins receiving means **40.** The device **10** is then ready to compact additional refuse.

The hydraulic system for the illustrated preferred embodiment is made up of conventional controls, piping, and motors, and a detailed description is not necessary.

Many advantages are provided by the device as described above. The self-dumping ability avoids the requirements of a special dumping mechanism on the equipment the compacted refuse is dumped into, so that any rear end loader or other means can be used to receive the compacted refuse.

The specific connection between the frame **13** and the container **12** enables the container to move away from the packer **11** upon initial operation of the dumping rams. The seal between the packer and the container minimizes spillage and reduces the noise level of the device, and the unique design allows the container to be hydraulically pressed against the seal. The X configuration of the packing rams minimizes the space requirement for the device. The automatic latching and unlatching of the door **24,** as well as the automatic folding thereof, reduce labor requirements and prevent spillage resulting from compacting refuse into an open container. The guide pins align the container with the packer after each dumping, again minimizing spillage.

The above detailed description of the preferred embodiment of the invention is intended to be illustrative, rather than limiting. It will be apparent that numerous modifications and variations could be made within the true scope of the invention, which is to be defined by the appended claims.

I claim:

1. A refuse handling device including:

a frame having a base section and a pair of upstanding frame members with vertically oriented slots formed in the upper portion thereof;

a hydraulically operated packer unit mounted on the base section of the frame and including an outlet at one end thereof through which compacted refuse may be expelled;

a container pivotally connected to the upstanding frame members and including an inlet opening in registration with the outlet opening of the packer unit when the container is in a filling position;

a pair of hydraulic rams rigidly connected at one end to the base section of the frame and connected at the other end to the container;

pivot pins attached to the container and moveable within the slots of the upstanding frame members, the pins being moved upwardly within the slots upon initial extension of the hydraulic rams and the container being pivoted to a dumping position upon cotinued extension of the hydraulic rams; and

a foldable door over the top of the container, the folding door being automatically latched shut when the container is in a filling position and being automatically unlatched and folded open upon extension of the hydraulic rams.

2. The refuse handling device of claim **1** wherein guide pins are provided on the packing unit and guide pin receiving means are provided on the container.

3. The refuse handling device of claim **1** wherein a flexible seal is provided between the outlet of the packer unit and the inlet opening of the container, and wherein the container moves away from the packing unit upon initial extension of the hydraulic rams prior to pivoting relative to the upstanding frame members.

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