United States Patent

Gagel

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[45] **Sept. 5, 1972**

[54] **LOAD EJECTION PLATE FOR CONTAINER**

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[73] Assignee: **Industrial Services of America, Inc.**, Louisville, Ky.

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[21] Appl. No.: **143,308**

[52] **U.S. Cl.** .....**220/93,** 198/144, 214/82, 214/310, 298/1 B

[51] **Int. Cl.** **B65f 1/12**

[58] **Field of Search** .....214/308, 310, 82; 220/93; 222/386, 387; 198/144; 298/1 B

[56] **References Cited**

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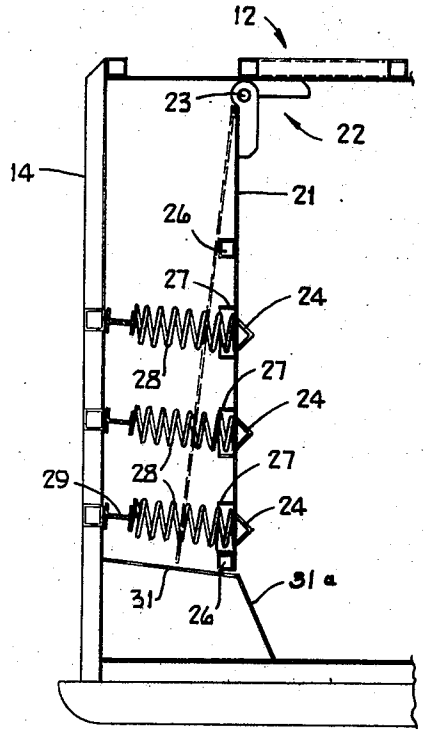
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[57] **ABSTRACT**

Disclosed is a container adapted to accommodate a compacted load, the container having a spring biased ejector plate which is engaged by the load as it is compacted in the container, and gives the load an initial impetus in load ejecting direction when the container is unloaded.

3 Claims, 4 Drawing Figures



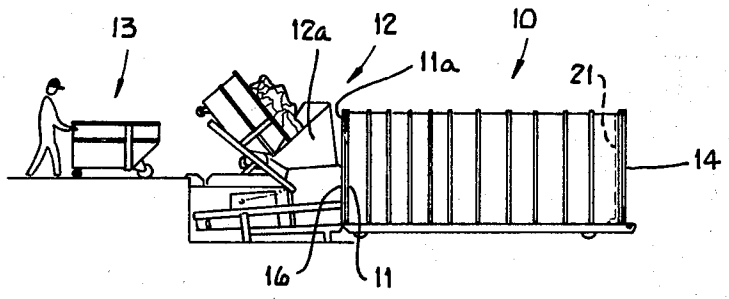


Fig. 1.

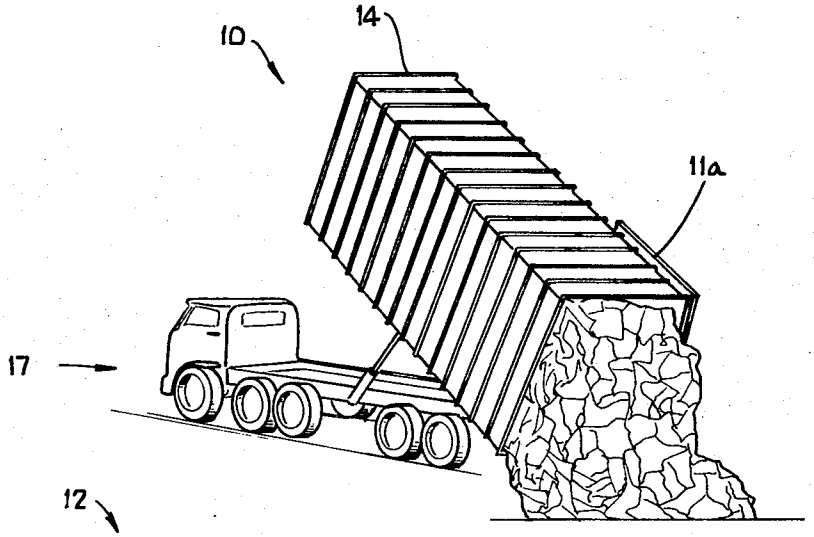


Fig. 2.

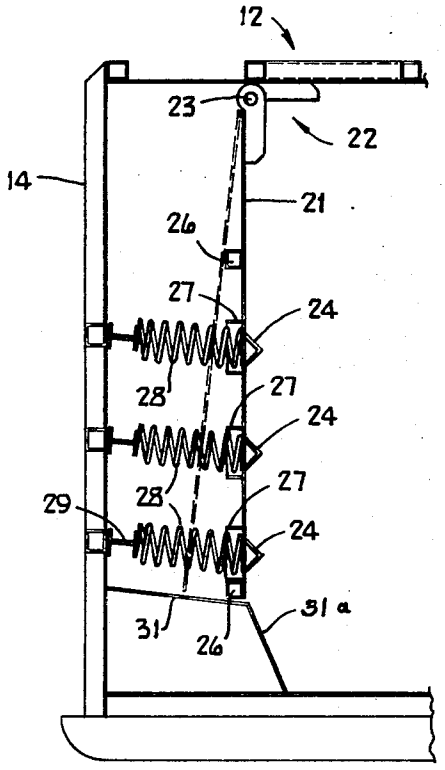


Fig. 3.

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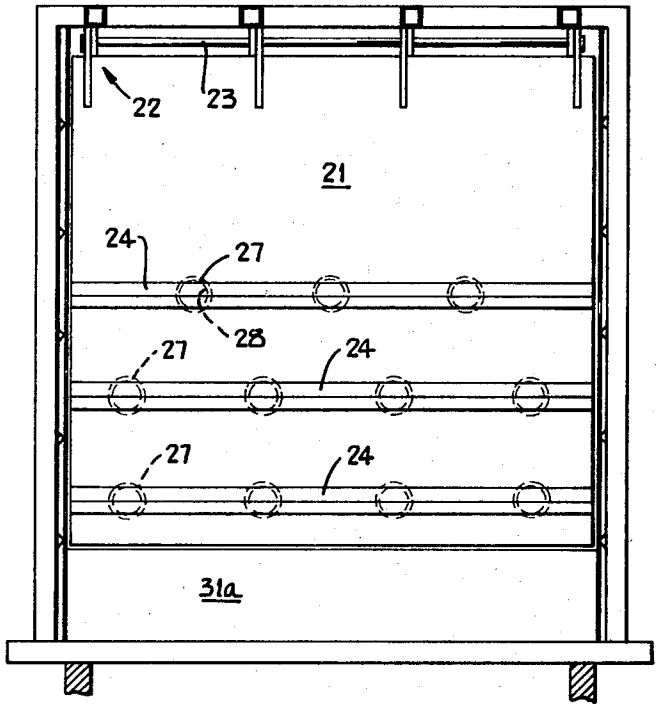


Fig.4.

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LOAD EJECTION PLATE FOR CONTAINER

BACKGROUND OF THE INVENTION

The handling of industrial and domestic waste disposal has, modernly, evolved into a system in which waste is transported to transfer stations where stationary compactors compact the load into closed containers. Moving of the load into the containers, and its compaction, is accomplished through a port at one end of the container which, after loading, is obstructed to hold the compacted load under compression in the container as it is moved to a disposal site. At the disposal side, such as a sanitary land fill, an unloading door, at the end of the container through which the load was moved into the container, is opened and the container is tilted so that unloading takes place. It is well known in the prior art to form these closed containers with a slight draft or longitudinal taper to facilitate removal of the load through the container unloading door. Apparatus of the general type described above is disclosed in U.S. Pat. Nos. 3,059,789 and 3,250,414. Use of longitudinal taper on the containers, and the use of a reel-operated ejector plate as disclosed in the aforesaid U.S. Pat. No. 3,059,789, have not been completely satisfactory as means for solving the problem of ejecting the compacted load from the container. The compacted material, depending on its physical characteristics, often tends to lock or seize in the container and, when the container is to be unloaded, cannot be removed other than by the dangerous, time consuming and costly expedient of manually picking the compacted material loose from the container.

The concept of the present invention provides a spring-loaded ejector plate at the closed end of the container remote from the loading and unloading end of the container, which stores energy as the load is compacted against it and discharges this energy to give a short, initial motion impetus to the compacted load, loosening it in the container, so that the load can slide from the tapered container by gravity during the container unloading operation.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of a container of the type described being loaded.

FIG. 2 is a perspective view of the container of FIG. 1 during the unloading operation.

FIG. 3 is a fragmentary, sectional side view of the container shown in FIGS. 1 and 2 and illustrating the ejector plate within the container.

FIG. 4 is an end view of the structure shown in FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring initially to FIG. 1, there is shown a container, identified at **10**, which is of generally rectangular configuration and tapered along its length so that its larger end **11** is adjacent to a stationary compactor **12** which serves to move material into and compact the material in the container. Refuse material may be loaded into the hopper **12***a* of the compactor by any suitable means such as the mobile containers **13**. The smaller end of the container is indicated at **14** and the wider end is closed by a door **11***a* which extends across

and closes this end of the container. A port, in the area indicated at **16** permits entry of the compactor ram into the container and this port area is obstructed or closed by suitable conventional means when the container has been loaded and just prior to its unfastening from the compactor.

Conventionally, the container **10**, with its compacted load is hoisted onto the bed of a tractor-trailer (indicated generally at **17** in FIG. 2), and the container is then hauled to the disposal site, such as a sanitary land fill. As shown in FIG. 2, at the sanitary land fill the container is hoisted to an inclined position, the door **11***a* opened, and the unloading operation then takes place. As previously mentioned, difficulty in starting the load from the container, even in elevated position, is often encountered and the structure of the present invention obviates this difficulty.

Referring primarily to FIGS. 3 and 4, the structure of the present invention is disposed within the container **12** and includes an ejector plate **21** which is suspended by means of a series of hinges **22** adjacent the top of the container **12**. The plate **21** may thus pivotally move around the axis of the shaft **23** which serves as the common pintle for the hinges. As may best be seen in FIG. 3, the face of the plate **21** adjacent the container load carries angle iron reinforcing members **24**.

The rear face of the plate **21** carries reinforcing beams **26** and spaced cylindrical sections **27**. These freely receive the ends of relatively heavy, coiled, compression springs **28** which are spaced across the plate as shown in FIGS. 3 and 4. The ends of the springs are welded, or otherwise rigidly secured to I-beam members **29** which butt against the closed end **14** of the container. Below the free lower end of the plate **21** is an inclined deflector plate **31**, the steeply inclined portion **31***a* (FIG. 3) of the plate serving to deflect the load upwardly against the front face of the plate **21** as the load is compacted and moved into the container.

In operation, as the load is compacted into the container (FIG. 1), the plate **21** will be swung rearwardly toward its broken line position of FIG. 3. As the load moves the plate **21** rearwardly, the springs **28** will be compressed, storing energy which will be released at the unloading operation.

After the compacted load is transported to a disposal site (FIG. 2), the unloading door **11***a* will be opened and the container tilted so that the load may slide from the container. During this operation the springs **28** release their stored energy to provide an initial impetus to the load, moving it clear of the somewhat tapered container walls so that it may slide from the tilted container.

I claim:

1. A closed, longitudinally-tapered container of the type adapted to accommodate a compacted load introduced into the container at the larger end thereof and to discharge the load through a discharge opening at said larger end of the container, load ejection means for providing an initial impetus to the compacted load for moving it through the container discharge opening, said ejection means comprising a plate disposed across the container interior adjacent to but spaced from the narrow end of the container, said plate being supported solely by hinges along its upper margin and resilient means interposed between the adjacent end of the con-

tainer and said plate for storing energy as said plate is pivotally moved toward said adjacent container end as the load is compacted in the container and for discharging said stored energy through said plate to the load to provide said initial impetus to the load as it is discharged from the container.

2. A container as claimed in claim 1 in which said plate has a length less than the height of the container interior so that the lower margin of said plate is spaced from the floor of said container, and an inclined deflector plate extending from the container floor to the adjacent narrow end of the container and passing closely beneath the free end of said plate for directing the load upwardly against said plate as it is compacted into the container.

3. A container as claimed in claim 1 in which said resilient means comprises a series of spaced compression springs, members rigidly secured to the rear face of said plate for freely accommodating the end portions of said springs, the opposite ends of said springs bottoming against the adjacent narrow end of the container.

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