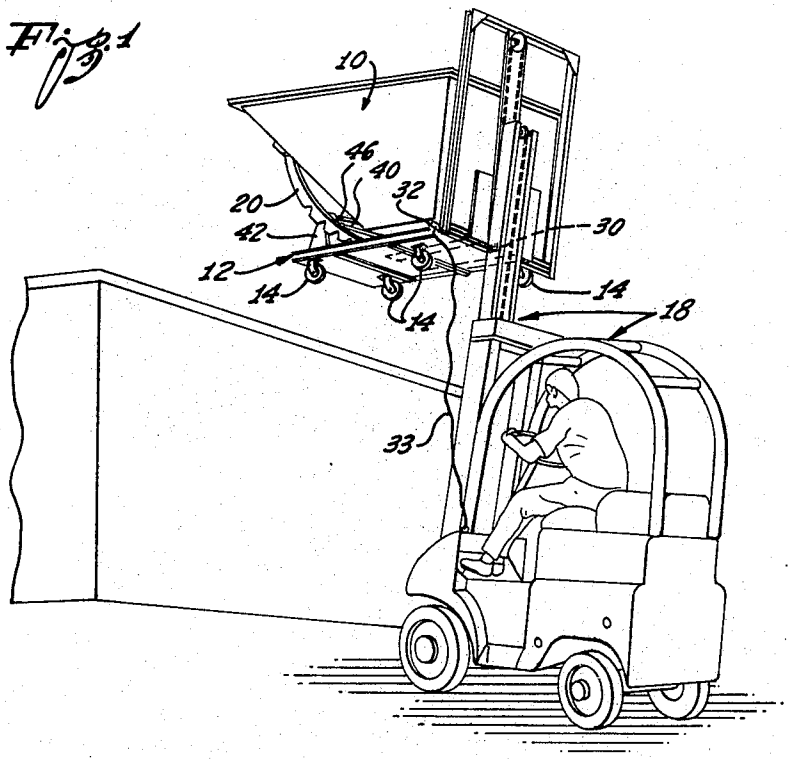
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ROLL-DUMPING BIN

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Fig. 1



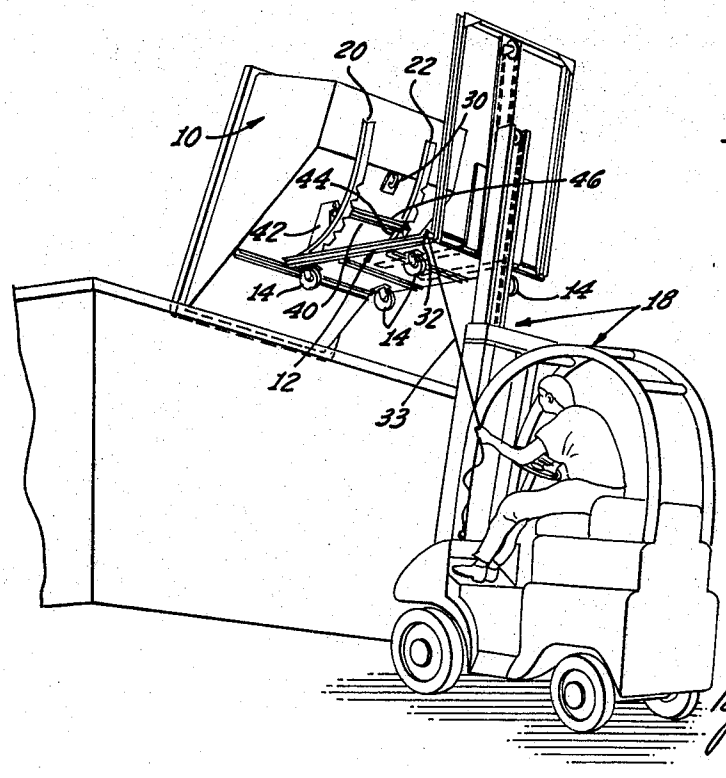


Fig. 2

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Fig. 3

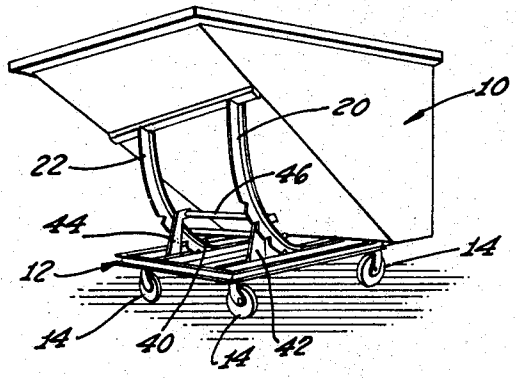


Fig. 5

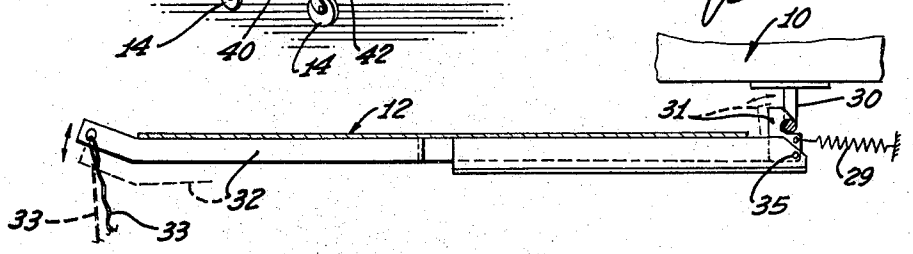
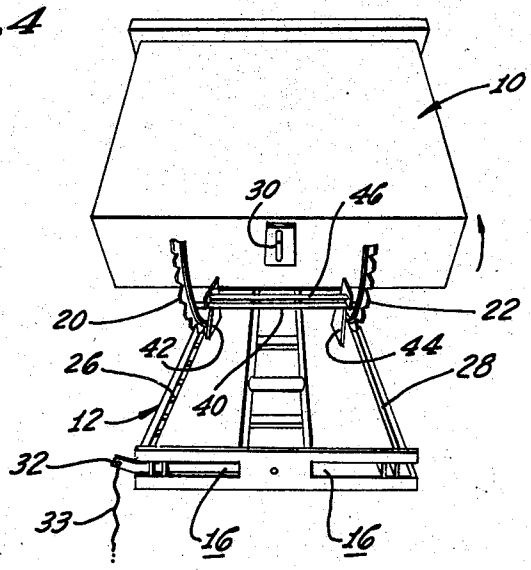


Fig. 4



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ROLL DUMPING BIN

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Int. Cl. B65g 7/00, 65/00
U.S. Cl. 214—313 2 Claims

ABSTRACT OF THE DISCLOSURE

A bin is provided for handling and transporting waste materials, and other materials. The particular bin to be described is of the dumping type, and it is intended to be used in conjunction with the usual type of fork lift truck. When so used, the bin can be rolled to a dumping position, merely by lifting it on the forks of the truck and by tilting the forks forwardly, as provided by the mechanism of the truck. The bin can subsequently be restored to its upright load-carrying position, by causing the truck to tilt its forks back to their normal position.

Background of the invention

Dumping hoppers or bins for transporting waste materials, or other materials, such as sand, castings, forging, stamped parts, scrap, and the like, are known to the art. Such bins are usually provided with a base, and with a body portion which is balanced on the base. Then, when the base is tilted forwardly, the body portion rolls forward on the base by the force of gravity to its dumping position. The aforesaid body portion is configured, so that when the base is returned to a generally horizontal position, the body portion rolls back to its upright load-bearing position, at which it may be latched to the base.

Dumping bins such as described in the preceding paragraph are especially shaped, as will be described, to define, for example, a solid truncated right-angled structure, with the area of the bottom being smaller than the area of the open top, and with both the bottom and the top having a rectangular shape.

When such a bin is filled with a homogeneous material it becomes relatively unstable. The resulting center of gravity is just within the forward edge of the bottom so that the bin will normally remain upright. However, a slight tilt forward causes the center of gravity to shift beyond the forward edge of the bottom so that the bin tips forward to a dumping position.

The assembly to be described includes arcuate rockers on the bottom of the bin which have web-like edge portions which roll on a base; and each of the rockers also has a serrated central portion which engage transverse pins in corresponding channels on the base, so that the rocking action of the bin is accompanied by a forward or backward movement of the bin along the base.

A slight tilt of the base in one direction, causes the center of gravity of the loaded bin to shift beyond the forward edge of its bottom, so that the bin rocks forward towards a dumping position. This forward rocking movement of the bin is accompanied by a forward movement of the bin along the base. The dumping action is gradual and can be interrupted at any time merely by tilting the base back to its original position.

The previous dumping bins of the type under consideration were usually equipped with pegs which protruded out from the bottom of the bin and which engaged holes in the base. However, the prior art assemblies for the most part have proven to be somewhat fragile, and also there is a tendency for the material handled thereby to build up on the base and become compacted. In time the compacted material can cause the bin to lift up from the base with serious consequences.

Dumping bins of the type described above are extremely convenient for a wide range of material handling purposes, as indicated above. Moreover, this type of dumping bin is relatively inexpensive since its dumping operation is carried out by gravitational forces, so that no extraneous dumping mechanism, apart from the fork truck itself, is required.

The present invention provides an improved dumping bin of the type described above. The dumping bin of the invention has the feature of being of a basically simple construction so as to be relatively inexpensive. In addition, the dumping bin of the invention is exceedingly strong and rugged, so as to be susceptible to rough usage, and yet capable of exhibiting a long trouble-free operational life.

Summary of the invention

The dumping bin of the invention includes a frame-like base, which may include wheels to permit the bin to be easily moved from one location to another. The frame is constructed to provide longitudinal channels adjacent its side edges, and extending forwardly from its rear end. These channels serve to receive the fork of a usual fork lift truck.

A bin portion of the dumping bin assembly of the invention is balanced on the frame-like base by two arcuate support rockers. These rockers are affixed to the underside of the bin portion, and they each have web-like side edges which rest on the base in a rolling relationship therewith. A series of spaced and parallel transverse pins are provided in longitudinal channels on each side of the base, and the aforesaid arcuate support rockers each have a central serrated portion which extends into the corresponding channel. These central serrated portions have notches which successively engage the transverse pins in both channels as the bin portion rolls forwardly on the base from its upright load-supporting position, to its forwardly tilted dumping position. Appropriate stop means are also provided, as will be described, to limit the forward angular movement of the bin portion when the base is tilted forwardly, and to hold it on the base.

Brief description of the drawings

FIGURE 1 is a view of a dumping bin combination constructed in accordance with one embodiment of the invention, the combination being supported on a usual fork lift truck and in position prior to dumping;

FIGURE 2 is a view like FIGURE 1, but showing the bin in its forward dumping position;

FIGURE 3 is a front perspective view of the dumping bin combination of one embodiment of the invention, and showing the bin in its upright load-supporting position;

FIGURE 4 is a rear perspective view of the dumping bin combination, and showing the bin in its forwardly tilted dumping position; and

FIGURE 5 is a fragmentary rear view of the combination illustrating details of a latch mechanism for holding the bin in its upright position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As shown in the drawings, for example, the illustrated dumping bin combination includes a bin-like body portion **10**. In the illustrated embodiment, the bin portion **10** has the configuration of a truncated solid right-angled triangle. The bottom of the bin and the open top both have a rectangular shape, as shown, with the bottom being smaller than the top. This configuration serves to provide a center of gravity such that when the bin is filled with a load, it has a tendency to remain in its upright position on a frame-like base **12**, so long as the base is held in a generally horizontal plane, as described previously herein. How-

ever, the configuration of the body portion **10** is such that when the frame is tilted forwardly, the center of gravity of the load shifts, as described, so that the bin portion tends to tilt over to its dumping position on the frame-like base **12**.

As shown in the drawings, the frame-like base **12** may include usual swivel-type wheels **14**, which conveniently permit the assembly to be moved from one location to another. The base **12** defines a pair of passages **16**, as best shown in FIGURE 4. These passages extend within the base adjacent its side edges from the rear end. The passages receive the forks of a usual fork truck designated **18** in FIGURES 1 and 2.

In accordance with usual practice, the dumping bin of the invention may be lifted on the fork truck, by moving the fork truck adjacent the bin with the fork in the lower position, and until the forks enter the passages **16**. Then the bin may be raised to the position shown in FIGURES 1 and 2. The frictional engagement of the forks in the passages **16** is such that when the bin is moved to the dumping position shown in FIGURE 2, there is no tendency for the base **12** or the bin **10** to slide off the forks.

As shown in the drawings, a pair of arcuate rockers **20** and **22** are affixed to the underside of the bin portion **10**, and as best shown in FIGURE 4, these rockers each has web-like side edges which are supported on the base **12** in a rolling engagement. The rockers each has a central notched, or serrated, central arcuate portion which extend down into corresponding channels adjacent the side edges of the base. A series of spaced and parallel transverse pins extend across each of the channels. These pins are successively engaged by the notches on the central portions of the rocker arms and cause the bin **10** to move back and forth along the base as the bin moves between its upright position and its dumping position.

The bin portion **10** of the combination is shaped, as mentioned above, so that when it is loaded with material, as shown in FIGURE 1, it assumes its generally upright position on the base **12** when the base is horizontal. Moreover, the bin portion may be held in its upright position by means of a hook **30** on the underside of the body portion **10**. The hook **30** engages a releasable spring loaded latch **31** (FIGURE 5) of any appropriate type on the base **12**. This latch **31** is spring loaded by a spring **29**, and it is controlled by a lever **32** which is pivoted to the base at a pivot point **35**. The operator pulls the line **33** to release the hook **30**, and when the line is released, the latching mechanism **31** is spring biased by the spring **29** back to its original position, so that when the body portion **10** assumes its upright position, its hook **30** is again latched and held in the latching mechanism.

The fork lift truck **18**, as is usual in trucks of this type, is capable of tilting its forks slightly forwardly, under the control of the operator. Therefore, the operation, as shown in FIGURES 1 and 2, is for the operator to hoist the loaded dumping bin combination to the position shown in FIGURE 1 over, for example, a larger receptacle. Then, the operator tilts the dumping bin combination forwardly on the lift truck, and releases the latching mechanism. This causes the bin portion **10** to roll on its rockers **20** and **22**, and is thereby caused to move forwardly along the base **12** by the engagement of the notches and pins **26**, **28**, to the dumping position shown in FIGURE 2.

A cross bar **40** is provided which extends from the rail **20** to the rail **22**. A pair of brackets **42** and **44** are provided adjacent the side edges of the base, together with a reinforcing cross bar **46**. When the bin portion **10** is dumped forwardly as shown in FIGURES 2 and 4, its cross bar **40** engages the brackets **42** and **44**, and the forward notch in each of the rockers **20** and **22** engages the forward pins **26** and **28**, thereby limiting the forward tilting angular movement of the bin portion **10**, and retaining

the bin portion firmly on the base **12**, when it is in its dumping position.

When it is desired to return the bin portion **10** to its upright position, the operator merely tilts the fork lift forks back to their original plane, and the shape of the bin portion **10** is such that its center of gravity shifts to a point causing it to roll back on the rockers **20** and **22** and track back on the base **12** to its upright load-supporting position. The hook **30** is then again received by the spring loaded latch **31**, to hold the bin **10** in its upright position, and ready for the next load.

It will be appreciated that the dumping bin combination of the present invention is exceedingly simple in its construction, and is capable of performing all its desired functions with a minimum of component parts. Moreover, all the components of the dumping bin combination of the present invention may be of sturdy and rugged construction, so that the combination is capable of a long operational life, despite rough usage thereof.

It will also be appreciated that modifications may be made of the illustrated embodiments of the invention without departing from the spirit of the invention. The following claims are intended to cover all modifications which come within the scope of the invention.

What is claimed is:

1. A dumping bin structure adapted to be used in conjunction with a fork lift truck, and the like, said structure including in combination: a frame-like base; a bin-like body portion having a generally truncated solid triangular configuration; a pair of spaced arcuate rockers affixed to the underside of said body portion and gravitationally supported on said base in a rolling relationship therewith, said rockers each having a web-like side edge, and said base having longitudinal channels extending therealong adjacent the sides thereof; a series of spaced and parallel pins extending across said longitudinal channels, the web-like side edges of said rockers each having a central portion extending down into the aforesaid channels, and the central portions of said rockers having notches therein which engage said pins successively as said body portion rolls on said base to a dumping position to cause said body portion to track forwardly on said base, said body portion being shaped to assume an upright load-supporting position on said rockers when said frame-like base is in a generally horizontal plane, and to roll to said dumping position on said rockers when said frame-like base is tilted forwardly with respect to said horizontal plane; a pair of spaced brackets mounted on said base adjacent the side edges of said base and extending upwardly from the plane thereof; and a bar extending across said rockers and affixed thereto in position to engage said brackets and limit the forward rolling movement of said body portion on said base; and latching means for releasably retaining said body portion upright on said base.

2. The dumping bin structure defined in claim **1**, in which said base defines a pair of fork-receiving passages respectively adjacent the side edges thereof and extending from the rear end toward the forward end thereof.

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U.S. Cl. X.R.

214—46.32; 298—17.5