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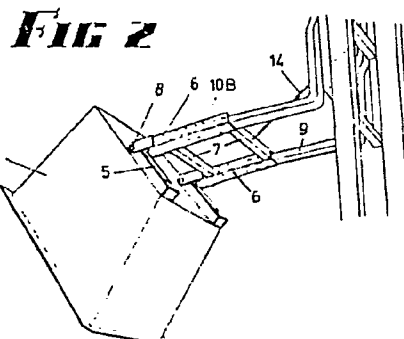
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54 Tipping device.

57 The base of a bin (1) has two guides for the forks (9) of a fork lift truck. Each guide has a forward channel member (5) attached to the bin (1) and a rear tubular or partially closed member (6) pivotally connected to the channel member (5) by means of a pivot (8) which is aligned with the pivot (8) of the other guide (5 and 6).

When the forks (9) are inserted into the guides, the forward and rear members (5 and 6) are held in alignment. To allow the bin (2) to tip, the bin (1) is rested and the forks (9) are partially withdrawn from the guides (5 and 6) so that they extend through the rear members (6), but are clear of the forward members (5). Then, on further lifting of the forks (9), the guides hinge about the pivots (8).



-1-

This invention relates to a tipping device and more particularly to a tipping device to allow tipping of a bin, pallet or other load supporting device adapted to be handled by the forks of a fork-lift truck.

5 Many goods, loads and materials are handled by a fork-lift truck, either by being in a bin, or on a pallet or the like. Where material is carried by a bin it is desirable to be able to tip the bin into another container or bulk transport vehicle or the
10 like.

 Many bins are transported by a fork-lift truck, and in order to empty the bin, a special vehicle is provided, for example a transport vehicle is provided with forks which lift and tip the bin into a container
15 carried by a transport vehicle. However, this vehicle can only empty the bins into its own container.

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Thus it is an object of this invention to provide a device which is operable to allow tipping of a bin or pallet or the like supported on the forks of a fork-lift truck.

5 It is a further object of this invention to provide a tipping device for a bin or pallet or the like, in which the tipping is controlled by the operation of the fork-lift truck in an automatic or semi-automatic manner.

10 Thus there is provided according to the invention a bin or pallet which is pivoted to a base portion which is adapted to be supported by the forks of a fork-lift truck, whereby the bin or pallet can pivot relative to this base portion.

15 In order to more fully understand the invention description will now be made of a preferred form of the invention utilizing a bin adapted to be carried and supported by the forks of a fork-lift truck, it being realized that instead of the bin there could be just
20 a platform tray or pallet like structure which would operate in the same manner.

In the drawings:-

FIG. 1 shows the bin in the loading position,
FIG. 2 shows the bin in the tipping position, and
25 FIG. 3 shows the bin formed as a scoop.

In the preferred form of the invention bin 1 is provided with a base 2 having guides or slots therein for the reception of the forks of a fork-lift truck. The base 2 is divided into two portions, a forward
30 portion 3 and a rear portion 4.

3.

The forward portion 3 is situated on the bin on the forward side of the bin, that is remote from the fork-lift truck. Pivoted to this forward portion 3 there is a rear base portion 4 also having guides and slots for the reception of the forks, preferably the pivot being generally centrally of the bin. The forward portion 3 can comprise a pair of channel members 5 fixed to the base of the bin 1.

The rear portion 4 comprises a pair of square tubular or partially closed members 6 braced by cross members 7 to form the base, and which is pivoted by transverse pivots 8 to the forward portion 3.

Thus it will be seen that when the forks 9 of the fork-lift truck are inserted the full distance into the members 5 that they pass through the rear portion 4 and through the member 6 with the members 5 and 6 being aligned when the bin is resting on a surface, thus in effect locking the two portions together so that the pivoting cannot occur.

It will be realized thus that if the forks are then withdrawn to be engaged only in the rear portion 3, and that the forks do not extend past the pivot point, that on raising the forks that the bin will thus be caused to be tilted forwardly to discharge the contents of the bin.

In order to prevent the bin from inadvertently being removed from the forks of a fork-lift truck, a safety chain 14 is provided which is attached to the base portion 4 and to the fork-lift truck itself, this chain being adjusted so that the forks can only be

4.

withdrawn a distance to clear the pivot 8. As shown in the drawings the forks are withdrawn from the fully inserted position 10A to the withdrawn position 10B.

5 In order to limit the tipping and tilting, a further chain or like flexible member (not shown) may be attached to the bin, and also to the mast of the fork-lift truck or other movable or controllable member so that this chain limits the tilting of the
10 bin.

 This further chain also has the advantage of allowing the automatic resetting or moving the bin back to its upright position.

 It will be realized that the bin can be operated
15 at a height so that the bin will tip into a container or the like or even a bulk transport vehicle, so that by elevating the bin, and resting the base portion of the bin on the edge of the container, withdrawing the forks until they pass the pivot point, that the bin if
20 it does not automatically tilt and tip to its discharge position could be caused to do so by slight elevation of the forks themselves. With the bin then again resting on the edge of the container to prevent the bin moving forwardly, forward movement of the fork-lift
25 truck will cause the forks to re-engage right through into the base portion of the container whereby the container can then be lifted and then removed to its
30 next position to be reloaded or the like.

 Alternatively the bin can be returned to its erect
30 position by lowering the fork-lifts to the ground where the bin will be returned by slight rearward

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movement of the fork-lifts to its upright condition,
and forward movement will re-engage the forks in the
member 5.

5 In a further alternative as shown in FIG. 3, the
bin can be shaped as a scoop 11 with a forward
cutting edge 12 and an open front side 13 so that the
unit can be used as a self loading scoop and be emptied
in a manner similar to the above description.

10 It will be realized that while the invention
above described has been particularly described in
relation to a container, that the invention could
be applied to a flat pallet or the like so that the
loads stacked thereon can be readily tipped therefrom,
or to pallets having cages or sides thereon, either
15 open on one side or closed on all sides.

Alternatively instead of the rear and forward
portions being formed with rectangular tubular or
channel members, a base can comprise a framework
having vertical studs to form the fork guides.

6.

1. A tipping bin for use with a fork-lift truck, said bin being characterized by a base adapted to receive the forks of a fork-lift truck, a portion of said base pivoting relative to said bin so that with the forks engaged in said portion, the bin may pivot relative thereto.

2. A tipping bin as defined in Claim 1 further characterized in that said base is divided into a forward portion and a rear portion pivoted to each other with said bin being attached to said forward portion, said portions having means to receive the forks with the forks passing firstly through said rear portion to pass into the forward portion, so that by withdrawing the forks from the forward portion into the rear portion the bin is adapted to

7.

10 tip forwardly.

3. A tipping bin as defined in Claim 2 further characterized in that the means to receive the forks are channels or rectangular tubular members.

4. A tipping bin as defined in Claim 1 further characterized in that a chain is provided to anchor the rear base portion to the fork-lift truck to prevent the forks from being inadvertently withdrawn.

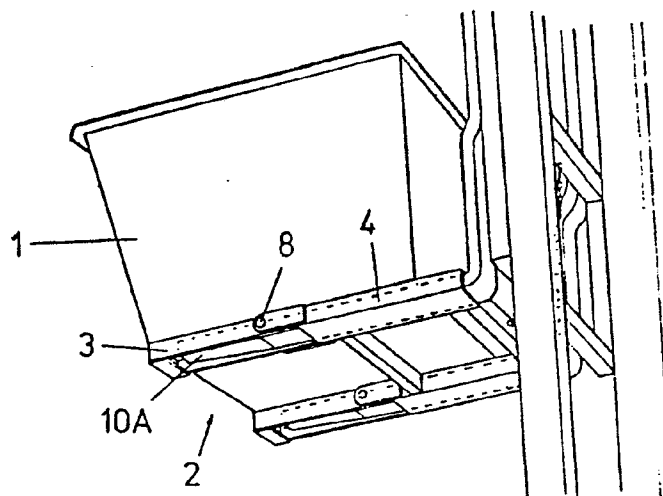
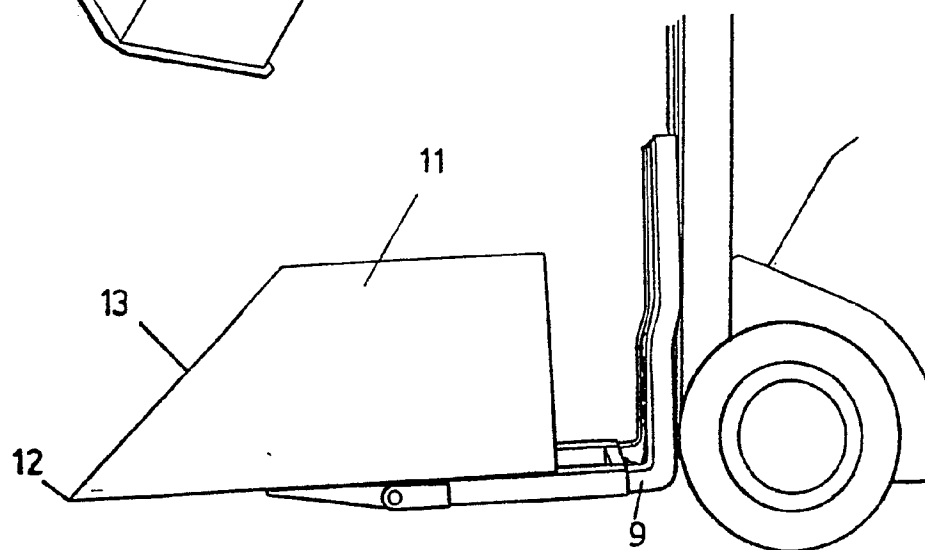
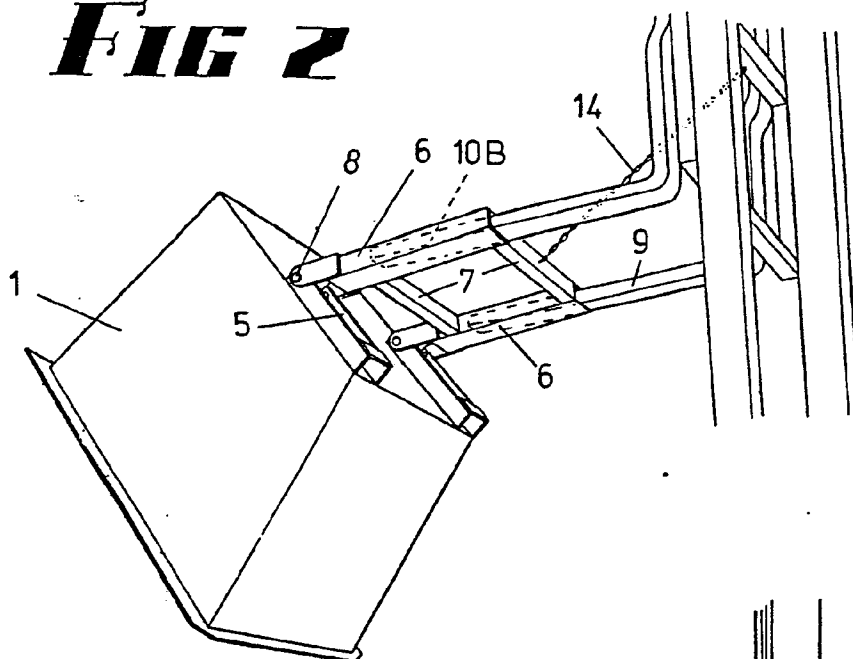
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AMENDED CLAIMS

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CLAIMS

1. A tipping bin for use with a fork-lift truck,
said bin having a base adapted to receive the forks of
a fork-lift truck, a portion of said base pivoting
5 relative to said bin so that with the forks engaged in
said portion, the bin may pivot relative thereto,
characterized in that said base is divided into a
forward portion and a rear portion pivoted to each
other with said bin being attached to said forward
10 portion, said portions having means to receive the
forks with the forks passing firstly through said rear
portion to pass into the forward portion, so that by
withdrawing the forks from the forward portion into the
rear portion the bin is adapted to tip forwardly.
- 15 2. A tipping bin as defined in claim 1,
characterized in that said rear portion of the base is
provided with rectangular tubular members adapted to
receive the forks of the fork lift truck, and the for-
ward portions are downwardly open channel shaped members
20 in line with the tubular members.
3. 3. A tipping bin as defined in claim 1 further
characterized in that a chain is provided to anchor the
rear base portion to the fork-lift truck to prevent the
forks from being inadvertently withdrawn.

FIG 1**FIG 2****FIG 3**



European Patent
Office

EUROPEAN SEARCH REPORT

0009864
Application number
EP 79 30 1517

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. '1)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	<u>CH - A - 560 647</u> (SLEZIAK) * Whole document *	1,3,4	B 66 F 9/19 B 65 G 65/23
	-- <u>US - A - 3 656 643</u> (KENESON) * Columns 3,4 "Operation"; figures *	1	

			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			B 66 F
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
			&: member of the same patent family, corresponding document
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	02-11-1979	BAETENS	