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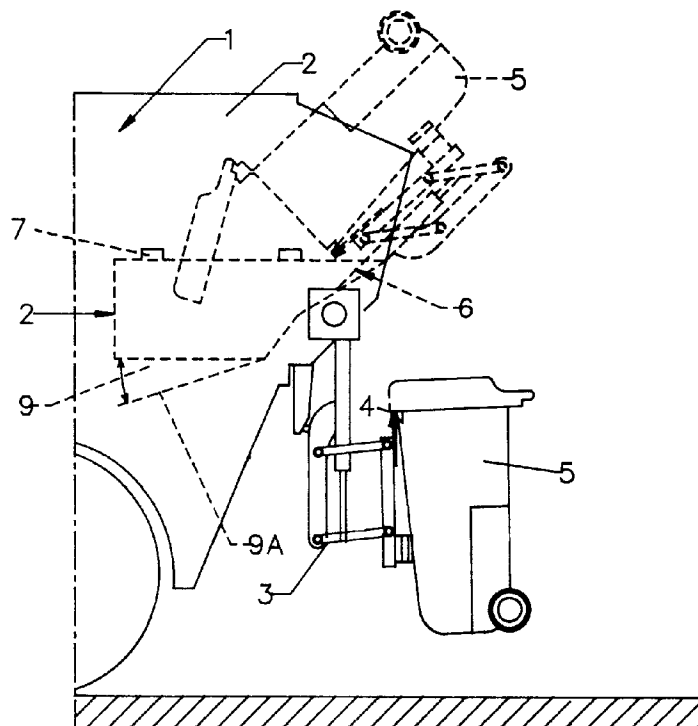
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AT BE CH DE DK ES FR GB GR IT LI LU NL SE(72) Inventor: **Nuyts, Henry****B-2300 Turnhout (BE)**(30) Priority: **06.02.1995 BE 9500090****02.05.1995 BE 9500399**(74) Representative: **Lips, Hendrik Jan George, Ir.****HAAGSCH OCTROOIBUREAU****Breitnerlaan 146****NL-2596 HG Den Haag (NL)**(71) Applicant: **NV NUYTS ORB****B-2360 Oud-Turnhout (BE)**(54) **Vehicle, a truck in particular, for collecting industrial or household waste material**

(57) Vehicle, comprising a container (2), for collecting industrial or household waste material, a lifting and tilting mechanism (3) for taking up a waste container (4) and emptying it into the container (2) of the truck, as well as means for determining the weight of the waste being dumped from a specific waste container into the container. Here, at least one buffer weighing tray (6) is arranged in, or immediately near the truck container (2), into which buffer weighing tray (6) the waste to be re-

moved from a waste container is dumped. The buffer weighing tray (6) is carried by load cells (7) so that the weight and thus the weight of the waste brought into the buffer weighing tray (6) can be determined. Further, means (9,14, 17,20,24) for discharging from the buffer weighing tray (6) the waste brought into it. The buffer weighing tray (6) can be made of a stiff material and have pivotable parts (9,14, 25). It can also be in the shape of a drum (22) or comprise a cloth (16).

FIG 1



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Description

The invention relates to a vehicle, a truck with container in particular, for collecting industrial or household waste material, a lifting and tilting mechanism for taking up a waste container and emptying it into the container of the truck being provided, as well as means for determining the weight of the waste being dumped from a specific waste container into the truck container.

Such a vehicle is known from EP-A-0 483 922. For determining the weight of the waste, load cells are applied, which are mounted in the loading and tilting mechanism, or between said mechanism and parts mounted movably in relation to the container of the vehicle.

This has the disadvantage, that the load cells are exposed to shocks on operating the loading and tilting mechanism. Further, the waste container must be weighed both immediately after taking it up, in filled condition, and after emptying it, in empty condition. In both cases, the waste container is in the loading and tilting mechanism. Due to this, the complete emptying cycle of a container will take up more time than when the weight of the waste need not be determined.

Although one could consider weighable mounting of the truck container in relation to the frame, it will be obvious that here likewise the weighing members will be exposed to shocks. Further, it must be possible to measure a weight many times higher than the weight of the waste removed from the waste container. This will result in a much lower accuracy in determining the weight of the waste.

The object of the invention is to remove these difficulties and to that end provides for, that at least one buffer weighing tray is arranged in or immediately near the truck container, into which buffer weighing tray the waste to be removed from a waste container is dumped, with means for determining the weight of the waste brought into the buffer weighing tray being provided as well as means for discharging from the buffer weighing tray the waste brought into it.

Here, weighing can take place after a waste container has been taken up and emptied, for which purpose loading and tilting mechanisms known per se can be applied. Thus, weighing the waste and emptying the buffer weighing tray is effected while the container is tilted back and put onto the ground, so that the cycle time for emptying a container is not affected at all.

It will be obvious, that on emptying more containers simultaneously, or on emptying containers having more compartments for different types of waste, the vehicle can be provided with a suitable number of buffer weighing trays. Naturally, a buffer weighing tray could also have more compartments, just as this will then be the case with the vehicle.

There, it can be provided for, that a buffer weighing tray is connected to at least one load cell by means of which the weight of the buffer weighing tray, with or without waste in it, can be determined.

According to a first embodiment, the buffer weighing tray can consist of a stiff material. The buffer weighing tray can be pivotably arranged or be provided with at least one pivotable or slidable part in such a way that by means of securing members and operating means, the buffer weighing tray or its pivotable or shiftable part can be held in a position in which the waste from a container can be dumped into the buffer weighing tray in order to be able to subsequently be brought to the pivoted or shifted position for removing the waste from the buffer weighing tray.

A pivotable part of the buffer weighing tray can be a wall of the buffer weighing tray designed as a flap. Then, the flap can be represented by both the bottom or one or more of the side walls of the tray. If the flap is represented by the side wall, e.g. the bottom of the tray can be arranged tiltingly, so that on pivoting or shifting the flap, the waste will automatically slide towards it and out of the buffer weighing tray.

Preferably, the operating means of the securing members will be arranged free from the buffer weighing tray. Owing to this, the weight of the buffer weighing tray can be kept as small as possible and the weighing will not be affected by electric or hydraulic lines to be connected to the operating means.

In order to provide for a proper removal of the waste from the buffer weighing tray, a scraper being movable across at least the bottom of the buffer weighing tray can be additionally provided.

Preferably, the scraper will be movably mounted to supporting members fixedly connected to parts of the truck container or to parts supporting the weighing device for the buffer weighing tray.

By applying load cells for determining the weight of the buffer weighing tray, the buffer weighing tray will take up almost the same position in both filled and empty condition.

According to another embodiment, the buffer weighing tray comprises a frame made of a stiff material and serving to support a lifting part made of a flexible material, such as a cloth or foil, being able to take up the shape of a trough or gutter.

Such a material can be brought into another shape by means arranged free from the buffer weighing tray, in which the waste dumped into it is removed from it.

There is also the possibility of designing the buffer weighing tray as a drum being provided with an opening in its wall and being rotatably mounted on a shaft carried by load cells. The cross-section of the drum can be either round or polygonal.

While in most cases, the buffer weighing tray will be arranged within the truck container, it can also be provided for, that, during bringing waste into it, it is situated outside of said container and that means for emptying the buffer weighing tray into the container are present.

Applying a running mechanism across which the buffer weighing tray is displaced can also be considered.

Such an embodiment can also be applied for bringing the buffer weighing tray to various compartments in order to be emptied there. Then, the buffer weighing tray can be used for various types of waste, each of them having to be brought into a specific compartment of the container.

In the usual way, the container can be provided with at least one compression unit for compressing the waste to be received in the container. The buffer weighing tray can be positioned in the dumping space of said compression unit.

The invention is further explained by way of embodiments shown in the drawing, in which:

Fig. 1 diagrammatically shows a side view of part of a vehicle for collecting waste, provided with a buffer weighing tray and with a lifting and tilting mechanism with a container shown therein;

Fig. 2 diagrammatically shows a view of the buffer weighing tray and the accompanying parts, in the direction of the arrow II of Fig. 1;

Fig. 3 diagrammatically shows a view corresponding to Fig. 1, yet of a modified embodiment of the buffer weighing tray and with another type of waste container;

Fig. 4 diagrammatically shows a view corresponding to Fig. 2, yet of another embodiment of the buffer weighing tray;

Fig. 5 diagrammatically shows a view corresponding to Fig. 1, yet of another embodiment of the buffer weighing tray, which is mounted in the dumping space of a compression unit placed in front of the container;

Fig. 6 diagrammatically shows an embodiment in which the buffer weighing tray is in the shape of a drum;

Fig. 7 diagrammatically shows another embodiment of a buffer weighing tray in its take-up position;

Fig. 8 shows the buffer weighing tray of Fig. 7 in the position in which the waste is removed from it.

The Figures 1 - 3 show a collecting vehicle 1 being provided with the container 2 to which a lifting and tilting mechanism 3 has been mounted. With the help of an engaging member 4 connected to said mechanism 3, a waste container 5 can be lifted to subsequently be brought to the position as it is indicated by dash lines in the Figures 1 and 3. The containers 5 shown in the Figures 1 and 3 can be of a different type but this is not important for the invention itself. On tilting a container 5 to the highest position, the waste present in it will fall out and end up in the buffer weighing tray 6.

With the embodiment according to the Figs. 1 and 2, the buffer weighing tray 6 has been suspended from four load cells 7 having their other sides connected to parts 8 of the truck container 2.

The buffer weighing tray 6 can be made of steelplate or a like stiff material and its bottom 9 can be pivotably

mounted so that it can take up the position indicated by 9A. Owing to this, the waste dumped into the tray 6 can be removed from it again.

For operating the bottom 9, one could use e.g. a hydraulic cylinder 10 fixedly connected to the container 2 and with its piston rod 11 pushing said bottom 9 to the closed position on moving upwards. Then, a part of a locking member 12 pivotably connected to the bottom 9 will slide across a ramp surface mounted on the side wall of the tray 6 against the action of a spring, and will fall into a bore in said ramp surface. During upward movement of the piston rod 11 and resultant pivoting of the bottom 9, a cam connected with the piston rod will fall above part of said locking member 12. When the piston rod 11 is moved downwards, said locking member 12 is pivoted against the action of said spring, so that the bottom 9 can pivot downwards. Then, it can be provided for, that during weighing the buffer weighing tray 6, the piston rod 11 will not contact its bottom 9 or the locking member 12.

In the buffer weighing tray 6 a scraper 13 can be mounted, which can be pushed across the bottom 9 for wiping off possibly remaining waste.

Fig. 3 shows a device largely corresponding to that of the Figures 1 and 2. However, here the buffer weighing tray 6 has not been suspended from load cells 7, but it is supported by said load cells 7. Further, not the bottom 9 of the buffer weighing tray 6 is pivotably mounted, but its side wall 14. For operating said side wall 14, corresponding parts can be applied as they are described by way of the Figures 1 and 2. Obviously, here a scraper can be used as well.

Fig. 4 shows the possibility of designing the buffer weighing tray 6 in the shape of a framework 15 being suspended from the load cells 7 and carrying a cloth 16 in which the waste can be dumped. With the help of a strip 17 to be moved upwards, which approximately engages the middle of the cloth, the waste can be removed from the cloth.

Here, the possibility of mounting the buffer weighing tray movably in the container is shown as well. To that end, the load cells have their other sides connected to a framework 18 being movable along rails 19.

With the embodiments shown in the Figs. 1 - 4, the buffer weighing tray 6 is within the container 2 of the vehicle 1.

Fig. 5 shows the possibility that the truck container 2 is provided with a compression unit not further indicated and that behind said container a dumping space 20 has been mounted in which the buffer weighing tray 6 is situated. The tray 6 can in turn be supported by load cells 7 now being carried by a supporting member 21 which is movable along guides not further indicated so that the buffer weighing tray can be brought upwards. Then, the waste can be removed from the buffer weighing tray by means of the mostly standard provision scraping system of the compression unit.

Fig. 6 shows the possibility that the buffer weighing

tray 6 is in the shape of a drum 22 rotatable around the shaft 23, said shaft being supported by the load cells 7 at the other side bearing on the parts connected to the dumping space 20. The drum jacket is provided with an opening 24 for dumping waste into the drum and removing it therefrom by rotation of the drum 22. In order to bring the waste at the right location in the container 2, partitions not further indicated can be applied. The drum 22 can also be mounted in the container 2 such as is the case with the embodiment according to the Figs. 1 - 4.

Fig. 7 shows an embodiment of the buffer weighing tray 6 in which it is represented by two tray-shaped parts 25, each of them rotatable around a shaft 26 mounted to a frame 27. The frame 27 has been suspended from the load cells 7. In the position shown in Fig. 7, the buffer weighing tray 6 can receive waste and after weighing, the parts 25 can be brought into the position shown in Fig. 8 to have the waste fall from the buffer weighing tray. Operation of the parts 25 can take place in several ways and will need no further explanation.

It will be obvious, that only some possible embodiments of a device according to the invention have been illustrated in the drawing and described above and that many changes can be made without being beyond the inventive idea described in the accompanying claims.

Thus, it is possible to mount the lifting and tilting mechanism to either a side of the container of the truck or to its front side. The position of the buffer weighing tray will be adapted to said position.

Claims

1. Vehicle, a truck with container (2) in particular, for collecting industrial or household waste material, a lifting and tilting mechanism (3) for taking up a waste container (4) and emptying it into the container (2) of the truck being provided, as well as means for determining the weight of the waste being dumped from a specific waste container (5) into the truck container (2), characterized in that at least one buffer weighing tray (6) is arranged in or immediately near the truck container (2), into which buffer weighing tray (6) the waste to be removed from a waste container (5) is dumped, with means (7) for determining the weight of the waste brought into the buffer weighing tray (6) being provided, as well as means for discharging from the buffer weighing tray (6) the waste brought into it.
2. Vehicle according to claim 1, characterized in that a buffer weighing tray (6) is connected to at least one load cell (7) by which the weight of the buffer weighing tray (6), with or without waste in it, can be determined.
3. Vehicle according to claim 1 or 2, characterized in that the buffer weighing tray (6) is pivotably arranged or be provided with at least one pivotable of slidable part (9, 14, 25), in such a way that by means of securing members (12) and operating means (10, 11), the buffer weighing tray (6) or its pivotable or shiftable part (9, 17, 25) can be held in a position in which the waste from a waste container (5) can be dumped into the buffer weighing tray (6) in order to be able to subsequently be brought to the pivoted or shifted position for removing the waste from the buffer weighing tray (6).
4. Vehicle according to claim 3, characterized in that a pivotable or slidable part of the buffer weighing tray (6) is represented by a wall of the buffer weighing tray designed as a flap (9, 14).
5. Vehicle according to one of the preceding claims, characterized in that a scraper (13) being movable across at least the bottom (9) of the buffer weighing tray (6) is provided.
6. Vehicle according to claim 1 or 2, characterized in that the buffer weighing tray (6) is designed as a drum (22) being provided with an opening (24) in its cylindrical wall and being rotatably supported by a shaft (23) carried by load cells (7).
7. Vehicle according to one of the preceding claims, characterized in that during bringing waste into it, the buffer weighing tray (6) is situated outside of the truck container (2) and that means for emptying the buffer weighing tray (6) into said container (2) are present.
8. Vehicle according to one of the preceding claims, characterized in that the buffer weighing tray (6) is mounted to a running mechanism (18, 19) across which the buffer weighing tray (6) is displaced.
9. Vehicle according to one of the preceding claims, characterized in that the truck container (2) is provided with at least one compression unit for compressing the waste to be received in said container (2), the buffer weighing tray (6) being positioned in the dumping space (23) of said compression unit.
10. Buffer weighing tray and supporting means for it, for application with the vehicle as described in one or more of the preceding claims.

FIG 1

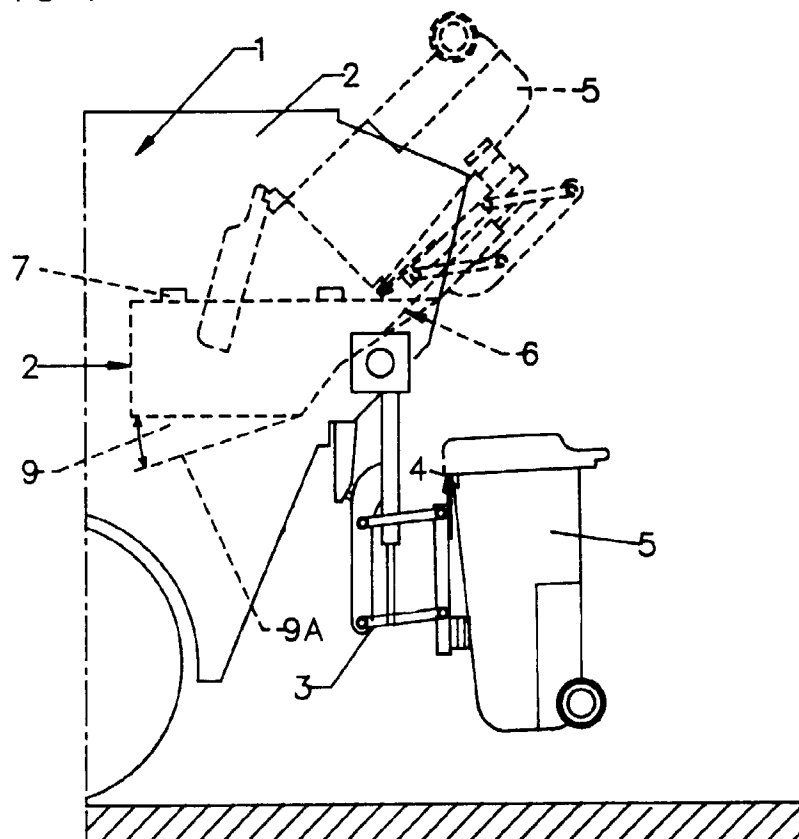


FIG 2

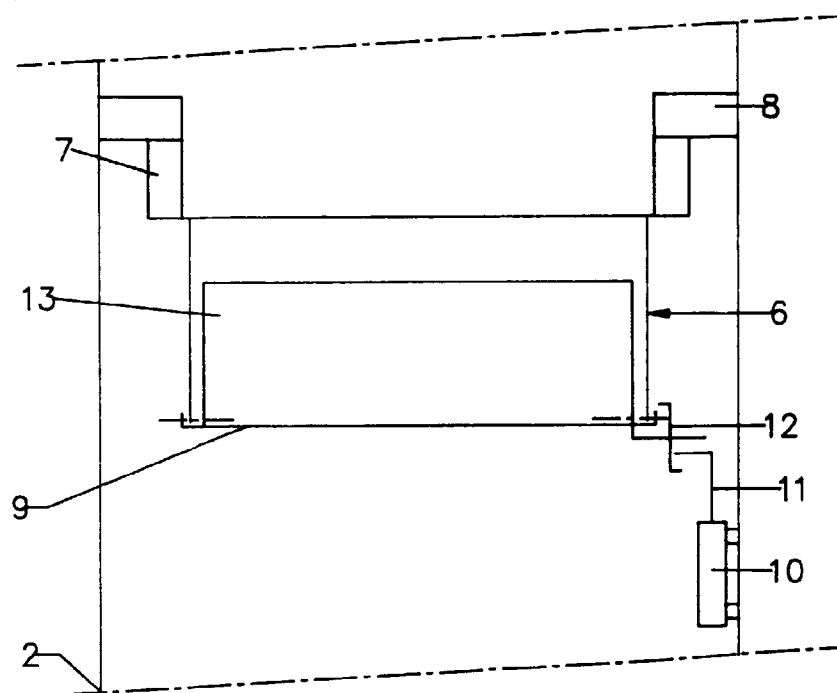


FIG 3

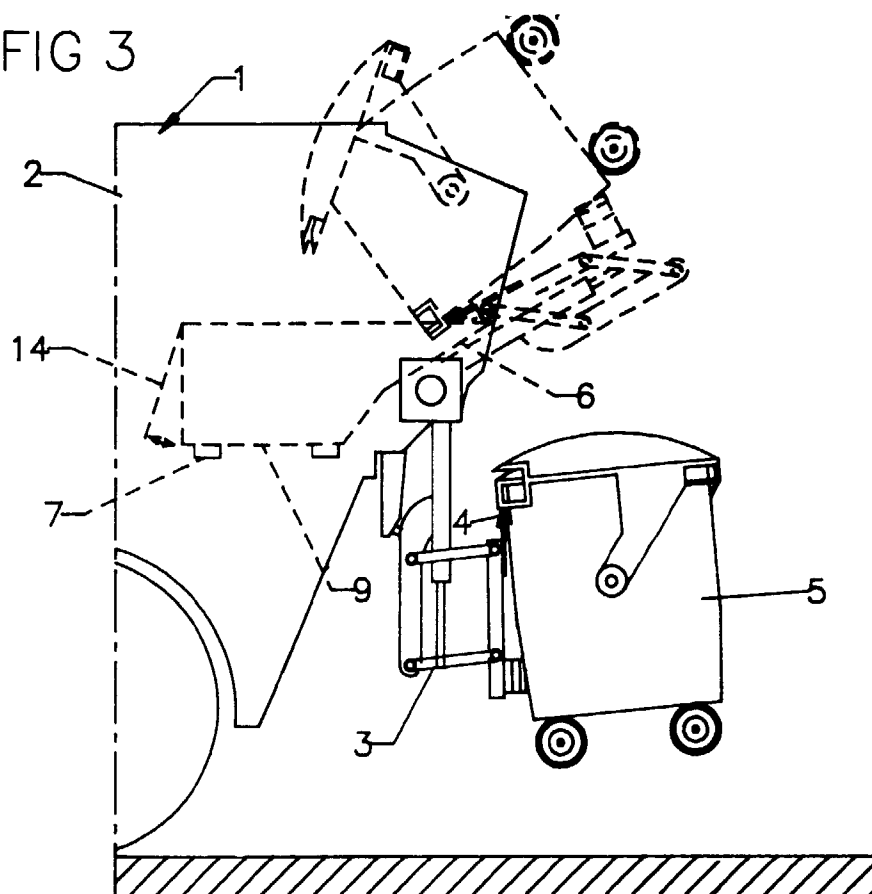


FIG 4

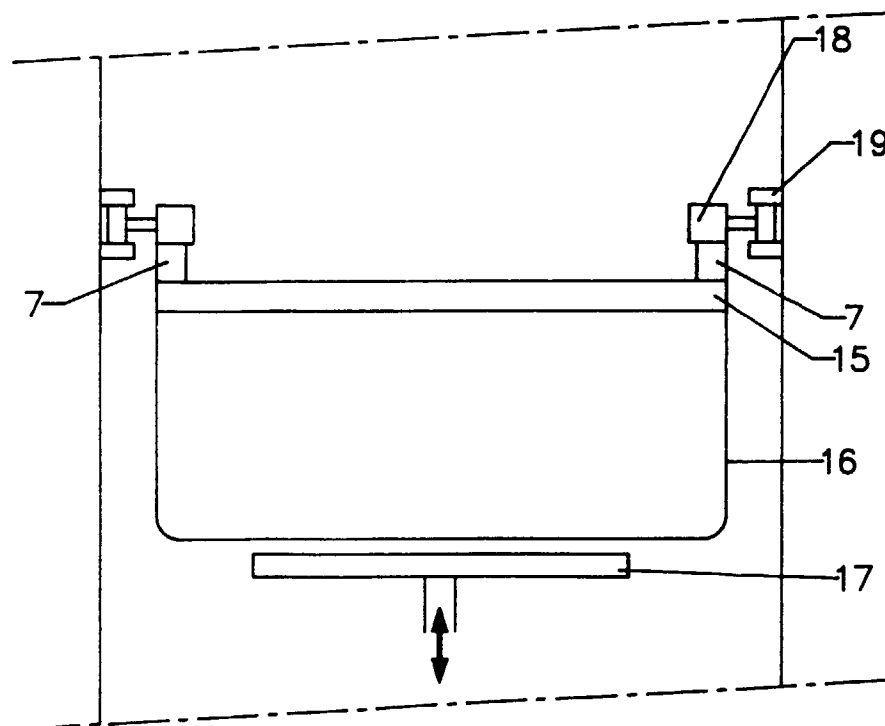


FIG 5

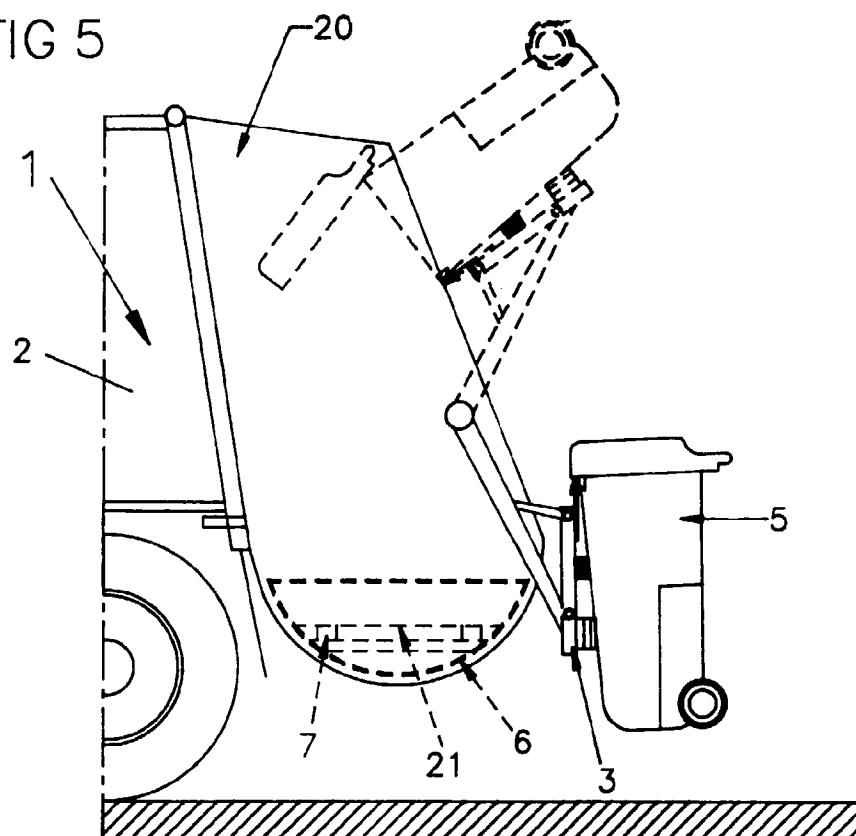


FIG 6

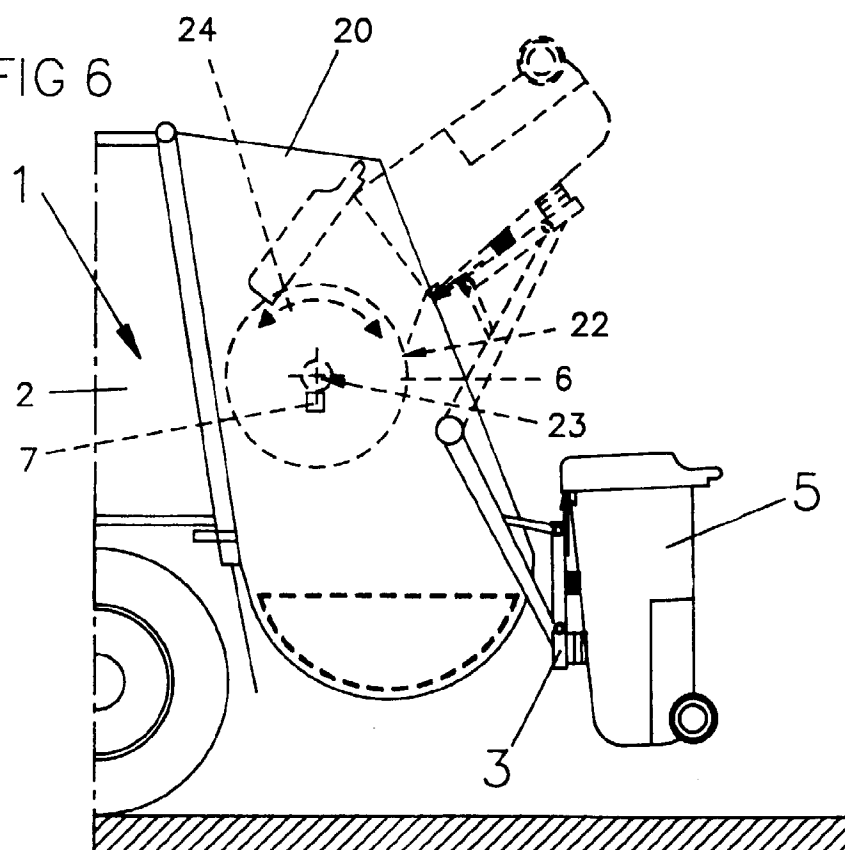


FIG7

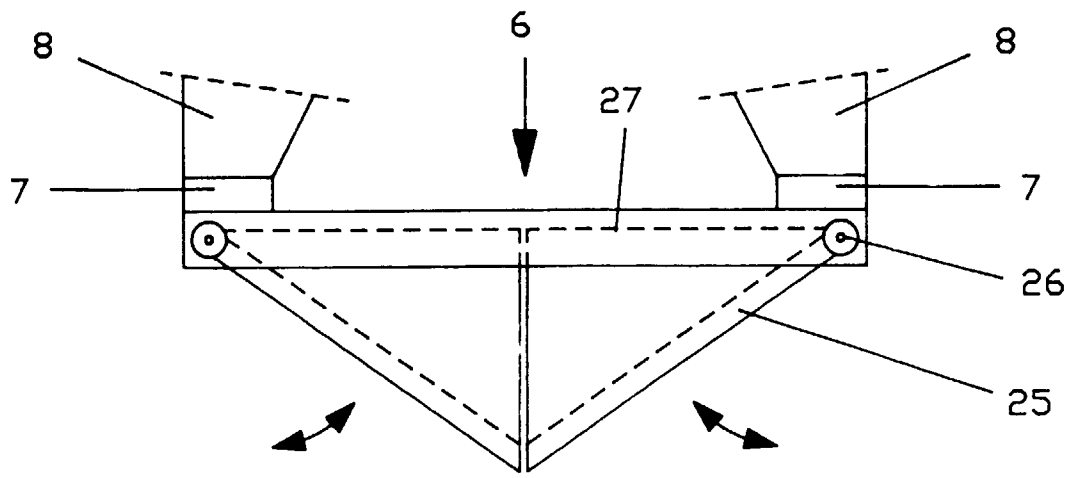
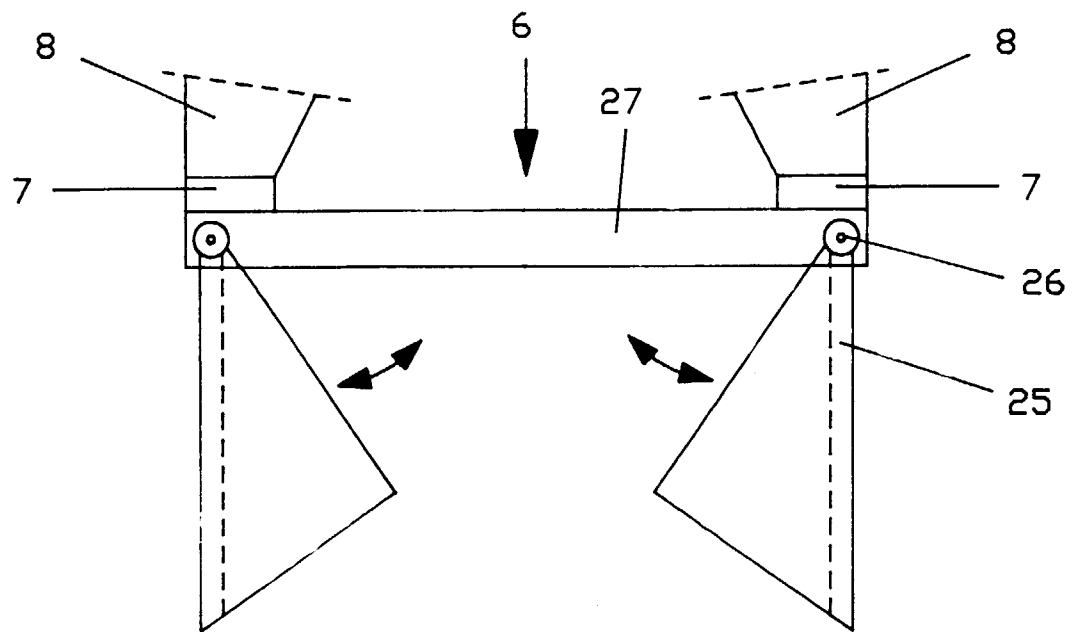


FIG8





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EUROPEAN SEARCH REPORT

Application Number
EP 96 20 0234

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X Y A	W0-A-94 07774 (A. JENSEN) * page 4, line 35 - page 6, line 30 * * figures 1,3 * ---	1-4,7,10 5,6,8 9	B65F3/04
Y	DE-A-42 02 208 (H. KUMMER) * column 6, line 39 - line 64 * * figures 2,3 * ---	5	
Y	FR-A-1 028 379 (A. JULLIAN ET AL.) * the whole document * ---	6	
P,Y	EP-A-0 669 270 (A. LANDOLT) * column 2, line 28 - column 4, line 34 * * figures 1-3 * ---	8	
X	DE-A-40 33 501 (VC-RECYCLING-PATENTVERWERTUNG GMBH) * claims 1,9 * -----	1	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10 May 1996	Examiner Smolders, R
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			

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