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(54) **Waste collecting device and method for using such a device**

Müllsammelvorrichtung und Verfahren zu ihrer Verwendung

Dispositif de collecte de déchets et procédé d'utilisation d'un tel dispositif

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Description

[0001] The present invention relates to a waste collecting device according to the introduction of claim 1. In practice two types of systems for collecting waste from waste collecting systems exist. A first collecting system, in which containers are exchanged by means of a vehicle, i.e. in which waste is carried off by the vehicle in the container in which it was deposited for emptying at a central location. A second type, in which a vehicle lifts the container from its location and empties the contents of the container into a collecting bin on the vehicle, after which the container in question is returned to its respective location. An important aspect of the second type is that it must be possible to empty the container quickly, using means that are available on the vehicle, which is not relevant in the case of the first type. The invention thus relates to a waste collecting device of the second type.

[0002] A waste collecting device as referred to in the introduction is generally known, for example from NL-C-1005958. Such waste collecting devices can be found at shopping centres, for example. Consumers go shopping, take their glass (nonreturnable) bottles along and deposit them in the waste collecting device in question. Periodically, or, if the container is fitted with a sensor that measures the degree to which the container is filled, when the sensor in question indicates that a predetermined degree of filling has been reached, a truck comprising a crane and a collecting bin drives to the waste collecting device in question, lifts the container, with the outlet opening in the closed position, from its location, opens the outlet opening, empties the contents into the collecting bin and returns the container, with the outlet opening in the closed position, to its location.

[0003] A drawback of such a waste collecting device is the fact that the container can fill up relatively rapidly, in particular in the case of empty receptacles such as (plastic) bottles and milk cartons, because the empty receptacles contain a lot of air. This drawback is manifesting itself to an increasing extent, because the collection of this kind of receptacles is becoming more and more topical.

[0004] Accordingly, it is the object of the present invention to provide a waste collecting device as referred to in the introduction, in which the container can be filled more efficiently, or in which the container fills up less rapidly than is the case with the known waste collecting device of the type in question.

[0005] This object is accomplished by the characterising part of claim 1. The waste collecting device comprises a compacting device for compressing the contents of the container. This does not so much mean that the receptacles are compressed individually, without excluding this possibility, but that the contents of the container are jointly compressed. This does not necessarily have to take place directly after the first waste has been deposited in the container, but it may also take place from a

moment the container has reached a certain degree of filling, for example by pressing together the waste that has been deposited in the container when the container is almost completely filled with, partially air-filled, receptacles. Since the contents of the container are pressed together by the compacting device, the container can be filled with six to seven times as much waste as is possible with a known container with comparable contents which is not fitted with a compacting device. In the present invention, locking and/or unlocking means are provided for locking and unlocking the closing means of the outlet opening. The locking means can prevent the closing means from unintentionally releasing the outlet opening when a pressure is exerted on the contents of the container, for example by the compacting device. The object of the present invention is thus accomplished. The invention is in part based on the perception that the container will be capable of withstanding the pressure of the compacting device when the closing means are of sufficiently sturdy construction. Another advantage of the present invention is that the compacted waste takes up less space not only in the container, but also in the truck with which it is transported to a central collecting facility. This leads to a reduction of the transport costs of a waste collecting system.

[0006] The outlet opening is provided at the bottom side of the container. Such a type is known as a so-called bottom discharge container. Bottom discharge containers are in particular suitable for waste collecting devices of the second type, whose contents are emptied into a collecting bin of a vehicle, after which the container is directly returned to its original location. Thus, the flaps at the bottom side of the container can be connected to the hoist means, so that the flaps can be operated by the hoist means.

[0007] Waste collecting devices comprising a compacting device are known, to be true, but they are waste collecting devices of the first type. The container, or at least the outlet opening, of such waste collecting devices is closed more firmly. The containers are quickly exchanged for empty ones at the location in question each time they are full. The containers need to remain firmly closed at all times while being handled, transported and stored for emptying at the central waste collection facility. In the case of containers of the second type it is important that the closing means can be unlocked in a simple manner upon being emptied. A container of the first type will thus be readily capable of withstanding the forces of the compacting device, whereas the exertion of a pressure in the case of a container of the second type involves the risk of the container being forced upwards from its at least partially underground location.

[0008] It is noted in this regard that furthermore containers comprising a conveyor are known, in which the conveyor carries the waste from the inlet opening to the container, and although the container may have a pressure-increasing effect on the contents of a container, such a conveyor must not be regarded as a compacting

device, because the force supplied by the conveyor is hardly capable of compacting the contents of the container, if at all. If such an effect is obtained at all, it may be considered to be an unintended effect. The force of the compacting means of a waste collecting device according to the present invention is preferably suitable for compacting by a factor of 2, more preferably a factor of 4, even more preferably a factor of at least 6 of the contents of the container. The force to be exerted by the compacting device depends on the type of container and the contents thereof.

[0009] German Utility Model DE 20 2006 016 421 U1 discloses an underground waste collecting container. This document discloses that containers with a press device are usually rather large to load upon a collecting vehicle to transport the container to a depot where it is being emptied. For that reason the invention disclosed in DE 20 2006 016 421 U1 is related to a rather small container to collect relatively large quantities of waste. The container has an inlet opening and an outlet opening at the upper side of the container. When the container has to be emptied it can be tipped, so that the closing plate pivots to an open position, or the closing plate can be removed completely to empty the container.

[0010] German Utility Model DE 203 05 392 U1 discloses an underground waste container having an inlet opening at the upper side and an outlet opening for emptying the container in a side wall. When the container is to be emptied it is collected by a collecting vehicle and replaced by an empty container. Once emptied, it can be taken to an underground receptacle to replace another container that has to be emptied.

[0011] The locking and/or unlocking means are preferably suitable for vertically locking/unlocking the outlet opening. By this is meant that the operating means are actuated in vertical direction for locking/unlocking the closing means. This makes it possible to actuate the locking and unlocking means during a hoisting movement by which the container is lifted from its location for emptying the same.

[0012] It is preferable that the locking and/or unlocking means are provided in hoisting means comprised by the container and by which the container is lifted by means of a crane associated with the vehicle. The hoist means can function as an operating element in that case.

[0013] It is preferable in that regard if the hoist means comprises at least two hoisting elements. When at least two hoisting elements are used, lifting the container can take place in a more controlled manner than in the situation in which only one hoisting element is used. Said two or more hoisting elements provide greater stability in certain situations.

[0014] In a preferred embodiment of the present invention, at least one of the hoisting elements forms part of an operating mechanism for the locking and unlocking means. This makes it possible to operate the locking and unlocking means while the container is being lifted, or at least while the container is suspended from one hoisting

element, or from both, for example the collecting bin on the vehicle.

[0015] When at least one of said at least two hoisting elements can be moved independently of at least the other of said at least two hoisting elements for operating the locking and unlocking means, it is possible to realise a simple operation of the locking and unlocking means. Thus, said at least one of said at least two hoisting elements can temporarily take over the hoisting function of at least the other of said at least two hoisting elements, whilst at least the other of said at least two hoisting elements can be operated by crane means mounted on the vehicle.

[0016] Thus it is advantageous if the closing means are in their locked position when a pulling force is being exerted on neither one or on both of said at least two hoisting elements, and that the closing means are in their unlocked position when a pulling force is being exerted on only one of said at least two hoisting elements. When a manipulator, for example a hydraulic manipulator, from which the other of said at least two hoisting elements is suspended, is veered out, the container will remain suspended from one of said at least two hoisting elements. As a result of said veering out, the locking engagement of the closing means can be released, so that the closing means will release the outlet opening and waste collected in the container can be deposited into a collecting bin on the vehicle. When subsequently the manipulator for the other of said at least two hoisting elements is tensioned again and a pulling force is exerted thereon, this will result in the container being suspended from both of said at least two hoisting elements again at some point, with the closing means in the locked position. Thus, said locking engagement can remain intact when the container is returned to its location and the tension on both of said at least two hoisting elements is released. In this way the container cannot push itself upwards, as it were, when waste is being deposited in a container which is already (too) full and the compacting means are activated so as to force the waste into the (too) full container, as a result of which the closing means may exhibit a tendency to open under the influence of said force.

[0017] An even more stable device is provided if the device comprises two hoisting elements, which can be moved with respect to a third hoisting element positioned therebetween. Said two hoisting elements or said third hoisting element positioned therebetween may function to operate the locking and unlocking means, whilst the container is suspended from the other hoisting element, or from the other hoisting elements.

[0018] To prevent the compacting action of the compacting device being opposed by air confined in packaging material, it is preferable if at least one piercing or cutting element is provided for piercing or cutting through receptacles deposited in the waste collecting device. Said piercing or cutting element as such forms an opening in the receptacle, from which the originally confined air can escape when the receptacle is being compressed.

[0019] In order to be able to compact waste deposited in the waste collecting device even further, it is preferable if a shredding mechanism is provided for shredding waste that is deposited in the inlet opening.

[0020] To force excess air from said waste, it is preferable if a flattening element is provided for flattening waste that is deposited in the waste collecting device before said waste lands in the container. It is preferable in that regard if waste in the form of a container is forced open upon being flattened.

[0021] To make it easier to lift the container from its location and return it again it is preferable if a holding device is provided for holding the container at said location, which holding device surrounds the container at least at the bottom and part of the side thereof. The holding device may be configured as a bin into which the container can be slidingly or telescopically received.

[0022] To prevent a waste collecting device from (seriously) marring the streetscape, it is preferable if the container is disposed at least partially under the ground at its location. In that case part of the waste collecting device is often located above the ground, into which part the waste can be deposited and through which the waste is guided to the inlet of the container.

[0023] The present invention further relates to a method for collecting waste, according to claim 8. The advantages of such a method correspond to the advantages as discussed in the foregoing in relation to the waste collecting device.

[0024] The present invention will be explained by way of example hereinafter with reference to the appended drawings, in which:

Figure 1a is cutaway perspective view of a waste collecting device according to the present invention; Figure 1b shows the waste collecting device of figure 1, showing the housing of the compactor in cutaway view;

Figure 2 is a perspective view of the waste collecting device of figure 1, in this case showing the locking and unlocking device in cutaway view;

Figure 3 shows the waste collecting device of figure 2, the eyes of which have been pulled up by a crane (not shown);

Figure 4 shows the waste collecting device of figure 2, with the locking device in the unlocked position; and

Figure 5 shows the waste collecting device of figure 2, with the closing flaps in the open position.

[0025] Like elements are indicated by the same numerals in all the figures.

[0026] Figure 1a shows a cutaway perspective view of a waste collecting bin 1 comprising a housing 2 which, in use, is disposed above the ground and which is provided with an inlet opening 3 for waste and with eyes 4a, 4b, 4c. Positioned under the housing 2 is a container 5, which, in use, is disposed under the ground and which

is bounded by ribs 6, between which walls 7 extend, which container is surrounded at the upper side by a floor plate 12, which, in use, is supported on a bottom of an underground trough in which the container 5 of the waste collecting bin 1 is placed. The container 5 is provided with flaps 8 at the bottom side, which close the outlet opening (see figure 5) of the bottom discharge container 5 and which are locked against unintentional opening by means of connecting rods 9, which are connected to a connecting piece 10. The connecting piece 10 is releasably connected to a locking and unlocking mechanism (not shown in figure 1) accommodated within the housing 2. A comparable mechanism of connecting rods and connecting piece is provided on the rear wall (not shown), which is positioned opposite the wall 7 along which the connecting rods 9 extend. As the figure shows, a compactor housing 11 is disposed between the housing 2 and a storage space of the underground container 5, which housing accommodates a compactor (not shown).

[0027] Figure 1b is a view of the waste collecting bin of figure 1, from which the front wall, the connecting rods and the compactor housing have been left out, thus exposing to view a roller 14 with a flat screw 13, which functions as a compactor, which are accommodated in the compactor housing shown in figure 1.

[0028] Figure 2 is another view of the waste collecting bin 1 of figure 1, from which the aboveground housing and the floor plate have been left out. As a result, the locking and unlocking mechanism 15 accommodated in the housing (not shown) is exposed to view. The locking and unlocking mechanism 15 comprises a movable locking pin 16, widened portions 17a, 17b, 17c, a yoke cam 18, a locking cam 19, a curve plate 20, rods 21 a, 21 b, 21 c, a bearing roller 22 and a slot 23, and is covered by a cover plate 26. Figure 2 shows the situation in which the waste collecting bin 1 is accommodated in an underground trough (not shown) in use.

[0029] Figure 3 shows the waste collecting bin 1 of figure 2, in a situation in which the waste collecting bin 1 is being lifted from the underground trough, for example to a truck having its own collecting bin, by means of a crane (not shown) via eyes 4a, 4b, 4c.

[0030] Figure 4 shows the waste collecting bin 1 in a situation in which the locking and unlocking mechanism is in the unlocked position, but before the flaps 8 are opened by the connecting piece 10 and the connecting rods 9.

[0031] Figure 5, to conclude, shows the waste collecting bin 1 in a situation in which the flaps 8 have been moved down for releasing the outlet opening 24 of the container 5.

[0032] Now referring to figures 1a and 1b, the waste collecting bin 1 according to the present invention is shown, which waste collecting bin 1 comprises a housing 2 provided with an inlet opening for waste, for example plastic bottles. The housing 2 is located aboveground and is separated from the underground container 5 by means of a floor plate 12. A channel (not shown) extends

from the inlet opening 3 to the compactor housing 11, in which the waste is flattened between the roller 14 and the wall of the compactor housing 11. The orientation of ribs on the roller 14 ensures that the waste being flattened between the roller 14 and the wall of the compactor housing 11 is guided in downward direction towards the flat screw 13. Because of the rotation of the roller 14 and the flat screw 13, waste is moved from the inlet opening 3 and the channel in the direction of the underground container 5. When the underground container 5 is practically empty, the waste will land in the container from the compactor housing 11, via the flat screw 13, and fall on the bottom of the underground container 5 or on waste collected on said bottom. If the underground container 5 is filled to the level of the flat screw 13, however, the flat screw 13 will force waste from the compactor housing into the underground container 5, further compressing the contents of the underground container 5 thereby. The compactor pressure, which is exerted on the contents of the underground container 5 via the flat screw 13, suffices for compacting the contents of the underground container 5 by a factor of 6 or more. During said compacting, the pressure on the flaps 8 increases further and further. To prevent the flaps 8 from opening under the influence of the pressure being exerted and forcing the underground container 5 upwards (the flaps 8 are positioned against or near the underground trough (not shown) in which the waste collecting bin 1, or at least the underground container 5 thereof, is accommodated), the flaps 8 are connected, via the connecting rods 9 and the connecting piece 10, to a locking and unlocking mechanism, which will be explained in more detail hereinafter.

[0033] Now referring to figure 2, the waste collecting bin of figure 1 is shown in partially cutaway view, so that the locking and unlocking mechanism 15 of the waste collecting bin 1 is exposed to a view. Figure 2 shows the situation in which the waste collecting bin 1 is placed at a location, usually in a condition ready for receiving waste, with the container 5 of the waste collecting bin 1 being disposed mainly under the ground. The eyes 4a, 4b and 4c are connected to rods 21 a, 21 b and 21 c, respectively, which are provided with a widened portion 17a, 17b and 17c, respectively, at their bottom ends. The outer rods 21 a and 21b are slidably accommodated in yoke cams 18, which are attached to the vertical arms of connecting pieces 10 and which are movable with respect to locking cams 19, which form part of a yoke that comprises a backplate 27 and connecting pieces 10. The rod 21 b is slidably accommodated between two curve plates 20. In addition, the three rods 21 a, 21 b and 21 c slidably extend through the cover plate 26. The locking cams 19 are supported on movable locking pins 16, which are connected to bearing rollers 22, which extend through slots 23 in the curve plates 20.

[0034] When the waste collecting bin 1 is to be lifted up from its location, a crane (not shown) engages the three eyes 4a, 4b, 4c and pulls them up, as a result of which the rods 21 a, 21 b, 21 c are likewise pulled up,

whilst the rest of the waste collecting bin 1 remains in place. Figure 3 shows the situation in which the rods 21 a, 21 b, 21 c have been pulled up so far that the rods 21 a, 21 c abut against the yoke cams 18 with their widened portions 17a, 17c. As a result, the yoke is slightly lifted up and the locking cams 19 become detached from the movable locking pins 16.

[0035] Once the waste collecting bin comprising the container has been manoeuvred to a position above a collecting bin of a truck, for example, the crane will slightly release the tension on the outer eyes 4a, 4c. Since the container 5 is connected to the outer eyes 4a, 4c via the yoke, however, the yoke will move down with the container 5. The curve plates 20 are stopped, however, by the widened portion 17b of the middle rod 21 b, which is suspended from the crane via the eye 4b. Thus, the bearing rollers 22 move down in the slots 23 of the curve plates 20. Since the slots 23 are positioned more inwardly at their bottom side than at their upper side, the bearing rollers 22 are forced inwards, pulling the movable locking pins 16 along in inward direction, as a result of which the downward movement of the locking cams 19 is no longer stopped by the movable locking pins 16 in question.

[0036] When the tension on the outer eyes 4a, 4c is subsequently released even further, the waste collecting device 1 will be suspended only from the middle eye 4b, and the backplate 27 can move downwards with the connecting pieces 10 with respect to the upper plate 26 and the curve plates 20. Since the upper plate 26 is fixedly connected to the ribs 6 and the walls 7 of the container 5, the container will remain substantially statically in place, and the connecting pieces 10 will move downwards with respect to the container 5, as a result of which also the connecting rods 9 will move downwards with respect to the container, thus opening the flaps 8 of the container 5. The waste in the container 5 will then freely fall down, for example into the collecting bin of the truck that collects the waste. When the above procedure is repeated in reverse order, the flaps 8 of the container 5 will close again and the waste collecting bin 1 can finally be returned to its location with the flaps in the locked condition. Because of this locked condition, it is subsequently possible again to exert a pressure on the contents of the container, without the risk of the flaps of the container opening spontaneously, forcing the container upwards from its location.

[0037] In the figures and the description, only one embodiment of the present invention has been shown and described by way of example. It will be understood, however, that the figures and the description by no means have a limiting effect on the scope of the present invention, which is defined by the appended claims. Thus the term "waste" should be given a broad interpretation. The term "waste" also includes articles of use, for example, which can be converted into raw materials via a return system, such as plastic bottles and milk cartons made of laminated cardboard. The ribs that can be distinguished on the roller may alternatively also be configured as

knives or pins, so that waste is not so much or not only flattened but cut through or pierced.

Claims

1. A waste collecting device (1) comprising a container (5) placed, or to be placed, at least partially under the ground at a location, said container (5) being of the type that is arranged to be lifted from its location by a vehicle so as to be emptied on site into a collecting bin on the vehicle, comprising an inlet opening (3) for waste, an outlet opening (24) provided at the bottom side of the container (5) for emptying the container (5) and closing means (8) for closing the outlet opening (24) **characterised in that** comprises said waste collecting device compacting device (13, 14) for compressing the contents of the container (5) wherein the closing means (8) are connected to locking and unlocking means, comprising a locking and unlocking mechanism (15), for locking and unlocking the closing means (8) of the outlet opening (24) for preventing the closing means (8) from unintentionally releasing the outlet opening (24).
2. A waste collecting device (1) according to claim 1, **characterised in that** said locking and unlocking means are provided in hoisting means comprised by the container (5) by which the container (5) is lifted by means of a crane associated with the vehicle.
3. A waste collecting device (1) according to claim 2, **characterised in that** the hoist means comprises at least two hoisting elements (4a, 4b, 4c).
4. A waste collecting device (1) according to claim 3, **characterised in that** at least one of the at least two hoisting elements (4a, 4b, 4c) forms part of an operating mechanism for the locking and unlocking means.
5. A waste collecting device (1) according to claim 4, **characterised in that** at least one of said at least two hoisting elements (4a, 4b, 4c) can be moved independently of at least the other of said at least two hoisting elements (4a, 4b, 4c) for operating the locking and unlocking means.
6. A waste collecting device according to claim 5, **characterised in that** the closing means (8) are in their locked position when a pulling force is being exerted on neither one or on both of said at least two hoisting elements (4a, 4b, 4c), and that the closing means (8) are in their unlocked position when a pulling force is being exerted on only one of said at least two hoisting elements (4a, 4b, 4c).
7. A waste collecting device (1) according to claim 5 or

6, **characterised in that** the device (1) comprises two hoisting elements (4a, 4c) which can be moved with respect to a third hoisting element (4b) positioned there between.

8. A method for collecting waste in a waste collecting device (1) according to any one or more of the preceding claims, comprising the steps of:
 - collecting waste in the container (5) of the waste collecting device (1)
 - periodically lifting the container (5) from its collecting location by means of a vehicle fitted with a hoist,
 - emptying the container (5) into a collecting bin on the vehicle by vertically actuating operating means (21a, 21b, 21c) to operate the locking and unlocking mechanism (15) to unlock the closing means (8) of the outlet opening (24) and to open the outlet opening (24) and subsequently to close the outlet opening (24) and then to operate the locking and unlocking mechanism (15) to lock the closing means (8) of the outlet opening (24), and
 - returning the container (5) to the collecting location.

Patentansprüche

1. Müllsammelvorrichtung (1) mit einem Behälter (5), der wenigstens teilweise unterflurig an einen Standplatz gestellt oder zu stellen ist, wobei der Behälter (5) von der Art ist, dass er so ausgebildet ist, dass er von einem Fahrzeug von seinem Standplatz angehoben und vor Ort in ein Sammelbehältnis auf dem Fahrzeug entleert wird, mit einer Einlassöffnung (3) für Müll und einer an der Unterseite des Behälters (5) vorgesehenen Auslassöffnung (24) zur Entleerung des Behälters (5) sowie Verschlusseinrichtungen (8) zum Verschließen der Auslassöffnung (24), **dadurch gekennzeichnet, dass** die Müllsammelvorrichtung eine Verdichtungsanordnung (13, 14) zum Zusammenpressen des Inhalts des Behälters (5) umfasst, wobei die Verschlusseinrichtungen (8) mit Verriegelungs- und Entriegelungseinrichtungen mit einem Verriegelungs- und Entriegelungsmechanismus (15) zum Verriegeln und Entriegeln der Verschlusseinrichtungen (8) der Auslassöffnung (24) verbunden sind, um zu verhindern, dass die Verschlusseinrichtungen (8) die Auslassöffnung (24) versehentlich freigeben.
2. Müllsammelvorrichtung (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Verriegelungs- und Entriegelungseinrichtungen in Hebeeinrichtungen vorgesehen sind, die der Behälter (5) umfasst und durch die der Behälter (5) mittels eines dem

Fahrzeug zugeordneten Krans angehoben wird.

3. Müllsammelvorrichtung (1) nach Anspruch 2, **dadurch gekennzeichnet, dass** die Hebeeinrichtung wenigstens zwei Hebeelemente (4a, 4b, 4c) umfasst. 5
4. Müllsammelvorrichtung (1) nach Anspruch 3, **dadurch gekennzeichnet, dass** wenigstens eines der wenigstens zwei Hebeelemente (4a, 4b, 4c) Teil eines Bedienmechanismus für die Verriegelungs- und Entriegelungseinrichtungen ist. 10
5. Müllsammelvorrichtung (1) nach Anspruch 4, **dadurch gekennzeichnet, dass** wenigstens eines der wenigstens zwei Hebeelemente (4a, 4b, 4c) unabhängig von wenigstens dem anderen der wenigstens zwei Hebeelemente (4a, 4b, 4c) zur Bedienung der Verriegelungs- und Entriegelungseinrichtungen bewegbar ist. 15
6. Müllsammelvorrichtung (1) nach Anspruch 5, **dadurch gekennzeichnet, dass** die Verschlusseinrichtungen (8) in ihrer verriegelten Stellung sind, wenn auf keines oder auf beide der wenigstens zwei Hebeelemente (4a, 4b, 4c) eine Zugkraft ausgeübt wird, und dass die Verschlusseinrichtungen (8) in ihrer entriegelten Stellung sind, wenn auf nur eines der wenigstens zwei Hebeelemente (4a, 4b, 4c) eine Zugkraft ausgeübt wird. 20
7. Müllsammelvorrichtung (1) nach Anspruch 5 oder 6, **dadurch gekennzeichnet, dass** die Vorrichtung (1) zwei Hebeelemente (4a, 4c) umfasst, die bezüglich eines dazwischen positionierten dritten Hebeelements (4b) bewegbar sind. 25
8. Verfahren zum Sammeln von Müll in einer Müllsammelvorrichtung (1) nach einem oder mehreren der vorhergehenden Ansprüche, mit den folgenden Schritten: 30
 - Müll wird im Behälter (5) der Müllsammelvorrichtung (1) gesammelt,
 - der Behälter (5) wird mittels eines mit einer Hebevorrichtung ausgestatteten Fahrzeugs periodisch von seinem Sammelstandplatz angehoben,
 - der Behälter (5) wird in ein Sammelbehältnis auf dem Fahrzeug entleert, indem Bedieneinrichtungen (21a, 21b, 21c) vertikal betätigt werden, um den Verriegelungs- und Entriegelungsmechanismus (15) so zu bedienen, dass die Verschlusseinrichtungen (8) der Auslassöffnung (24) entriegelt werden und die Auslassöffnung (24) geöffnet wird und die Auslassöffnung (24) anschließend geschlossen wird, und um dann den Verriegelungs- und Entriegelungsme-

chanismus (15) so zu bedienen, dass die Verschlusseinrichtungen (8) der Auslassöffnung (24) verriegelt werden, und
- der Behälter (5) wird an den Sammelstandplatz zurückgestellt.

Revendications

1. Dispositif de collecte de déchets (1), comprenant un conteneur (5) positionné, ou destiné à être positionné, au moins partiellement sous le sol dans un emplacement, ledit conteneur (5) étant du type qui est agencé pour être levé à partir de son emplacement par un véhicule afin d'être vidé sur place dans une benne de collecte sur le véhicule, comprenant une ouverture d'entrée (3) pour des déchets, une ouverture de sortie (24) prévue sur le côté inférieur du conteneur (5) pour vider le conteneur (5), et des moyens de fermeture (8) pour fermer l'ouverture de sortie (24), **caractérisé en ce que** ledit dispositif de collecte de déchets comprend un dispositif de compactage (13, 14) pour comprimer le contenu du conteneur (5), dans lequel les moyens de fermeture (8) sont raccordés à des moyens de verrouillage et de déverrouillage, comprenant un mécanisme de verrouillage et de déverrouillage (15), pour verrouiller et déverrouiller les moyens de fermeture (8) de l'ouverture de sortie (24) pour empêcher les moyens de fermeture (8) de relâcher involontairement l'ouverture de sortie (24). 10
2. Dispositif de collecte de déchets (1) selon la revendication 1, **caractérisé en ce que** lesdits moyens de verrouillage et de déverrouillage sont prévus dans des moyens de levage compris par le conteneur (5) par lesquels le conteneur (5) est levé au moyen d'une grue associée au véhicule. 15
3. Dispositif de collecte de déchets (1) selon la revendication 2, **caractérisé en ce que** les moyens de levage comprennent au moins deux éléments de levage (4a, 4b, 4c). 20
4. Dispositif de collecte de déchets (1) selon la revendication 3, **caractérisé en ce qu'**au moins un des au moins deux éléments de levage (4a, 4b, 4c) fait partie d'un mécanisme d'actionnement pour les moyens de verrouillage et de déverrouillage. 25
5. Dispositif de collecte de déchets (1) selon la revendication 4, **caractérisé en ce qu'**au moins un desdits au moins deux éléments de levage (4a, 4b, 4c) peut être déplacé indépendamment d'au moins l'autre desdits au moins deux éléments de levage (4a, 4b, 4c) pour actionner les moyens de verrouillage et de déverrouillage. 30

6. Dispositif de collecte de déchets (1) selon la revendication 5, **caractérisé en ce que** les moyens de fermeture (8) sont dans leur position verrouillée lorsqu'une force de traction n'est exercée sur aucun, ou est exercée sur les deux, desdits au moins deux éléments de levage (4a, 4b, 4c), et que les moyens de fermeture (8) sont dans leur position déverrouillée lorsqu'une force de traction est exercée sur seulement un desdits au moins deux éléments de levage (4a, 4b, 4c). 5 10
7. Dispositif de collecte de déchets (1) selon la revendication 5 ou 6, **caractérisé en ce que** le dispositif (1) comprend deux éléments de levage (4a, 4c) qui peuvent être déplacés par rapport à un troisième élément de levage (4b) positionné entre ceux-ci. 15
8. Procéder pour collecter des déchets dans un dispositif de collecte de déchets (1) selon une ou plusieurs quelconques des revendications précédentes, comprenant les étapes de : 20
- collecte de déchets dans le conteneur (5) du dispositif de collecte de déchets (1),
 - levage périodique du conteneur (5) à partir de son emplacement de collecte au moyen d'un véhicule équipé d'un dispositif de levage, 25
 - vidage du conteneur (5) dans une benne de collecte sur le véhicule en actionnant verticalement des moyens d'actionnement (21a, 21b, 21c) pour actionner le mécanisme de verrouillage et de déverrouillage (15) pour déverrouiller les moyens de fermeture (8) de l'ouverture de sortie (24) et pour ouvrir l'ouverture de sortie (24) et, par la suite, pour fermer l'ouverture de sortie (24) et puis pour actionner le mécanisme de verrouillage et de déverrouillage (15) pour verrouiller les moyens de fermeture (8) de l'ouverture de sortie (24), et 30 35
 - remise du conteneur (5) dans l'emplacement de collecte. 40

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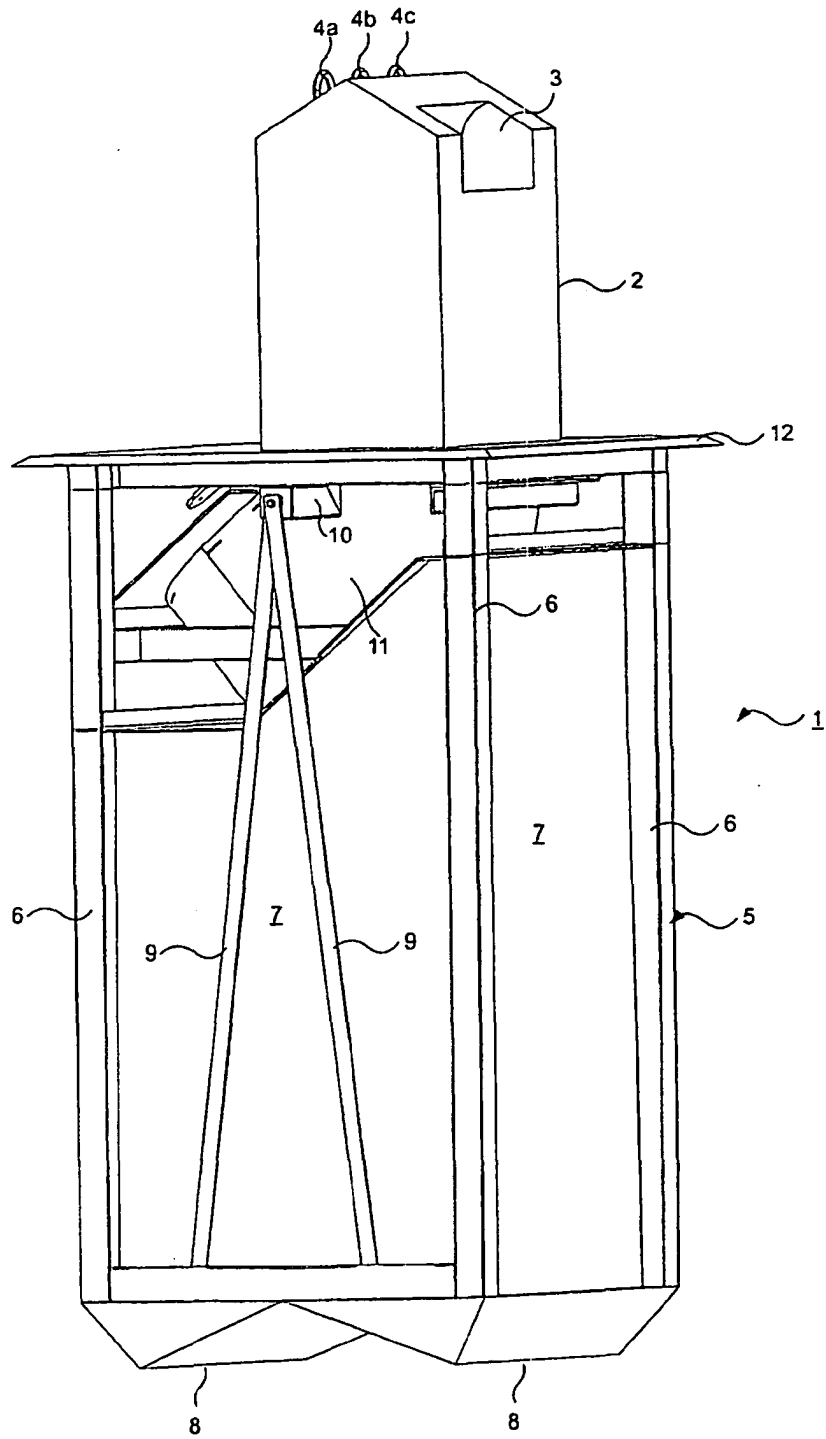


Fig.1a

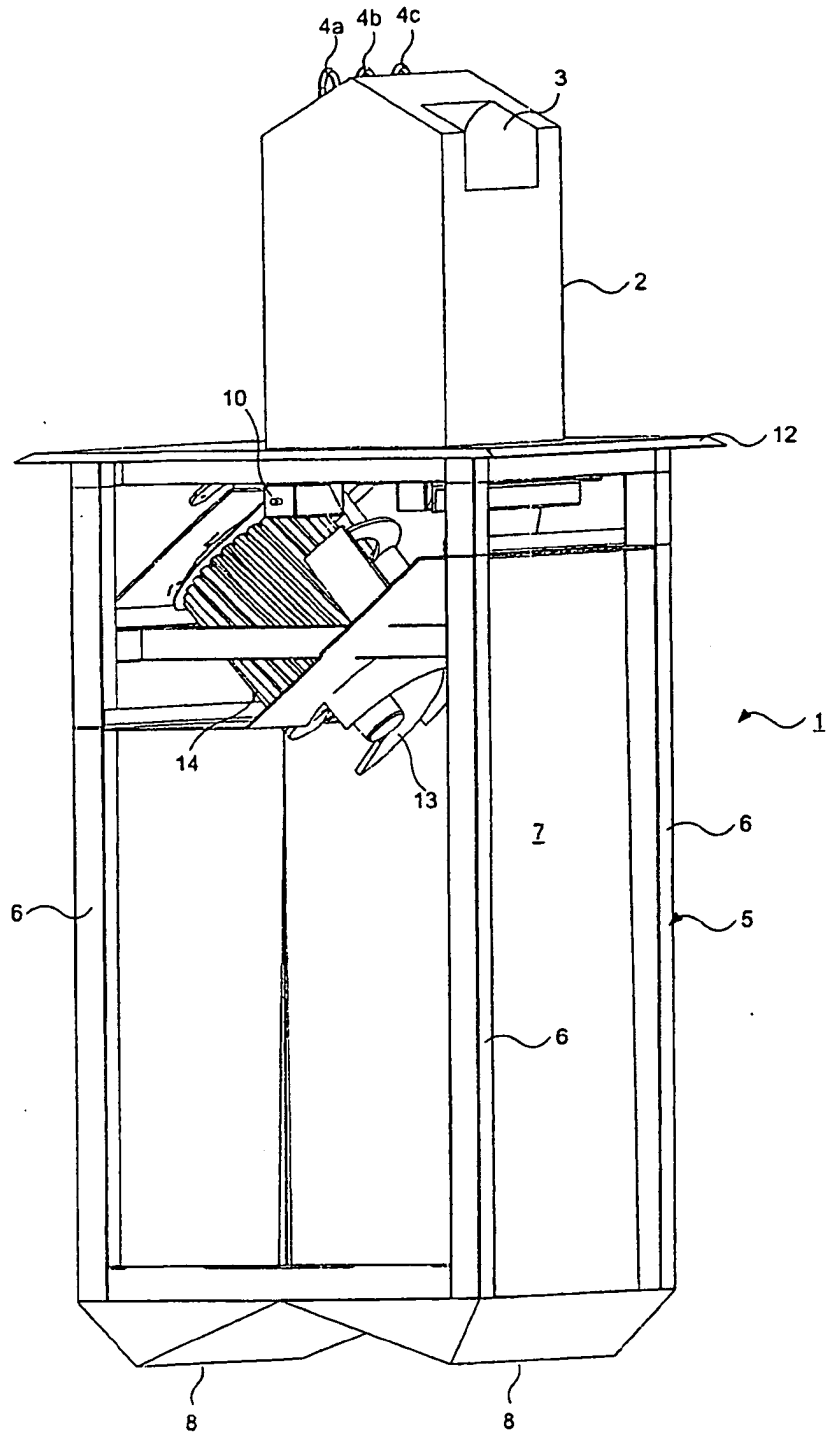


Fig.1b

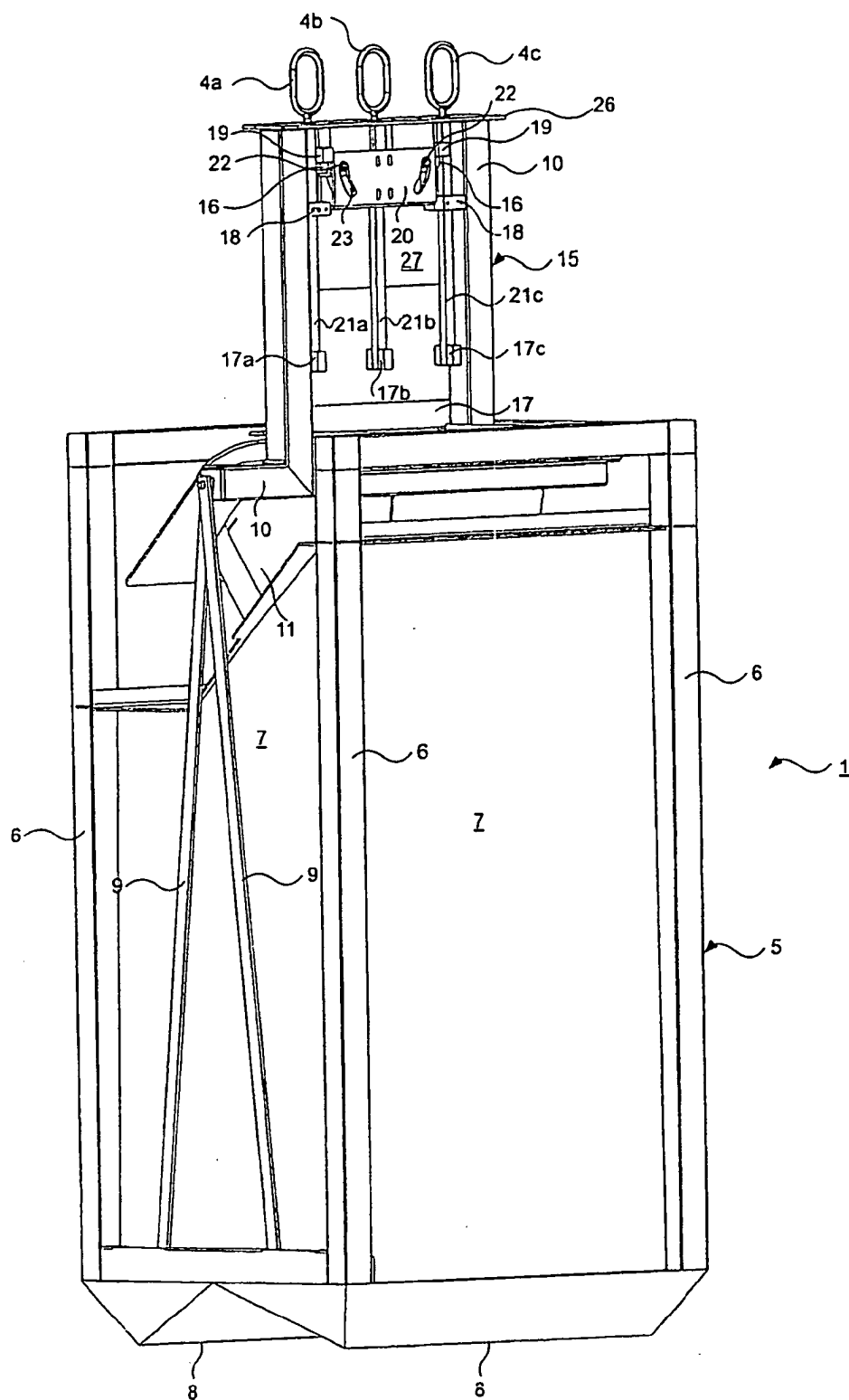


Fig.2

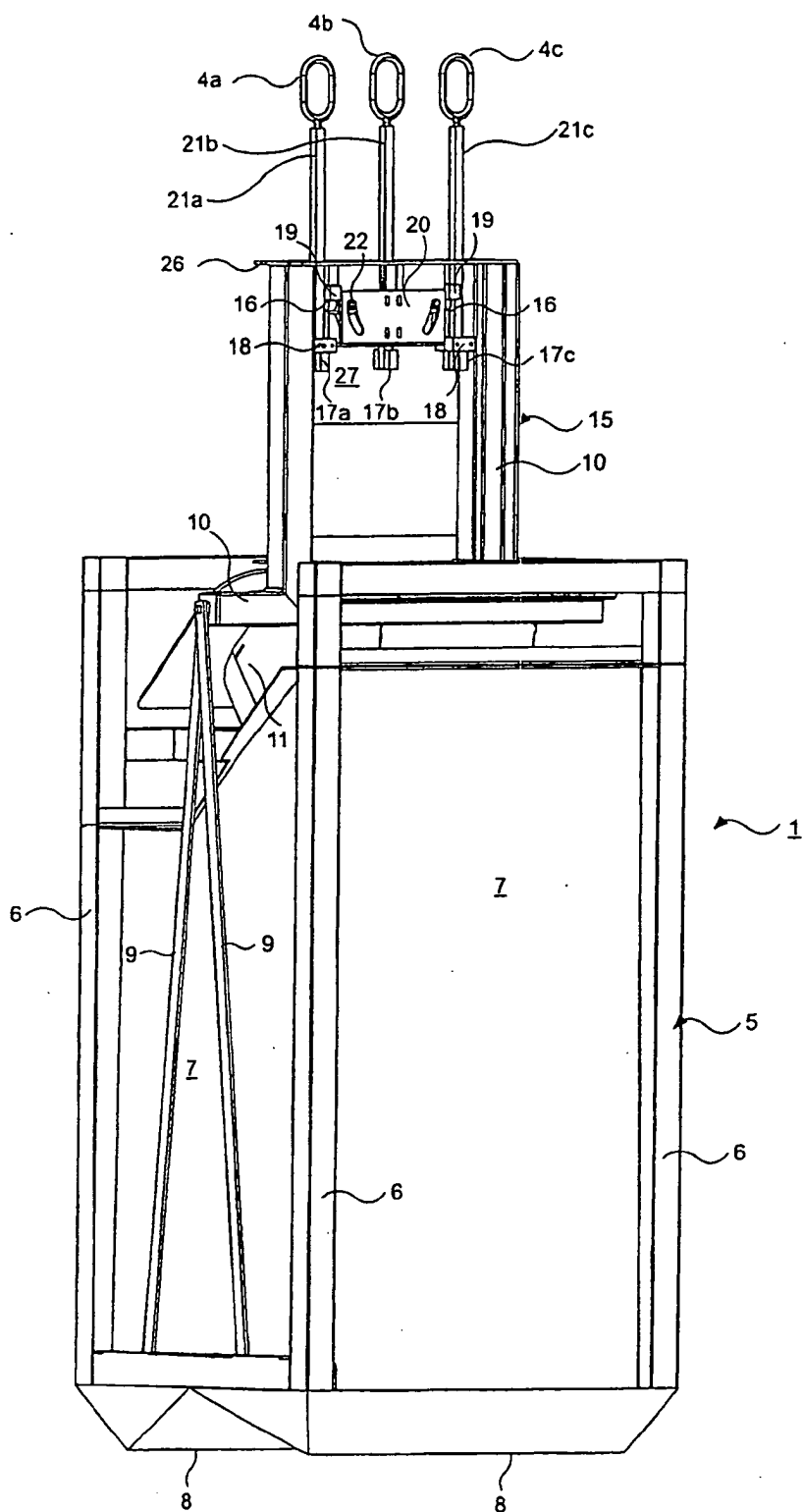


Fig.3

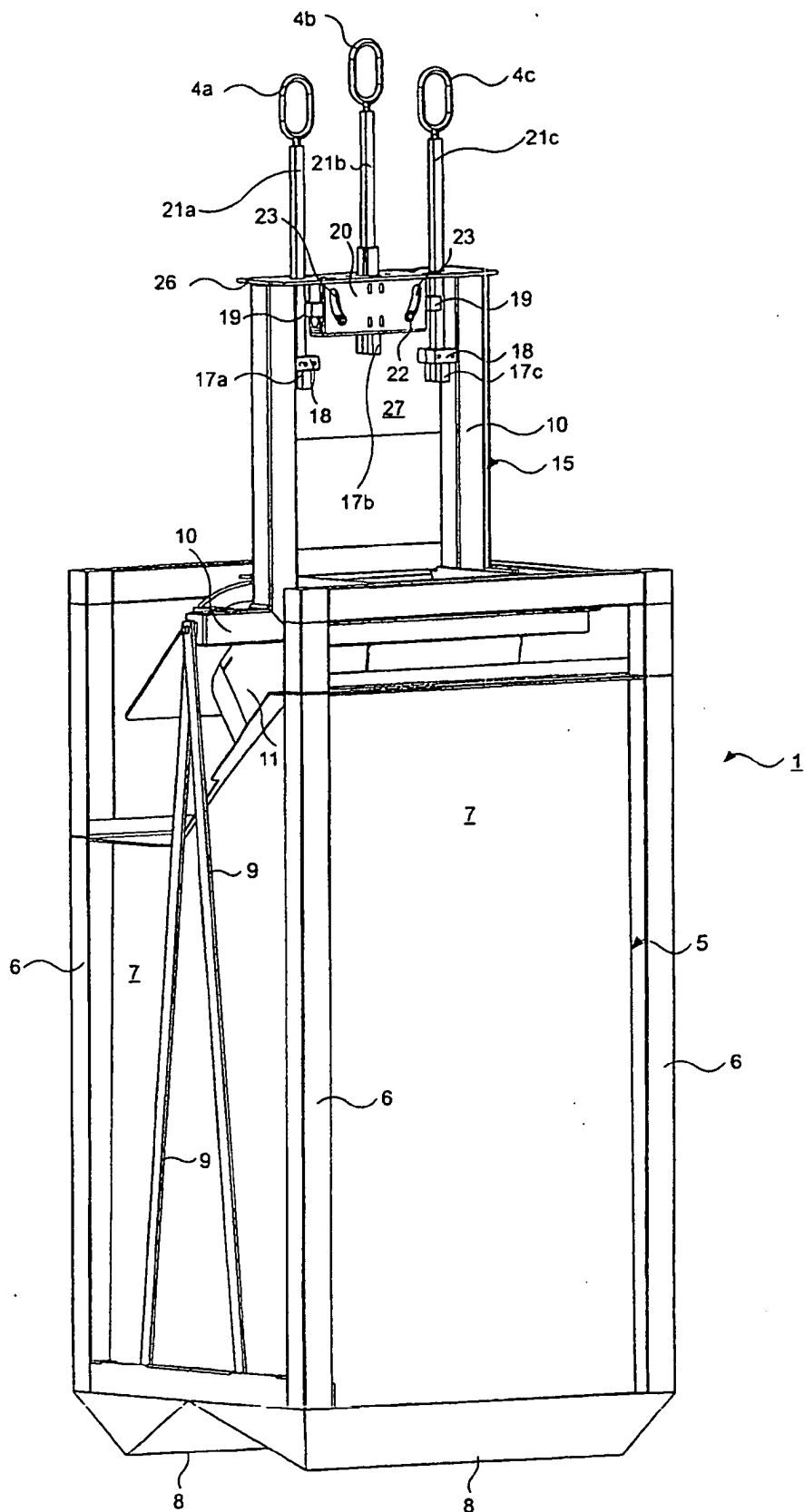


Fig.4

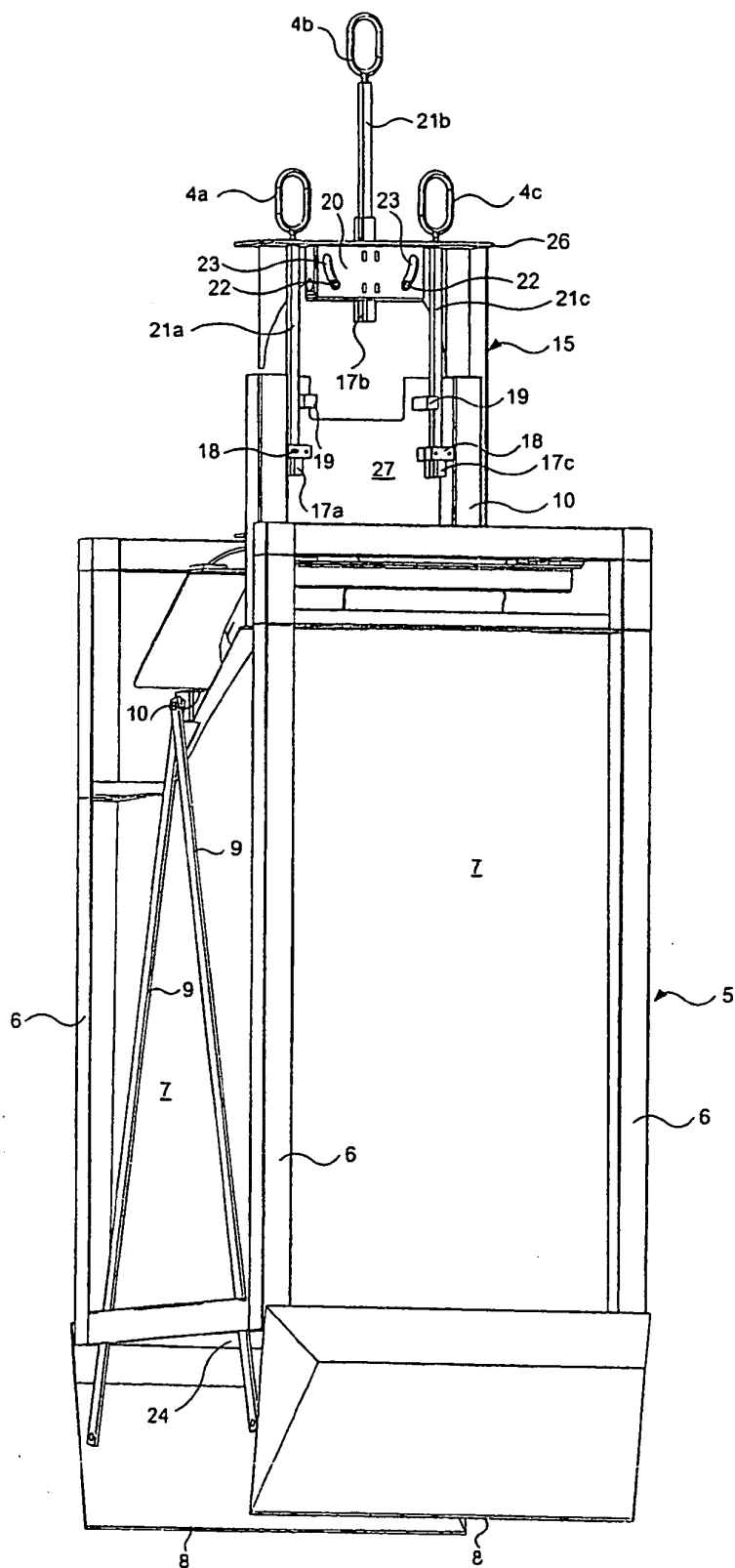


Fig.5

REFERENCES CITED IN THE DESCRIPTION

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