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(54) Device for handling and emptying waste collection containers

Vorrichtung zum Handhaben und Entleeren von Müllbehältern

Dispositif pour manipuler et vider des conteneurs à déchets

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Description

[0001] The present invention concerns a device for handling and emptying the contents of containers for waste collection.

[0002] Motor vehicles generally used for handling and emptying the contents of these containers are fitted with:

- a body to contain the refuses with a relevant compactor and a hopper for waste emptying,
- a container coupling device,
- means for lifting the container above the body of the vehicle and
- means for tilting it, in order to empty the refuses contained in it.

[0003] The means already known for lifting the container consist of a guiding frame associated to a wall of the vehicle, made of two parallel guides on which slides a carriage associated to the coupling means of the container.

[0004] Documents EP-A-0728684 and DE-U-8712902 relate to a device for handling and emptying the contents of containers for waste collection inside the body of a vehicle for refuse collection, said device comprising a first guiding frame associated to a second guiding frame apt to raise a container up to a determined height.

[0005] Furthermore, EP-A-1 142 803 disclosed a device in accordance with the preamble of claim 1.

[0006] It is also known that in order to reach and couple a container at a certain distance from the vehicle, it is necessary for the guide lifting the container to change from a substantially parallel configuration to an inclined configuration with respect to the wall of the vehicle.

[0007] The guides are substantially hinged to the upper section of the vehicle body; a carriage slides between the guides bearing a device with arms for the coupling of the container.

[0008] In order to also couple the containers placed far away from the side wall of the vehicle, it is necessary to have sufficiently long guides; now, since it is not possible to extend the guides length downwards due to obstructing problems with respect to the road, the length of the guides is extended in the upward direction utilizing the whole height of the vehicle for their manufacture.

[0009] According to this configuration, the emptying of the container occurs substantially with the container projecting over the upper edge of the body of the vehicle used for waste collection; therefore, the handling and emptying of a container is not possible when the latter is positioned, for instance, in places where there is an obstruction in the height, such as a balcony or recess, or the branches of a tree jutting out over the vehicle body.

[0010] In some instances, longer arms are used for reducing the guide length. However, the greater length of the gripping arms does not allow the structure to couple the containers placed too near the side edge of the vehicle, a very important operation in order to prevent the

vehicle from moving too near the centre-line of the road. Moreover, due to the length of the gripping arms, especially when these arms have gripped the container, high flexure moments are caused due to the distance between the load supported overhanging by the carriage and the rotation axis of the gripping arms, which can be bucked by manufacturing the device with a sturdy complex frame.

[0011] However, also in this instance, during the emptying stage the size of the container exceeds the height of the vehicle. In fact, the space obtained in height by shortening the guides is lost increasing the length of the coupling arms, which bring the container substantially to the same position as it would have had with longer guides. In order to reduce the guides length, it is also known to have the guide frame hinged on the upper end to an oscillating element articulated with the vehicle. Even if the emptying height of the container is reduced with this method, the emptying height of the container remains anyway such, that during the emptying operation, the container will largely exceed the upper bulk of the vehicle. Moreover, the emptying height is not a consistent one but as a function of the inclination of the guiding frame, according to the position of the container with respect to the vehicle.

[0012] Moreover, according to the known solutions, either fixed or mobile with respect to the body wall, during the emptying of the container the guiding frames in which the carriage is sliding remain in a stable position, i.e. in the position reached for the coupling of the container; this situation requires the use of specific actuators for rotating the container besides the ones provided for the handling of the guiding frame and the ones for displacing the carriage with the coupling device.

[0013] These actuators for arms rotation for the emptying of the container are complex and notoriously expensive.

[0014] Therefore, the known guiding frames solely exert the function of approaching the gripping arms to the container and sliding carriage for the translation of the container. It is the aim of the present invention to provide a device for handling and emptying the contents of containers for waste collection, which has not the drawbacks of the known state of art, but has operating advantages, is easy to use and has limited costs.

[0015] A further aim of the present invention is to provide a device for handling and emptying the contents of containers for waste collection, in which the size of the container during the emptying stage remains substantially within the vehicle height. A further aim of the present invention is to provide a device for handling and emptying the contents of containers for waste collection, in which the guides for lifting and emptying the container can be made of such a length to reach the containers far away from the vehicle without increasing the fixed length of the guiding frame.

[0016] In order to achieve such aims, it is the object of the present invention to provide a device for handling and emptying the contents of containers for waste collection,

incorporating the features of the annexed claims, which form an integral part of the present description.

[0017] Further objects and advantages of the present invention will become apparent from the following detailed description and annexed drawings, which are supplied by way of non limiting example, wherein:

- Fig. 1 shows schematically a side view of a vehicle for refuse collection comprising a device for handling and emptying the contents of containers for waste collection, according to the present invention;
- Fig. 2 shows a partially cutaway rear view of a vehicle for refuse collection comprising the device according to the present invention, in a rest position and displacing position of the vehicle;
- Figs. 3 and 4 show a partially cutaway rear view of a vehicle for refuse collection, comprising the device according to the present invention, during the handling stages of a waste container, in the conditions in which the container is near or far from the vehicle, respectively;
- Fig. 5 shows schematically a partially cutaway rear view of a vehicle for refuse collection, with the handling device in an intermediate emptying position of the container according to the present invention.

[0018] With reference to Figs. 1 to 5, reference 1 indicates a vehicle for refuse collection comprising a body 2, inside which the contents of waste containers C is emptied, a device 3 for handling the container C associated to a side wall 4 of the vehicle 1. The body 2 has an opening 5 for emptying the contents of the waste containers inside it.

[0019] The device 3 comprises a first guiding frame 6, which is obtained by two parallel uprights integral to each other, indicated with reference 7, said frame being hinged to a supporting structure 8 fastened to the side wall 4 of the body 2.

[0020] Between the uprights 7 of the first guiding frame 6 a second guiding frame 9 is provided, which is also obtained by two parallel uprights integral to each other, indicated with reference 10, which can slide between the uprights 7 of said first guiding frame 6, from a first position where it is inserted into the first guiding frame 6 and a second position where it is substantially fully projecting outside the latter.

[0021] It is obvious that the second guiding frame 9 may also take any position between the previous two, as a function of the position of the waste container C.

[0022] Reference 11 indicates a sliding carriage between the uprights 10 of the second guide 9.

[0023] Reference 12 indicates a coupling device of the container C associated to the carriage 11. The coupling device has two gripping arms 13, which can rotate by means of hydraulic actuators around an axis perpendicular to the displacing axis of the carriage 11.

[0024] The distance between the two arms 13, placed each one at an end of the device 12, is regulated auto-

matically in function of the width of the container C to be coupled.

[0025] The gripping arms 13 in their rest stage, i.e. when the guide 6 is positioned adjacent to the vehicle and the latter shifts for the gripping and emptying of another container, are vertically positioned in parallel to the guiding frame 6 facing downwards, and the second guiding frame 9 is partially inserted in the first guiding frame 6, so that the lower end of the gripping arms 13 is substantially positioned at the lower level of the body 2 (see Fig. 2).

[0026] The coupling device with its relevant arms and actuators is not described herein, being commonly known as such.

[0027] Reference 14 indicates two hydraulic actuators articulated to an end to the supporting structure 8 fastened to the side wall 4 of the body 2, in a different location from the one in which the upper end of the first guiding frame 6 is articulated, and on the other end they are articulated sideways each one on a lower end of the uprights 7 of it.

[0028] Partial activation of the actuators 14 determines an inclination towards the external part of the vehicle of the lower end of the first guiding frame 6 in order to approach it to the container C. The inclination provided by the actuators 14 to the first guiding frame 6 corresponds to one same inclination of the second guiding frame 9 sliding inside the first one.

[0029] Reference 15 indicates two hydraulic actuators articulated on one end to the first guiding frame 6, and articulated sideways on the other end each one to a lower end of the uprights 10 of the second guiding frame 9.

[0030] Activation of the actuators 15 determines a sliding movement of the second guiding frame 9 in the first guiding frame 6, and a translation of the carriage 11 in the second guiding frame 9.

[0031] In fact, the carriage 11 is handled by means of a mechanical transmission consisting of wheels and chains, not shown in the figure as commonly known as such, which is connected to the first guiding frame 6 and carriage 11, so that any displacement imparted by the actuators 15 to the second guiding frame 9 corresponds to a displacement in the same direction of the carriage 11, the length of which is about double the path of the second guiding frame 9, with respect to the first guiding frame 6.

[0032] In the emptying position of the container C, the carriage 11 is positioned in the upper section of the second guiding frame 9, whereas the lower end of the latter is about aligned to the lower end of the first guiding frame 6.

[0033] In the position of maximum extension of the second guiding frame 9, exiting the first guiding frame 6, the carriage 11 is substantially positioned on the lower end of the second guiding frame 9.

[0034] Inclination of the first guiding frame 6 and the extension of the second guiding frame 9 are obtained as a function of the position of the container C with respect

to the vehicle 1.

[0035] When the waste container C is lifted with the gripping device associated to the carriage 11 and then translated along the guiding frame 6 by the carriage 11, it exerts a force downwards equal to its weight on the guiding frame itself. This force tends to let the guiding frame 6 go back inside until it reaches its vertical position. However, this movement is hindered by the actuators 14.

[0036] In order to operate the device, the vehicle is placed near the container, with respect to the driving direction. The vehicle shall be positioned with respect to the container to be emptied by means of common systems, such as a telecamera located on the vehicle.

[0037] As to detecting the distance of the container from the vehicle, this is obtained for example by means of ultrasound sensors.

[0038] If the container is at a close position, handling occurs as illustrated in Figure 4, i.e. with the device next to the wall.

[0039] If the container is at a distant position with respect to the vehicle, handling occurs as illustrated in the FigS. 3 and 5, i.e. with the device in an inclined position.

[0040] In order to couple the container placed in a far position from the vehicle, the operation is as follows.

[0041] The first guiding frame 6 is inclined by means of the actuators 14 outside-the vehicle in order to approach and address its lower end towards the container C, while at the same time the actuators 15 are activated for shifting the second guiding frame 9 sliding in the first guiding frame 6.

[0042] Through the shifting of the second guiding frame 9 also the carriage 11 associated to it is shifted; the movement of the second guiding frame 9 and the relevant movement of the carriage 11 is interrupted when the gripping arms 13 associated to the coupling device 12 associated to the carriage 11 are in line with the coupling means of the container C.

[0043] The container is then grabbed by the coupling device 12 by means of the arms 13. After coupling the container C, the actuators 15 are activated again in the opposite direction, so as to cause the second guiding frame 9 slide back in the first guiding frame 6.

[0044] Through the movement of the second guiding frame 9, also the carriage 11 associated to it is shifted in the same direction. The movement of the second guiding frame 9 is stopped when the latter is fully inserted in the first guiding frame 6.

[0045] Now the carriage 11 is substantially positioned on the upper end of the second guiding frame 9, even if its path is longer than the one of the latter for the reasons previously indicated, i.e. due to the connecting and transmission method between the carriage 11, first guiding frame 6 and second guiding frame 9, it covers a substantially double path than the one covered by the second guiding frame 9.

[0046] The actuators 14 are subsequently activated for transmitting a rotating movement upwards to the first guiding frame 6 around the hinging fulcrum of the latter

to the supporting structure 8 fastened to the side wall 4 of the body 2.

[0047] This rotating movement is transmitted to the second guiding frame 9, which is associated in a sliding way to the first frame and consequently to the carriage 11 associated in a sliding way to the second guiding frame 9, and to the coupling device 12 of the container C associated to the carriage 11, so as to obtain a rotation of the container C itself for emptying it into the body 2 of the vehicle 1, as shown by the dotted lines in the Figs. 3, 4 and 5.

[0048] Thus, no further rotation of the arms 13 of the coupling device 12 is required, since both the rotation and positioning of the container C for its emptying is given by the rotation of the first guiding frame 6. As a result, the use of a complex expensive coupling device is not necessary.

[0049] The arms 13 shall obviously be fitted with known means for the sealing of the container when it is tilted and for the opening of the container cover.

[0050] It is clear that the coupling device shall be suitable for the type of container to be picked up.

[0051] A reverse operation is then carried out for repositioning the container on the ground. As it can be noticed from Figs. 3-5, the container is illustrated as if it were positioned in a recess R, R1 and R2, respectively, whose upper section T projects over the body 2 of the vehicle 1. Reference V indicates the profile of the path covered by the container C during the shifting stage for emptying its contents in the body of the vehicle.

[0052] Therefore, also in these positioning conditions, the container C can be handled, i.e. coupled, lifted, emptied and positioned back on the ground, without interfering with the upper side of the recess, which takes a space over the body 2.

[0053] In these conditions, it would not be possible to carry out these operations with the known devices, since the container in its emptying position would interfere with the upper side of the recess T. Moreover, in order to be able to couple the container in such a condition and emptying it without any interferences with the upper side of the recess, it would be necessary to use a very long fixed guiding frame in order to maintain the vehicle far from to upper projection.

[0054] The configuration of the guiding frame 6, as a function of the distance where the container C is located with respect to the vehicle 1, will remain substantially constant for the whole coupling/uncoupling, lifting/descent operation of the container C, whereas the emptying of its contents into the body 2 and its positioning back on the ground shall be executed right through a rotation of the guiding frame 6, as previously described.

[0055] In some cases, such as for example a positioning of the container C requiring a great inclination of the frame 6 in order to avoid that during the lifting of the container C through the sliding of the second guiding frame 9 in the first guiding frame 6, and relevant sliding of the carriage 11, the container C may interfere with the lower

end of the first guiding frame 6, the container C should be inclined by means of the arms 13. This would entail the risk of dropping some of the contents of the container C before it will reach its emptying position.

[0056] In order to avoid this situation during the sliding of the second guiding frame 9 and a relevant shifting of the carriage 11, the inclination of the first guiding frame 6 is reduced up to a position such to avoid a possible interference with the container C. The whole operation of positioning the vehicle with respect to the container, coupling, shifting and emptying the container, occurs automatically by means of a computerized system controlled by the driver inside the vehicle cabin.

[0057] This system detects the positioning parameters of the vehicle in the driving direction with respect to the container, the distance between the vehicle and the container and the positioning of the coupling device on the container.

[0058] This computerized system is not described since it is known.

[0059] As deduced from the description, the device for handling and emptying the contents of containers for waste collection is obtained in a simple and economical way.

[0060] As it can be noticed from the Figs. 3-5, the bulk of the first guiding frame 6 when rotating during the emptying stage of the container is smaller than the bulk of the container itself during rotation; this is due to the fact that during the emptying stage of the container the second guiding frame is inserted in the first frame and does not take any space during rotation. Therefore, this allows an emptying stage of the container with a minimum bulk both in the height of the container with respect to the vehicle and in the rotation of the first guiding frame for bringing the container in its emptying position.

[0061] These bulks can be obtained only if both guiding frames slide one into the other as previously described.

[0062] Representation in the figures of the positioning of the device along a side wall of the vehicle body is merely by way of indication and not binding, since the device can be located on the vehicle in the most suitable position for the function to be carried out, such as on the other side wall or on the rear.

[0063] The features of the device for handling and emptying the contents of containers for waste collection are clear from the above description and annexed drawings. From the above description the advantages of the device for handling and emptying the contents of containers for waste collection according to the present invention are also clear.

[0064] In particular they consist in that:

- the device is obtained in a simple and economical way;
- manufacture of a guide in two parts sliding one inside the other so as to form an articulated arm allows a dimensional reduction both for the height and rotation during the emptying stage of the container;

- it does not require a further mechanism for emptying the container into the body;
- it also allows handling of the containers positioned in recesses, whose upper section occupies a space over the vehicle body, without increasing the guides length;
- it is not necessary for the gripping arms of the container to be longer;
- it is not necessary for the gripping arms for the emptying of the container to rotate.

[0065] It is obvious that many changes and applications are easily possible for the man skilled in the art to the device for handling and emptying the contents of containers for waste collection described herein by way of example, without departing from the novelty spirit of the inventive idea, and it is also clear that in practical actuation of the invention the components may often differ in form and size from the ones described and be replaced with technical equivalent elements.

Claims

1. Device for handling and emptying the contents of containers (C) for waste collection inside the body (2) of a vehicle (1) for refuse collection, said device (3) comprising:

- a first guiding frame (6) associated in an oscillating way to a side wall (4) of said vehicle (1);
- first actuator means (14) are articulated in an oscillating way on one end to said wall (4) of said vehicle (1) and on the other end to said first guiding frame (6), in particular to the lower end of the first guiding frame (6), for obtaining:

- a first substantially parallel configuration of said first guiding frame (6) with respect to said wall (4);
- a second inclined configuration of said first guiding frame (6) with respect to said wall (4) for grabbing a container situated at a distant point with respect to the vehicle;
- a third configuration of said first guiding frame (6), in order to execute the emptying of said container (C) into said body (2);

- a carriage (11);
- coupling means (12) of said container (C) associated to said carriage (11), said coupling means comprising two rotatable gripping arms (13) for said container (C);

characterized in that

the device comprises second actuator means (15) for sliding in a rectilinear way a second guiding frame (9) in said first guiding frame (6), said second guiding

frame (9) being apt to take at least a first position in which said second guiding frame (9) is substantially inserted into said first guiding frame (6), and a second position in which said second guiding frame (9) is substantially fully projecting outside said first guiding frame (6),
and in that
 said carriage (11) is associated to the second guiding frame (9) for translating said waste container (C) along said second guiding frame (9).

2. Device according to claim 1, **characterized in that** said carriage (11) moves in the same direction of said second guiding frame (9) with a substantially double amplitude shift.
3. Device according to claim 1, **characterized in that** said second actuator means (15) are articulated on one end to said first guiding frame (6) and on the other end to said second guiding frame (9).
4. Device according to claim 1, **characterized in that** said first actuator means (14) comprise at least an hydraulic actuator (14).
5. Device according to claim 1, **characterized in that** said second actuator means (15) comprise at least an hydraulic actuator (15).
6. Device according to claim 1, **characterized in that** said first guiding frame (6) comprises two parallel uprights (7) integral to each other with said second guiding frame (9) sliding between them.
7. Device according to one or more of the previous claims, **characterized in that** said waste container (C) in its emptying position has a bulk such not to substantially exceed the bulk in height of said body (2).
8. Device according to claim 1, **characterized in that** said second guiding frame (9) comprises two parallel uprights (10) integral to each other, with said carriage (11) sliding between them.
9. Method for handling and emptying the contents of containers (C) for waste collection inside the body (2) of a vehicle (1) for refuse collection by means of a device (3) according to any of claims 1 to 8, said method comprising the following steps:

- a) activate said second actuator means (15) for the shifting of the second guiding frame (9) sliding in the first guiding frame (6) and of the carriage (11) associated to said second guiding frame (9);
- b) grab the container (C) by means of said coupling means (12);

- c) activate said second actuator means (15) so as to cause the second guiding frame (9) slide back in said first guiding frame (6) and to shift the carriage (11) in the same direction;
- d) activate said first actuator means (14) for transmitting a rotating movement upwards to the first guiding frame (6) around the hinging fulcrum of said first guiding frame (6) to the side wall (4) of the body (2), so as to obtain a rotation of the container (C) for emptying it into said body (2) of the vehicle (1).

10. Method according to claim 9, **characterized in that**, in order to handling and emptying the contents of a container (C) situated at a distant position with respect to the vehicle (1), said step a) comprises the step of activating said first actuator means (14) for inclining said first guiding frame (6) outside the vehicle (1).

Patentansprüche

1. Vorrichtung zur Handhabung und Entleerung von Inhalten eines Behälters (C) zur Abfallsammlung innerhalb eines Gehäuses (2) eines Fahrzeugs (1) zur Abfallsammlung, wobei die Vorrichtung (3) umfasst:

- einen ersten Führungsrahmen (6) schwenkbar angeordnet an einer Seitenwand (4) des Fahrzeugs (1);
- erste Antriebseinheiten (14), die mit einem Ende an der Seitenwand (4) des Fahrzeugs (1) und mit dem anderen Ende an dem ersten Führungsrahmen (6) drehbar befestigt sind, insbesondere an dem unteren Ende des ersten Führungsrahmens (6), zur Erzielung:

- o einer ersten im Wesentlichen parallelen Anordnung des ersten Führungsrahmens (6) zur Seitenwand (4);
- o einer zweiten schrägen Anordnung des ersten Führungsrahmens (6) zur Seitenwand (4), um einen Behälter, welcher sich an einem von dem Fahrzeug (1) beabstandeten Stelle befindet, aufzunehmen;
- o einer dritten Anordnung des ersten Führungsrahmens (6), um ein Entleeren des Behälters (C) in das Gehäuse (2) des Fahrzeugs auszuführen;

- eine Transfervorrichtung (11);
- Kupplungselemente (12) des Behälters (C), die an der Transfervorrichtung (11) angeordnet sind, wobei die Kupplungselemente (12) drehbare Transportelemente (13) für den Container umfassen;

dadurch gekennzeichnet, dass

die Vorrichtung zweite Antriebseinheiten (15) umfasst, die einen zweiten Führungsrahmen (9) in translatorischer Richtung innerhalb des ersten Führungsrahmens (6) bewegt, wobei der zweite Führungsrahmen (9) ausgebildet ist, zumindest eine erste Position, in der der zweite Führungsrahmen (9) im Wesentlichen in den ersten Führungsrahmen (6) eingefahren ist, und eine zweite Position, in der der zweite Führungsrahmen (9) im Wesentlichen vollständig ausragend vom ersten Führungsrahmen (6) ist, einzunehmen, und ferner gekennzeichnet, dass die Transfervorrichtung (11) an dem zweiten Führungsrahmen (9) angeordnet ist, um den Behälter (C) in Richtung des zweiten Führungsrahmens (9) zu bewegen.

2. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** sich die Transfervorrichtung (11) in die gleiche Richtung bewegt wie der zweite Führungsrahmen (9) und dabei, im Vergleich zum zweiten Führungsrahmen, im Wesentlichen den zweifachen Weg zurücklegt.
3. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die zweiten Antriebseinheiten (15) mit einem Ende beweglich an dem ersten Führungsrahmen (6) und mit dem anderen Ende beweglich an dem zweiten Führungsrahmen (9) angeordnet sind.
4. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die ersten Antriebseinheiten (14) mindestens eine hydraulische Antriebseinheit umfassen.
5. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die zweiten Antriebseinheiten (15) mindestens eine hydraulische Antriebseinheit umfassen.
6. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der erste Führungsrahmen (6) zwei parallel angeordnete Führungselemente (7) aufweist, die unbeweglich zueinander sind, wobei sich der zweite Führungsrahmen (9) geführt von den zwei Führungselementen bewegen kann.
7. Vorrichtung gemäß einem oder mehreren der vorherigen Ansprüche, **dadurch gekennzeichnet, dass** der Behälter (C) in seiner Entleerungsposition mit seinem Großteil im Wesentlichen nicht die Höhe des Gehäuses (2) übersteigt.
8. Vorrichtung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der zweite Führungsrahmen (9) zwei parallel angeordnete Führungselemente (10) auf-

weist, die unbeweglich zueinander sind, wobei sich die Transfervorrichtung (11) geführt von den zwei Führungselementen (10) bewegen kann.

9. Verfahren zum Handhaben und Entleeren von Inhalten eines Behälters (C) zur Abfallsammlung innerhalb eines Gehäuses (2) eines Fahrzeugs (1) zur Abfallsammlung mit einer Vorrichtung (3) gemäß einem der Ansprüche 1-8, umfassend die Schritte:

- a) Aktivieren der zweiten Antriebseinheiten (15) zum Bewegen des zweiten Führungsrahmens (9), der im ersten Führungsrahmen (6) geführt wird, und der Transfervorrichtung (11), welche an dem zweiten Führungsrahmen (9) angeordnet ist;
- b) Aufnehmen des Behälters (C) mittels der Kupplungselemente (12);
- c) Aktivieren der zweiten Antriebseinheiten (15), um den zweiten Führungsrahmen zurückzufahren in den ersten Führungsrahmen und um die Transfervorrichtung in die gleiche Richtung zu bewegen;
- d) Aktivieren der ersten Antriebseinheiten (14), um eine kreisförmige Aufwärtsbewegung des ersten Führungsrahmens (6) um den Drehpunkt des ersten Führungsrahmens (6) in Richtung der Seitenwand (4) des Gehäuses (2) zu erzeugen, so dass eine Rotation des Containers (C) zum Entleeren dieses in das Gehäuse des Fahrzeugs (1) zu erreichen.

10. Verfahren gemäß Anspruch 9, **dadurch gekennzeichnet, dass** Schritt a) den weiteren Schritt einer Aktivierung der ersten Antriebseinheiten (14) zum Kippen des ersten Führungsrahmens (6) außerhalb des Fahrzeugs (1), damit Behälter (C) handhabbar und entleerbar sind, die sich in einer entfernten Position vom Fahrzeug (1) befinden.

Revendications

1. Dispositif pour manipuler et vider le contenu des conteneurs (C) destinés à la collecte des déchets à l'intérieur du corps (2) d'un véhicule (1) permettant la collecte des ordures, ledit dispositif (3) comprend :

- une première structure de guidage (6) associée, de façon à pivoter, à une paroi latérale (4) dudit véhicule (1) ;
- des premiers moyens d'actionneur (14) sont articulés de façon à pivoter, sur une extrémité, à ladite paroi (4) dudit véhicule (1) et sur l'autre extrémité, à ladite première structure de guidage (6), en particulier à l'extrémité inférieure de la première structure de guidage (6), en vue d'obtenir :

- une première configuration essentiellement parallèle de ladite première structure de guidage (6) par rapport à ladite paroi (4) ;
 - une deuxième configuration inclinée de ladite première structure de guidage (6) par rapport à ladite paroi (4) permettant de saisir un conteneur situé à un point distant par rapport au véhicule ;
 - une troisième configuration de ladite première structure de guidage (6), afin d'exécuter le vidage dudit conteneur (C) dans ledit corps (2) ;
 - un chariot (11) ;
 - des moyens de couplage (12) (C) dudit conteneur associés au dit chariot (11), lesdits moyens de couplage comportant deux bras de prise rotatifs (13) pour ledit conteneur (C) ;
- caractérisé en ce que**
- le dispositif comprend des seconds moyens d'actionneur (15) permettant de faire coulisser d'une façon rectiligne une seconde structure de guidage (9) dans ladite première structure de guidage (6), ladite seconde structure de guidage (9) étant capable de prendre au moins une première position dans laquelle ladite seconde structure de guidage (9) est essentiellement insérée dans ladite première structure de guidage (6), et une seconde position dans laquelle ladite seconde structure de guidage (9) fait saillie essentiellement entièrement vers l'extérieur de ladite première structure de guidage (6), et **en ce que** ledit chariot (11) est associé à la seconde structure de guidage (9) pour translater ledit conteneur à déchets (C) le long de ladite seconde structure de guidage (9).
2. Dispositif selon la revendication 1, **caractérisé en ce que** ledit chariot (11) se déplace dans la même direction que ladite seconde structure de guidage (9) avec un décalage sensiblement d'une double amplitude.
 3. Dispositif selon la revendication 1, **caractérisé en ce que** lesdits seconds moyens d'actionneur (15) sont articulés, sur une extrémité, à ladite première surface de guidage (6) et, sur l'autre extrémité, à ladite seconde surface de guidage (9).
 4. Dispositif selon la revendication 1, **caractérisé en ce que** lesdits premiers moyens d'actionneur (14) comportent au moins un actionneur hydraulique (14).
 5. Dispositif selon la revendication 1, **caractérisé en ce que** lesdits seconds moyens d'actionneur (15) comportent au moins un actionneur hydraulique (15).
 6. Dispositif selon la revendication 1, **caractérisé en ce que** ladite première structure de guidage (6) comprend deux montants parallèles (7) solidaires l'un de l'autre, ladite seconde structure de guidage (9) coulisant entre eux.
 7. Dispositif selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** ledit conteneur à déchets (C), dans sa position de vidage, a un encombrement tel qu'il ne dépasse pas essentiellement en hauteur l'encombrement dudit corps (2).
 8. Dispositif selon la revendication 1, **caractérisé en ce que** ladite seconde structure de guidage (9) comporte deux montants parallèles (10) solidaires l'un de l'autre, ledit chariot coulisant entre eux.
 9. Procédé pour manipuler et vider le contenu de conteneurs (C) destinés à la collecte de déchets à l'intérieur du corps (2) d'un véhicule destiné au ramassage des ordures au moyen d'un dispositif (3) selon l'une quelconque des revendications 1 à 8, ledit procédé comprenant les étapes suivantes :
 - a) activer lesdits seconds moyens d'actionneur (15) en vue du décalage de la seconde structure de guidage (9) coulisant dans la première structure de guidage (6) et du chariot (11) associé à ladite seconde structure de guidage (9) ;
 - b) saisir le conteneur (C) par l'intermédiaire desdits moyens de couplage (12) ;
 - c) activer lesdits seconds moyens d'actionneur (15) de façon à entraîner la seconde structure de guidage (9) à revenir en coulisant dans ladite première structure de guidage (6) et à décaler le chariot (11) dans la même direction ;
 - d) activer lesdits premiers moyens d'actionneur (14) pour transmettre un mouvement de rotation vers le haut à la première structure de guidage (6) autour du point de pivotement de l'articulation de ladite première structure de guidage (6) vers la paroi latérale (4) du corps (2) de façon à obtenir une rotation du conteneur (C) en vue de le vider dans ledit corps (2) du véhicule (1).
 10. Procédé selon la revendication 9, **caractérisé en ce que**, dans le but de manipuler et de vider le contenu d'un conteneur (C) situé au niveau d'une position distante par rapport au véhicule (1), ladite étape a) comporte l'étape consistant à activer lesdits premiers moyens d'actionneur (14) pour incliner ladite première structure de guidage (6) vers l'extérieur du véhicule (1).

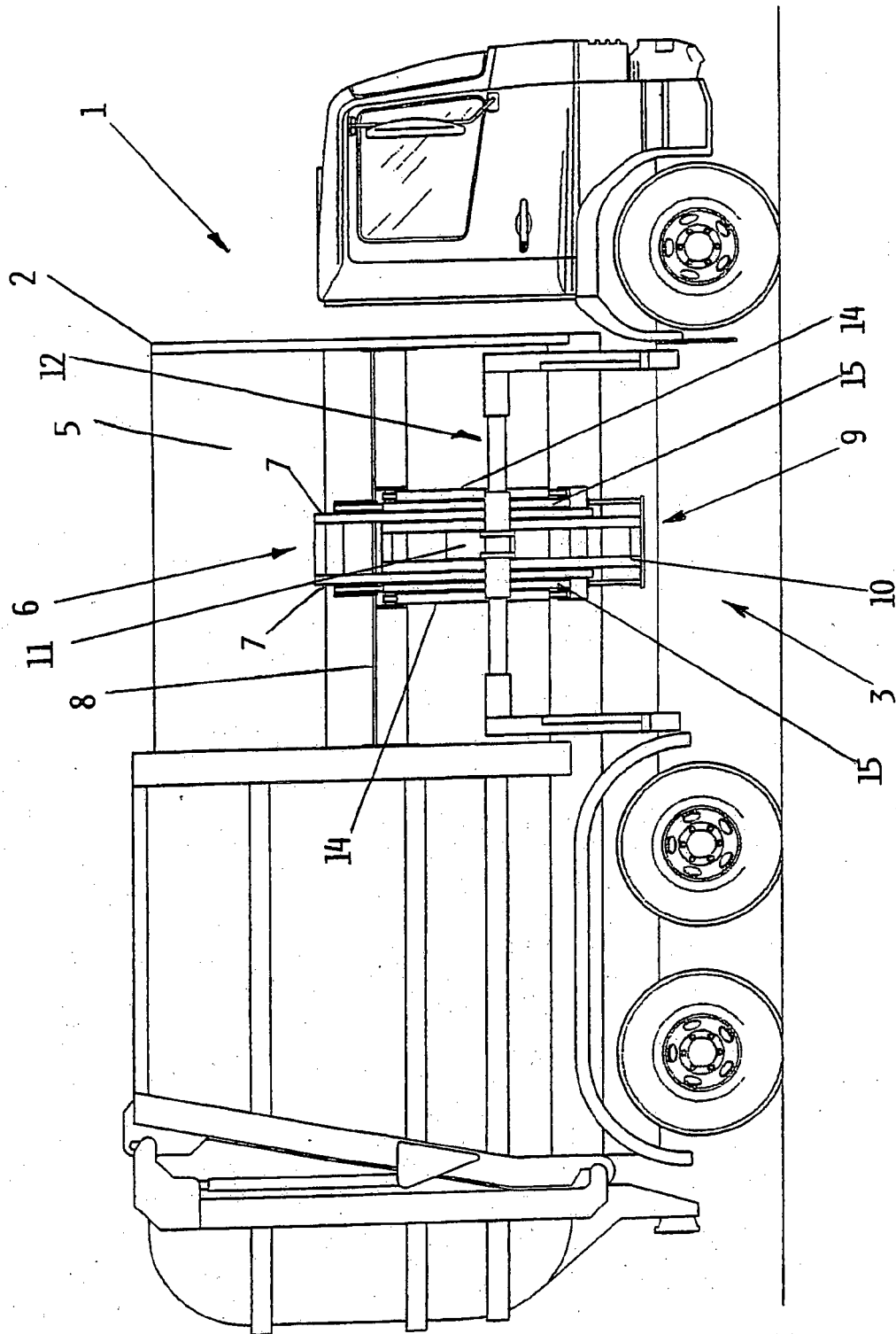


FIG. 1

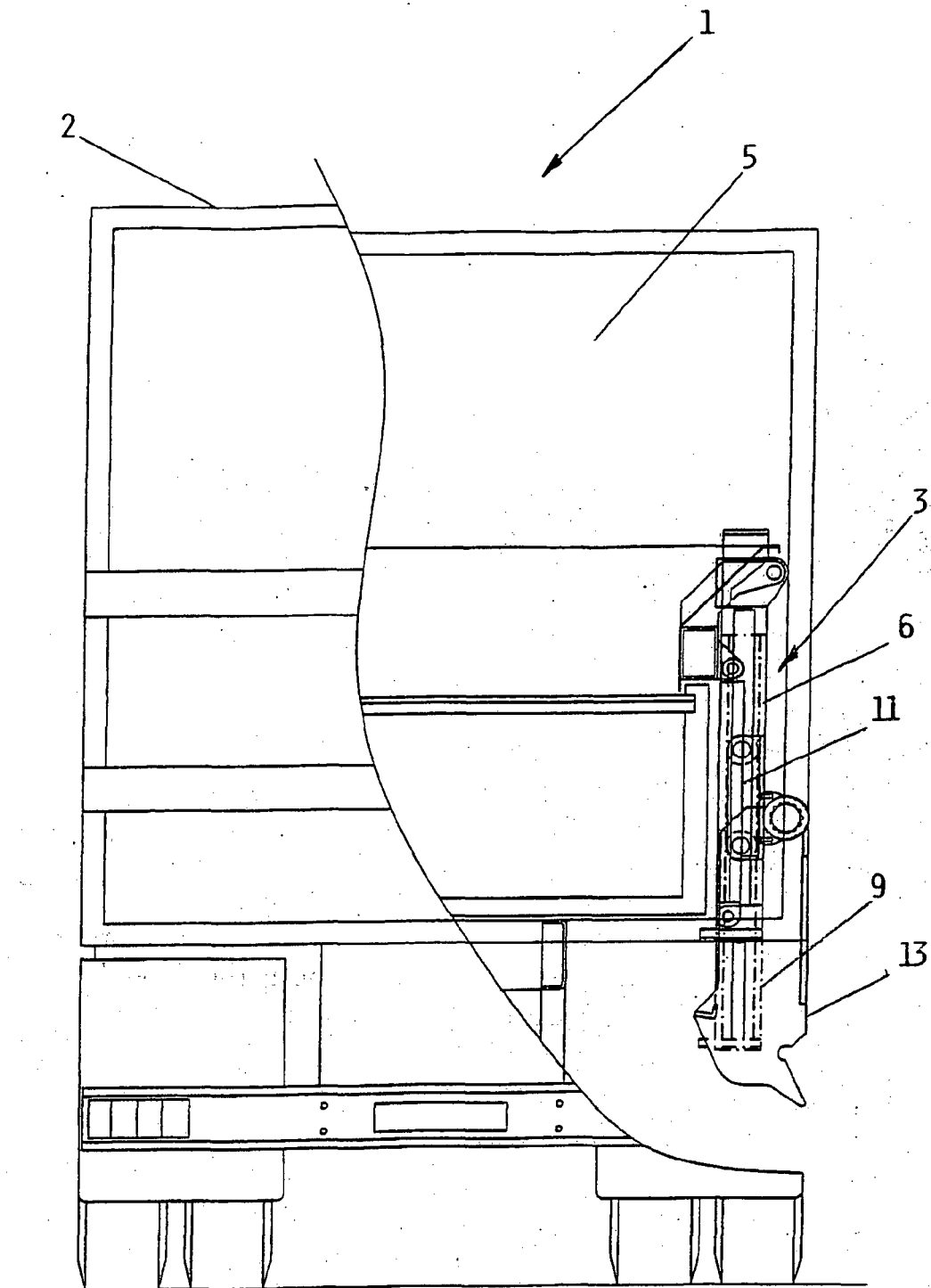
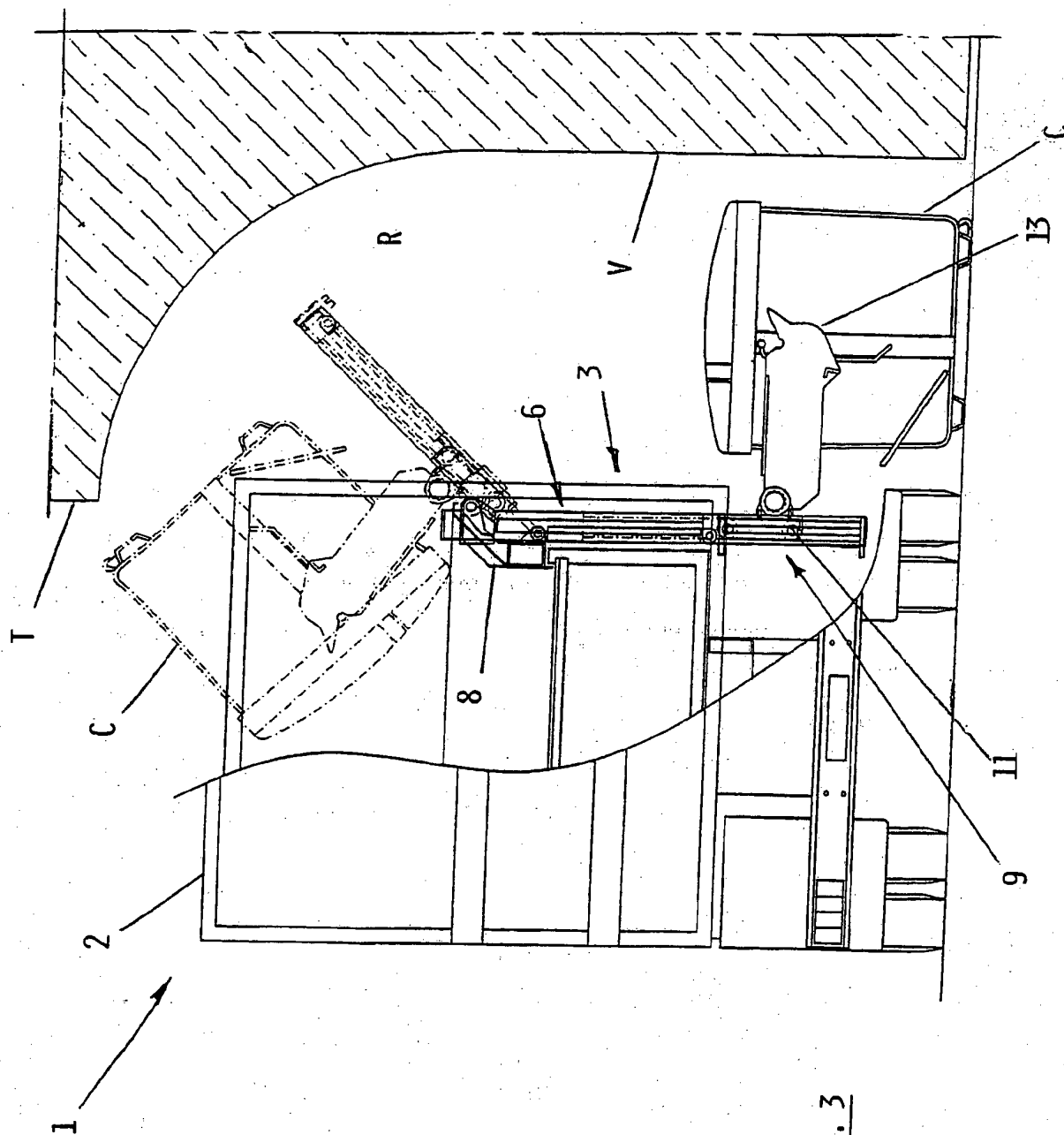
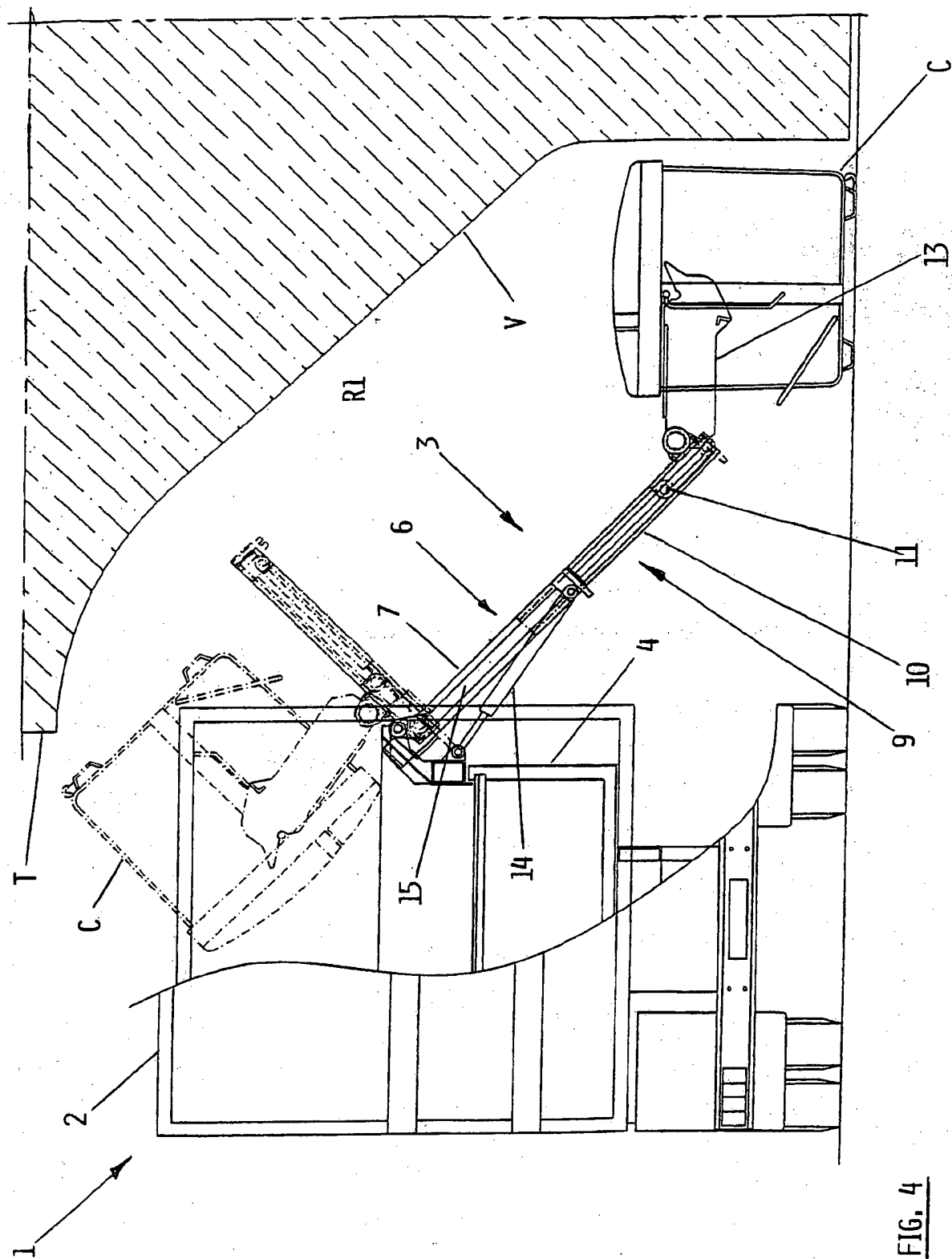


FIG. 2





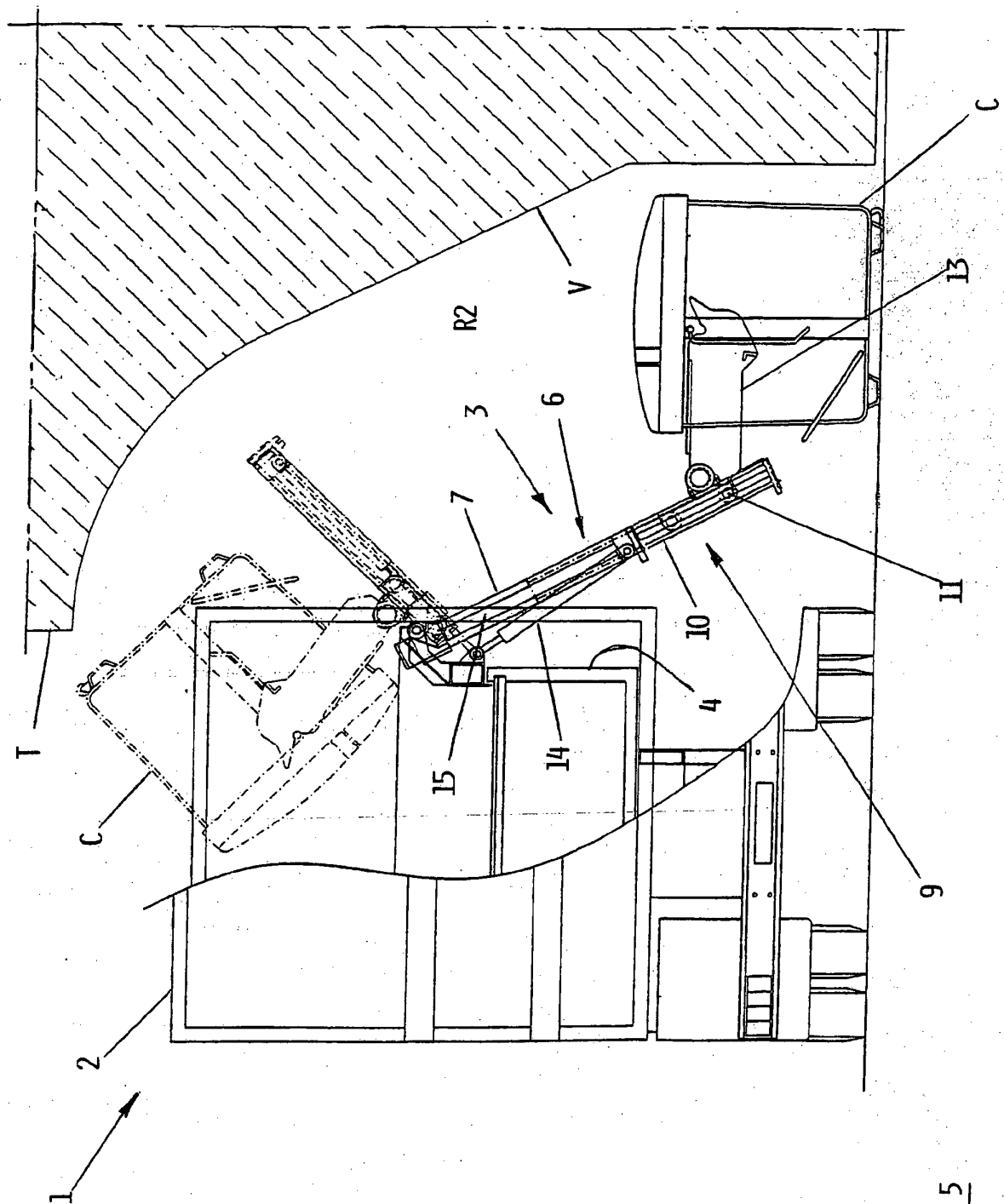


FIG. 5

REFERENCES CITED IN THE DESCRIPTION

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