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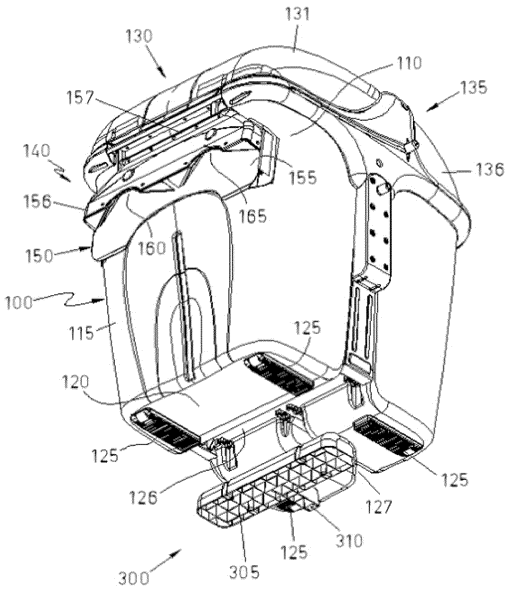
(54) WASTE CONTAINER ASSEMBLY

(57) It comprises a side loading container (100) having at least one discharge area (130) for emptying its contents into a waste collection vehicle (200), and releasably mounted means (140) for attaching the container (100) to the vehicle (200) comprising at least one coupling body (150) arranged in a wall (115) in said discharge area (130) defining at least one interior space (160; 165) tapering toward the top thereof and suitable for receiving a coupling member (216) of the waste collection vehicle (200). Means (300) for retaining and positioning the container (100) on the ground (350) are also provided comprising at least one recess (126; 127) arranged in a base of the container (100) adapted to receive at least one complementary projection (305; 310) to be anchored on the ground (350).

FIG.1



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Description

[0001] The present invention relates to a waste container assembly, for example for urban waste collection, whether of domestic, industrial type, etc. The assembly of the invention consists of at least one high-capacity side loading container adapted to receive waste therein and provided with at least one discharge area for emptying into a waste collection vehicle. The present waste container assembly further includes means for attaching the container to the waste collection vehicle.

BACKGROUND

[0002] Different types of attaching means for temporary coupling a container to a waste collection vehicle for handling are currently known. Such known attaching means generally consist of a structure, usually driven by hydraulic means, comprising one or more mechanical moving arms adapted for handling the container, for example for lifting and turning the container for emptying the waste therein into a collection vehicle. Attaching means adapted to hold the container in a position suitable for carrying out cleaning operations inside and/or outside the container are also known.

[0003] The different types of attaching means in containers known in the art basically differ in how the container is attached to the waste collection vehicle, through the arm or arms thereof.

[0004] One of said known attaching means are the ones referred in the art to as of the "pocket" type. They consist of recesses formed on side walls of the container, usually on the container shorter sides. Such recesses of the container are adapted to receive corresponding ends of the mechanical arms of the waste collection vehicle attaching means such as described, for example, in U200501822.

[0005] Further known means for attaching a container for being handled in emptying operations are those referred to as of the "trunnion" type. Said attaching means, which are disclosed, for example in U9901868, consist of cylindrical bushings protruding from opposite side walls of the container, usually the shorter sides. Such cylindrical bushings are suitably adapted in shape and size to be inserted into clamps at the respective ends of the waste collection vehicle moving arms.

[0006] The attaching means known in the art of the above described type have the disadvantage that the containers tend to move from their operating position on the street. Misplacement of the container relative to its operating position on the street, which may be due to many causes, such as for example to vehicle impacts on the street, etc., represents a serious problem in current urban waste collection systems. Container misplacement, which occurs frequently, causes the container to be misplaced relative to the vehicle attaching means. As a result, container handling operations are constrained and may even be unable to be carried out if the end of the arm or arms of the waste collection vehicle can not properly engage the container. This problem is more common in small containers, especially if they are provided with wheels, for example caster wheels. Said small containers become misplaced, that is, they are moved away from the operating position on the street, very easily because of their light weight and low load capacity, and as a result of the provision of wheels, even when they are provided with a braking mechanism. In this regard, it is common to remove the container wheels for reducing the chances of incorrect positioning of the container relative to the end of the arm or arms of the vehicle.

[0007] Therefore, in prior art waste collection systems it is difficult to always ensure proper positioning of the container on the street. As a result, this known type of waste collection systems requires an additional operator, in addition to the vehicle driver, to properly position the container relative to the waste collection vehicle before the container is handled in emptying, cleaning operations, etc. In addition, repositioning of containers without wheels in case of large and heavy weight containers is very difficult even in cases involving such additional operator. This involves an increase in the overall cost of service due to the requirement of additional manpower and additional time for repositioning the container to a proper operating position.

[0008] In the particular case of the attaching means of the "trunnion" type, they have the additional disadvantage that the containers must be arranged spaced apart laterally from each other by a distance. This is due to the presence of projections, that is, cylindrical bushings, provided in the container on the side walls thereof for coupling to the waste collection vehicle, as indicated above and especially to the lateral space that is required for approaching the waste collection vehicle arms to the container body. Required lateral space is relatively large as the vehicle arms should get close to the container separated from each other by a distance that is substantially greater than the container size. Once the container is positioned between the arms, the arms move approaching one another, towards the container shorter lateral sides, for coupling said cylindrical bushings thereof.

[0009] Attaching means referred to as of the "comb" type are also known as disclosed, for example, in document U200800343. In this type of attaching means, the container has, in a discharge area thereof, a wall terminating in an upper flange defining a suitable space adapted to receive spikes. Such spikes are comb-like members provided at one end of the moving arm or arms of he waste collection vehicle. Said spikes can be distributed in groups of aligned spikes to allow lifting of the container for being emptied into the waste collection vehicle once they are inserted into the container upper flange.

[0010] In addition to the disadvantages in the aforementioned "comb" type attaching means, they have the problem that are too restrictive regarding the available positioning range of the container relative to the waste collection vehicle, that is, relative to the arm or arms of

the waste collection vehicle. This means that if the container is not well parallel to the line of spike groups the container can not be lifted by the vehicle properly. The container can be handled only when the end of the arm or arms of the waste collection vehicle are positioned properly relative to the container. This situation, combined with the ease and frequency at which containers are misplaced from its operating position as stated, results in that handling of said containers is, again, complex and expensive, and takes a considerable time, requiring at least one additional operator. Specifically, this type of attaching means are used in waste collection systems where an operator is required to take the container to the waste collection vehicle, rather than other waste collection systems where the vehicle approaches where the container or containers are placed.

[0011] All these disadvantages derived from the need for the container to be in a particular operating position at the time that the arm or arms of the waste collection vehicle approaches the container for handling makes container emptying operations to be complex, expensive and require undesirable long time, especially in handling of large capacity containers exceeding 2200 litres.

SUMMARY OF THE INVENTION

[0012] The present invention provides a waste container assembly whereby all the above mentioned disadvantages with reference to the prior art can at least be reduced. Furthermore, it has been found that the waste container assembly of the invention provides additional advantages as will be seen hereinafter.

[0013] The invention provides a waste container assembly in which the means for attaching the container to a waste collection vehicle for handling comprise at least one coupling body associated with the container. Said coupling body is arranged on a container wall in a discharge area thereof. Specifically, the container coupling body may be arranged in one portion of the container through which its contents is emptied into the waste collection vehicle. Said container portion usually corresponds to a container large side facing the passing traffic.

[0014] According to the invention, the coupling body arranged in the container of the waste container assembly is configured so that at least one interior space is defined therein. Said interior space is conveniently adapted to receive a coupling member of the waste collection vehicle having a complementary configuration. A complementary configuration means herein that the coupling member, provided at a free end of a moving mechanical arm of the waste collection vehicle, has a shape that is substantially complementary in size and shape to the size and shape of the inner space of the container coupling body.

[0015] Once the coupling member of the waste collection vehicle has been inserted into the interior space of the container coupling body, the container can be perfectly handled by the vehicle, that is, it can be lifted, rotated, flipped, etc. effectively.

[0016] According to the invention, the container coupling body is of the referred to as "diamond" type with its interior space suitably configured for tapering towards the top thereof. This particular configuration of the interior of the coupling body tapering towards the top allows a very fast and effective adaptation of the coupling member of the arm of the vehicle attaching means in the interior of the container coupling body.

[0017] In preferred embodiments, the coupling body has two interior spaces. As stated above, the interior spaces are configured tapering towards the top thereof for easy and effective attachment of the container by the vehicle.

[0018] In some embodiments, the interior of the coupling body may be substantially frusto pyramidal in shape, narrowing towards the top. In a preferred embodiment of the invention, the interior of the coupling body has a rectangular triangular cross section with a side curved outwards. This particular configuration is advantageous for a quick and effective attachment of the container by the vehicle.

[0019] According to the invention, it is preferred that the interior space of the coupling body has inner walls adapted such that the coupling body of the waste collection vehicle is slidably received therein to ensure easy and efficient coupling of said container for its handling.

[0020] The coupling body of the "diamond" type container allows high-capacity containers, of the order of 2200 litres, 3200 litres or more, to be effectively lifted.

[0021] The attaching means may further comprise opposed anchor arms attached at one end to the coupling body and at the other end to the container. Said anchor arms allow the coupling body to be properly attached to the container. The anchor arms of the coupling body are particularly advantageous both in embodiments where the coupling body is mounted releasably in the container and in embodiments where the coupling body is fixedly attached to the container, providing in both cases an attachment that is effective, rigid and resistant to the action of the attaching means of the waste collection vehicle.

[0022] The coupling body may be extended upwards into a flange. Said coupling body flange may be adapted to engage the container upper edge. The combination of the above mentioned upper flange and the anchor arms of the coupling body enables a very effective fixing of the coupling body to the container, suitable to resist the action of the vehicle attaching means when handling the container. The coupling body flange also has the function of holding the container when it is handled by the vehicle. The flange prevents the vehicle attaching means to come out of the coupling body interior spaces when the container is in a lifted position, where it is usually inclined, preventing the container from falling.

[0023] In combination with the above, the waste container assembly of the invention further includes means for retaining and positioning the container on the ground where it is installed, usually on the street. Said container

retaining and positioning means may comprise one or more recesses formed on the bottom or the base of the container. The recesses are adapted to receive at least one corresponding complementary projection suitable to be anchored on the ground.

[0024] Embodiments of the retaining and positioning means where the projection is formed on the bottom of the container and is adapted to be received in a complementary recess formed on the ground would not be ruled out. In any case, the projection may be an elongated member arranged in a longitudinal position or in a transverse position to the container. In some embodiments projections arranged both longitudinal and transverse to the container may be provided. In general, the container positioning and retaining means comprise complementary projections and recesses enabling a limited angular movement of the container to the ground. The projection or projections of the means for retaining and positioning the container on the ground may be members having a substantially prismatic configuration which may include rounded edges for easy positioning of the container.

[0025] These retaining and positioning means ensures that the container, in particular a high-capacity container, always remains in the same operating position. Operating position here refers to a position of the container suitable be properly coupled by the waste collection vehicle. In general, the operating position of a waste collection container is substantially parallel to the direction of the path along which the collection vehicle travels.

[0026] The system which is herein described is particularly advantageous in side loading containers, that is, adapted to be handled through one side of the waste collection vehicle. The system of the invention is also advantageous in remotely handling high-capacity containers, namely those with a capacity of 2200 litres and even 3200 litres or more, making them suited even to contain industrial waste.

[0027] This is possible due to the particular arrangement of the coupling body of the "diamond" type that allows handling of large containers using a very simple and lightweight mechanism, allowing a greater payload to be lifted since a lower own weight has to be moved, in combination with the arrangement of said container retaining and positioning means that ensure a correct positioning of the container in an operating position on the ground relative to waste collection vehicle. The system of the invention thus allows an efficient remote handling of high-capacity containers without requiring the intervention of additional operator.

[0028] As noted above, with the system of the invention the means for coupling the container can be simplified due to the use of the coupling body of the "diamond" type since the engaging means of the waste collection vehicle require fewer joints over, for example, a conventional system of the "trunnion" type that usually requires arms with a clamping system. Furthermore, the coupling body of the system of the invention is a relatively simple and lightweight part relative to other systems involving duplication of parts such as in the systems of the "trunnion" or "pocket" type, that include elements formed on both sides of the container. Additionally, fewer movements are required to be performed by the waste collection vehicle attaching means in order to handle the container, so that the working cycle is shorter and therefore the service life of the elevator is significantly longer with longer life cycles before performing maintenance operations. On the other hand, the fact should be stressed that the containers in the waste container assembly of the invention can be placed side by side leaving little or no lateral distance therebetween. As a result, with the waste container assembly of the invention the space occupied on the street is smaller.

[0029] Finally, a further important advantage of the container assembly of the invention is that it can be used with existing conventional containers, for example containers of the "trunnion" type. This is due to the fact that no modifications are required on the container structure in said container assembly. For example, the use of the invention with conventional containers is independent of container parts such as the lid or actuating mechanisms (pedal, handle, etc.) and other parts. The system described according to the invention only requires the conventional container to be mounted on the coupling body on a wall in the container discharge area, for example by conventional mechanical means such as screws, and the provision of the means for retaining and positioning the container on the ground.

[0030] Further objects, advantages and features of embodiments of the container assembly of the present invention will become more apparent to those skilled in the art upon examination of the following description given by way of example of a preferred embodiment thereof, or may be learned by practice of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] Particular embodiments of the present invention will be described in the following by way of non-limiting examples. The following description is given with reference to the appended drawings, in which:

Figure 1 is a bottom perspective view of a container of one embodiment of a waste container assembly wherein the container coupling member is shown comprising an outer cover provided thereto;

Figure 2 is a bottom perspective view of the container of the waste container assembly in figure 1 wherein the container coupling member is shown without the cover to expose its interior main structure;

Figure 3 is a bottom perspective view of one embodiment of a coupling member adapted to be mounted on a container of the waste container assembly illustrated in figures 1 and 2;

Figure 4 is a front elevational view of the coupling member in figure 3;

Figure 5 is a perspective view of the coupling member in figures 3-5 where the arms for anchoring the coupling member to the container are shown; and

Figure 6 is a side elevational view in section of the coupling member along line AA' in figure 4;

Figure 7 is an elevational part view of the coupling means of a waste collection vehicle arranged in the vicinity of a waste container assembly ready for handling the container of the waste container assembly; and

Figure 8 is an elevational part view of the coupling means of the waste collection vehicle in figure 7 which is shown coupled to the container coupling body to lift it in order to empty the waste contained therein.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0032] An embodiment example is described herein of a waste container assembly according to the invention only for illustrative purposes.

[0033] The waste container assembly described herein is particularly suitable for urban waste collection, but is not limited to such particular application. The present waste container assembly could also be used for collection of industrial waste, etc.

[0034] According to the figures, the waste container assembly illustrated herein consists of a container of the conventional type, intended to be placed on public roads. More specifically, it is a container of the side loading type, that is, adapted to be handled by one side of the waste collection vehicle. The container is indicated generally by reference 100 and shown in figures 1, 2 and 7 and 8 of the drawings.

[0035] As noted, the container 100 is a standard container. It is formed by a body 110 adapted to receive waste therein. The body 110 of the container 100 is made of polyethylene and polypropylene, and has a capacity of 2200 litres. The waste container assembly may comprise containers 100 of 3200 litre capacity, or even more.

[0036] The body 110 of the container 100 includes a bottom or base 120 provided with fixed support elements 125. The body 110 of the container 100 is also provided with a discharge area 130 and a loading area 135. The discharge area 130 is disposed normally in correspondence with the side of a waste collection vehicle 200 and it is adapted for emptying the container 100 to the collection vehicle 200. By contrast, the discharge area 135 is adapted for introducing waste into the container 100. Respective tilting closure lids 131, 136 are provided in both areas 130, 135. The closure lids 131, 136 may be rotated during the emptying operation of the container 100 to the waste collection vehicle 200. The waste collection vehicle 200 may be, for example, a side loading waste compactor truck with a container lifting system 100.

[0037] In the discharge area 130 of the container 100, means 140 for attaching the container 100 to the collection vehicle 200 are provided. In the illustrated embodiment, the attaching means 140 comprise a coupling body 150. The coupling body 150 is mounted in an upper portion of the front wall 115 of the body 110 of the container 100. As noted, said front wall 115 of the body 110 of the container 100 corresponds to the discharge area 130 thereof.

[0038] The configuration of the coupling body 150 of the means 140 for attaching the container 100 to the collection vehicle 200 is illustrated in detail in figures 3 to 6. As shown in said figures 3 to 6, the coupling body 150 is formed by a main structure 155. The coupling body 150 also includes an outer cover 156 that can be attached to the main structure 155. The outer cover 156 allows the main structure 155 to be protected and also for aesthetic purposes since the surface thereof may be provided, for example, with a logo.

[0039] Continuing with figures 3 to 6 of the drawings, the main structure 155 of the coupling body 150 is mainly formed of a rear wall 152 intended to be in contact with the front wall 115 of the body 110 of the container 100 when the coupling body 150 is coupled to the container 100. The main structure 155 is also formed of a front wall 151 of lower height than the rear wall 152. Two interior spaces 160, 165 are defined between the walls 151, 152 of the main structure 155 of the coupling body 150.

[0040] Said interior spaces 160, 165 of the coupling body 150 are properly configured so that they taper towards the top thereof. The inside of the respective inner spaces 160, 165 is formed by inner walls adapted to receive the attaching means 210 of the waste collection vehicle 200. Said attaching means 210 of the waste collection vehicle 200, see figures 7 and 8, comprise a moving mechanical arm 215 with a coupling member 216 whose outer shape is complementary to the shape of the interior spaces 160, 165 of the coupling body 150. The coupling member 216 is formed at the free end of the moving mechanical arm 215 of the attaching means 210 of the waste collection vehicle 200. The configuration of the interior spaces 160, 165 of the coupling body 150 is such that said coupling member 216 of the moving mechanical arm 215 of the waste collection vehicle 200 is allowed to be slidably received therein. The configuration of this mechanism is of the "diamond" type.

[0041] Insertion of the free end of the moving mechanical arm 215 of the waste collection vehicle 200 into the inner spaces 160, 165 of the coupling body 150 of the container 200 can be thus performed very efficiently and quickly. Holding of the container 200 for imparting, through the attaching means 210 of the waste collection vehicle 200, lifting, turning movements, etc. thereto, is

effective and quick.

[0042] As it can be seen from figures 7 and 8, and in detail from figure 5 of the drawings, the coupling body 150 of the attaching means 140 of the container 100 comprises anchor arms 170. The anchor arms 170 are attached at one end thereof to the coupling body 150 and at the other end 110 to the container body 100. The purpose of the coupling arms 170 is to suitably hold the coupling body 150 to the body 110 of the container 100. Attachment of the coupling body 150 to the body 110 of the container 100 by said anchor arms 170 may be accomplished through screws or other suitable mechanical means.

[0043] The coupling body 150 extends at the top into a flange 157. Such flange 157 is shaped to be suitably coupled to the top of the container 100. Said flange 157 performs the function of securing the container 110 when it is handled by the vehicle 200, preventing the coupling member 216 of the arm 215 of the vehicle 200 from coming out of the interior spaces 160, 165 of the coupling body 150 when the container 100 is in a lifted position, where it is usually inclined, preventing it from falling. Furthermore, the flange 157 of the coupling body 150 cooperates with said anchor arms 170 of the coupling body 150 for efficient and rigid attachment to the body 110 of the container 100. Such rigid attachment of the coupling body 150 to the container 100 that is achieved with the described configuration is capable of withstanding the action of the mechanical arm 215 of the attaching means 210 of the waste collection vehicle 200.

[0044] The waste container assembly of the embodiment described according to the figures further includes means 300 for retaining and positioning the container 100 on the ground 350 of the public road where it is installed. Said retaining and positioning means 300 are shown in figures 1 and 2. As it can be seen from said figures 1 and 2, the means 300 for retaining and positioning the container 100 on the ground 350 comprise a longitudinal recess 126 and a transverse recess 127 formed in the bottom 120 of the container 100. Said recesses 126, 127 are adapted to receive a corresponding longitudinal projection 305 and transversal projection 310. The longitudinal projection 305 and the transverse projection 310 are bodies having a substantially prismatic configuration with rounded edges for easy positioning and centring of the container 100. Said substantially prismatic projections may have a height of about 100 millimetres. The longitudinal projection 305 and the transverse projection 310 are anchored to the ground 350 on the street where the container 100 is placed by any conventional mechanical means such as screws.

[0045] The structure of the means 300 for retaining and positioning the container 100 on the ground 350 with the longitudinal and transverse projections 305, 310 allows a small angular movement of the container 100, for example of about 9,2°, in the operating position of the container 100. Such small angular movement of the container 100 to the ground 350 where it is mounted can accommodate relative deviations between the container 100 and the end of the mechanical arm 215 of the coupling means 210 of the waste collection vehicle 200 in handling operations.

[0046] When the container 100 of the system of the invention is positioned on the ground 350 of the street in the operating position, that is, with the projections 305, 310 received into complementary recesses 126, 127 of the container 100, the container 100 is perfectly positioned so that the attaching means 140 can cooperate correctly with the corresponding attaching means 210 of the vehicle 200 for a rapid and efficient handling of the container 100. Thus, with the described configuration, the retaining and positioning means 300 allows to effectively ensure that the container 100 remains always in said operating position, which is a position substantially parallel to the direction of the street along which the waste collection vehicle 200 travels.

[0047] As noted above, the container 100 shown is a high-capacity side loading container, of the order of 2200 litres, and may be of 3200 litres or even more. The provision of the above described retaining and positioning means 300, in combination with the particular configuration of the engaging means 140 of the container 100, of the "diamond" type, also described above, is very advantageous. With the described embodiment of the waste container assembly, remote handling of high-capacity containers 100 is no longer a problem, and additional operator is not required to reposition the container 100, since the container 100 is perfectly retained in said operating position, ready to be handled by the coupling means 210 of the waste collection vehicle 200 safely and effectively for emptying, cleaning, maintenance, operations etc.

[0048] Although only a number of particular embodiments and examples of the waste container have been disclosed herein, it will be understood by those skilled in the art that other alternative embodiments and/or uses of said waste container as well as obvious modifications and equivalents thereof are possible.

[0049] Thus, although a coupling body has been illustrated and shown with a structure of two interior spaces, it is apparent that the coupling body could be provided with more than two interior spaces, or even only one interior space, provided that the inner structure is configured within the principle of the invention, i.e., for quick, effective and safe coupling of the waste collection vehicle attaching means. Moreover, while the two inner spaces of the coupling body have been described and shown in the figures equal to each other, their shape and/or size may be different from each other to receive the coupling member of the attaching means of the waste collection vehicle, as described.

[0050] Moreover, the coupling body might be removably or releasably attached to the container body through the use of, for example, quick coupling means. Alternatively, the coupling body might be permanently attached to the container body through the use of, for example,

welded joints.

[0051] As for the means for retaining and positioning the container, the projection could be formed in a bottom portion of the container and could be adapted to be received in a complementary recess formed on the ground of the street where the container is placed. Said means for retaining and positioning the container could include a single projection in a longitudinal position to the container or a single projection on a transverse position to the container as an alternative to the combined configuration comprising longitudinal projections and transverse projections as described and illustrated herein.

[0052] The present invention covers all possible combinations of the particular embodiments described. The scope of the present invention should not be limited by the particular embodiments disclosed and shown herein, but should be determined only by a fair reading of the claims that follow.

[0053] Reference signs related to drawings and placed in parentheses in a claim, are solely for attempting to increase the intelligibility of the claim, and shall not be construed as limiting the scope of the claim.

Claims

1. A waste container assembly comprising at least one container (100) adapted to receive waste therein, the container (100) having at least one discharge area (130) for emptying into a waste collection vehicle (200), the container assembly further comprising means (140) for attaching the container (100) to the waste collection vehicle (200) and means (300) for retaining and positioning the container (200) on the ground (350), **characterized in that** the means (140) for attaching the container (100) comprise at least one coupling body (150) arranged in a wall (115) of the container (100) in said discharge area (130), the coupling body (150) defining at least one interior space (160; 165) configured such that it tapers towards the top thereof, said interior space (160; 165) being suitable for receiving a coupling element (216) of the waste collection vehicle (200) for holding the container (100) during handling operations thereof.

2. The system of claim 1, wherein the means (140) for attaching the container (100) further comprises anchor arms (170) connected at one end to the coupling body (150) and at the other end opposite to the container (100).

3. The system of claim 1 or 2, wherein the means (140) for attaching the container (100) are mounted releasably to the container (100).

4. The system of any of the preceding claims, wherein the interior space (160; 165) of the coupling body (150) is substantially frusto pyramidal in shape.

5. The system of any of the preceding claims, wherein the interior space (160; 165) of the coupling body (150) has a rectangular triangular cross section with a curved side.

6. The system of any of the preceding claims, wherein the interior space (160; 165) of the coupling body (150) has interior walls adapted to slidably receive the coupling member (216) of the waste collection vehicle (200).

7. The system of any of the preceding claims, wherein the coupling body (150) extends at the top into a flange (157) that is adapted to engage the upper edge of the container (100).

8. The system of any of the preceding claims, wherein the coupling body (150) defines two interior spaces (160, 165) suitable for receiving a corresponding coupling member (216) of the waste collection vehicle (200).

9. The system of any of the preceding claims, wherein the container (100) is of the side loading type, adapted to be handled by one side of the waste collection vehicle (200).

10. The system of any of the preceding claims, wherein the container (100) has a capacity of 2200 litres.

11. The system of any of the preceding claims, wherein the means (300) for retaining and positioning the container (100) on the ground (350) comprise at least one recess (126; 127) formed in a bottom (126) of the container (100) adapted to receive at least one corresponding complementary projection (305; 310) suitable to be anchored on the ground (350).

12. The system of claim 11, wherein said projection is an elongated member (305) arranged in a longitudinal position to the container (100).

13. The system of claim 11 or 12, wherein said projection is an elongated member (310) arranged in a transverse position to the container (100).

FIG.1

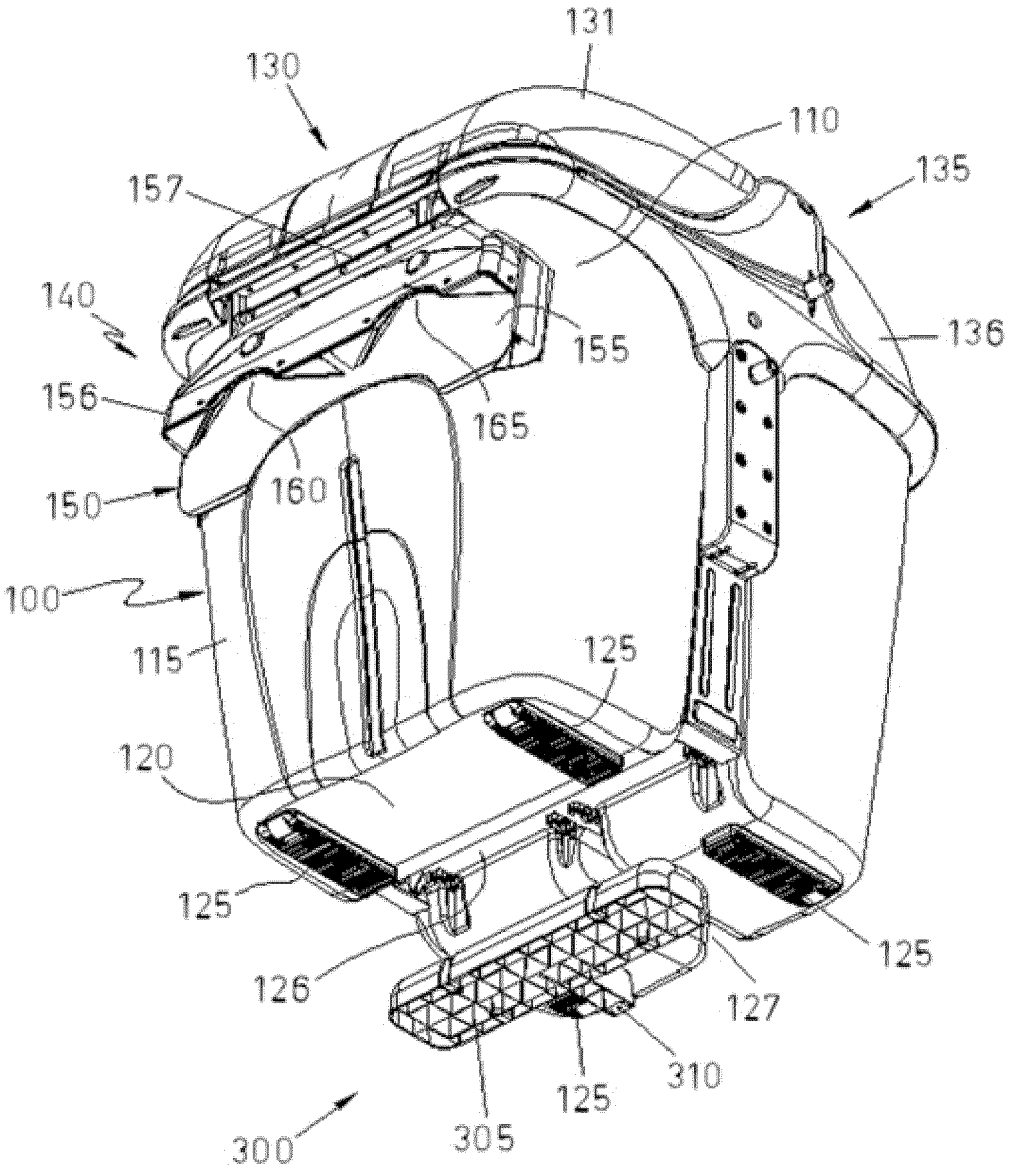
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FIG.2

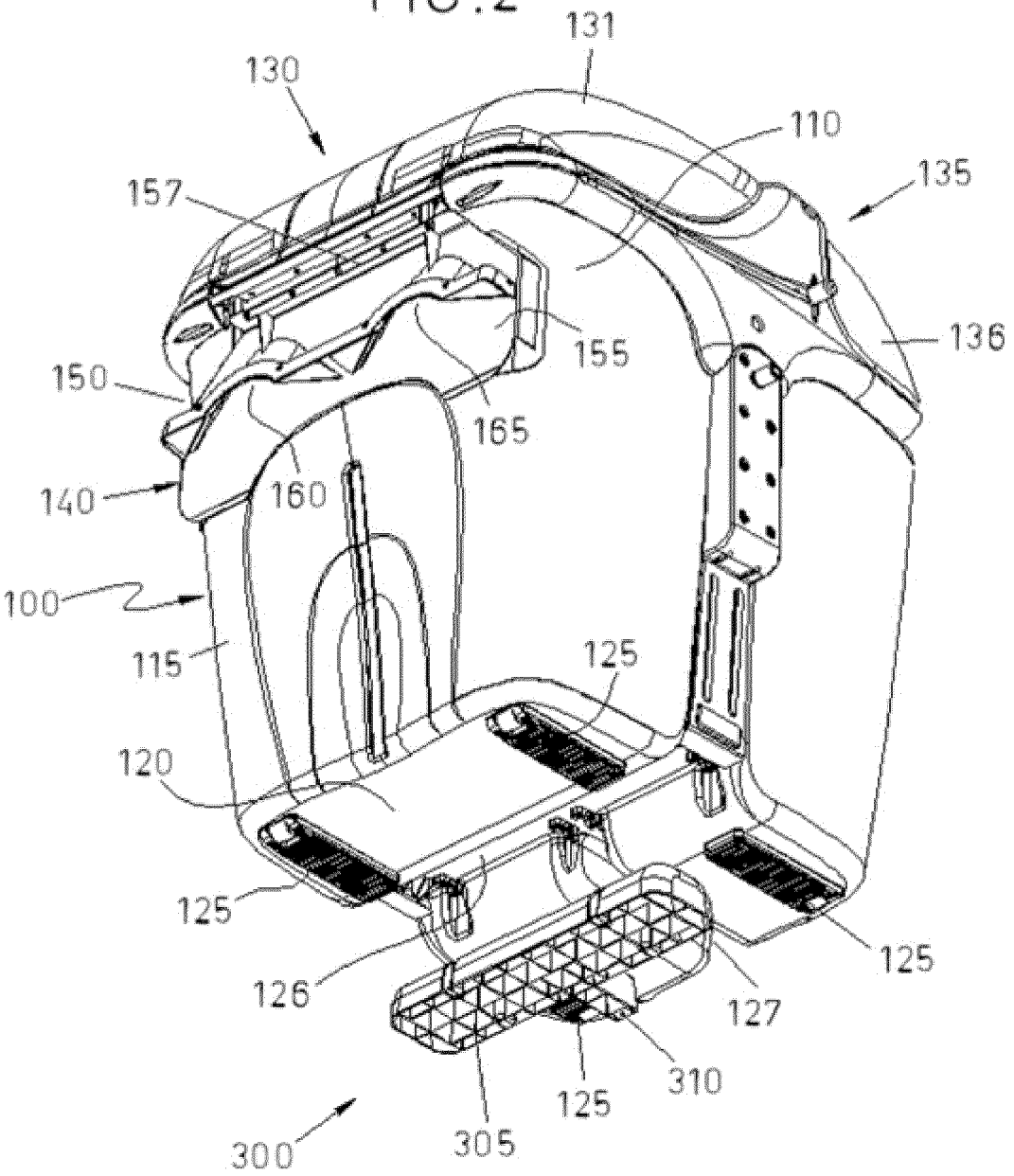
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FIG.3

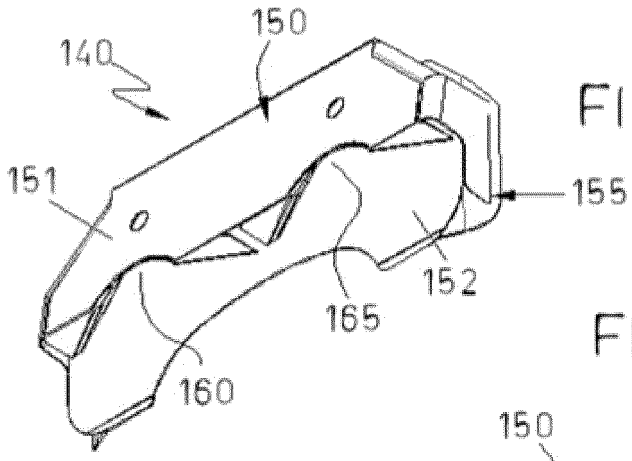


FIG.4

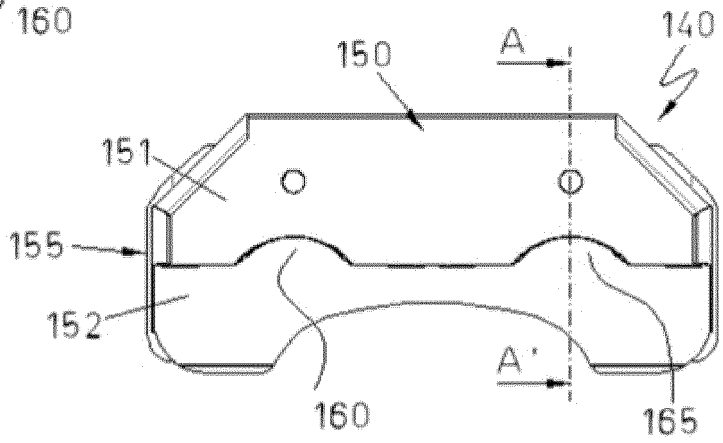


FIG.5

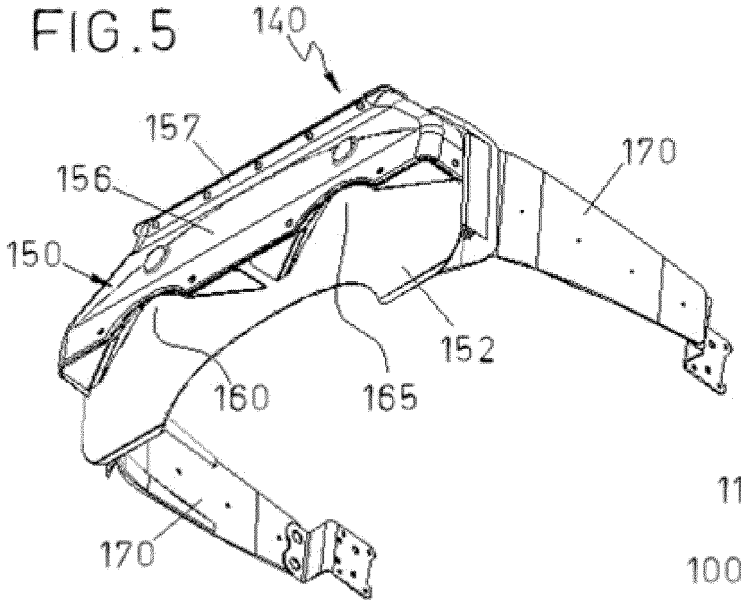


FIG.6

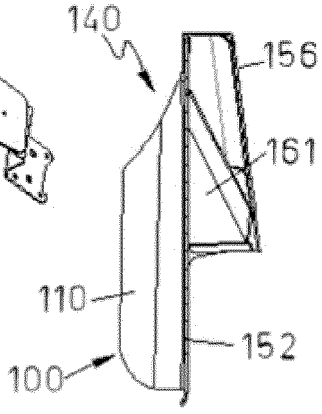
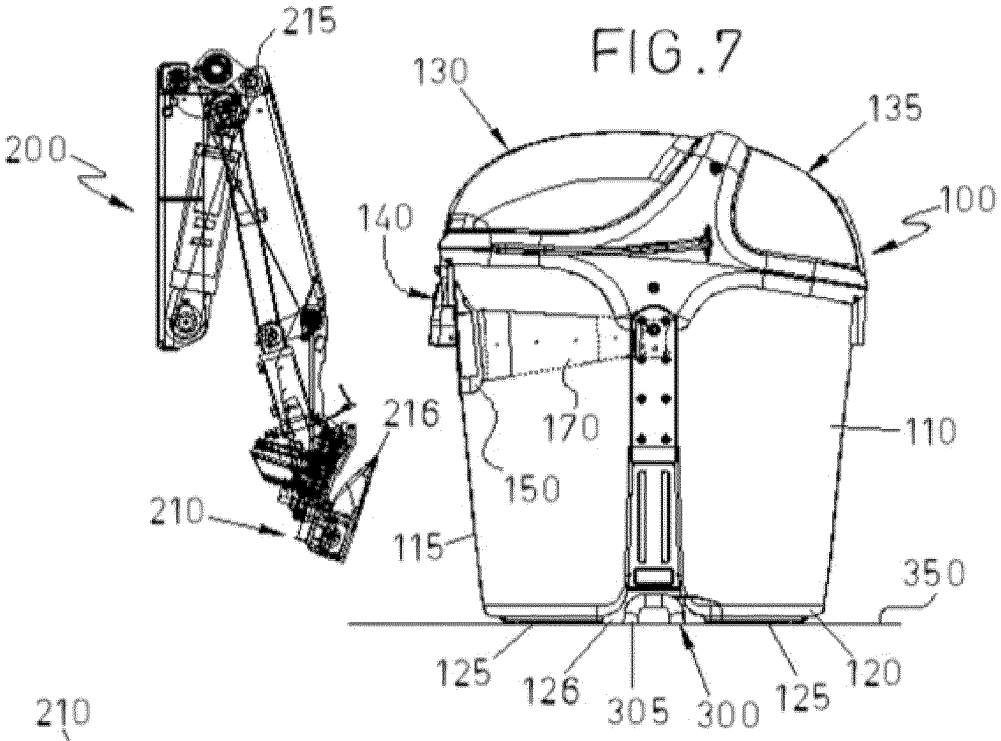


FIG.7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100
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150
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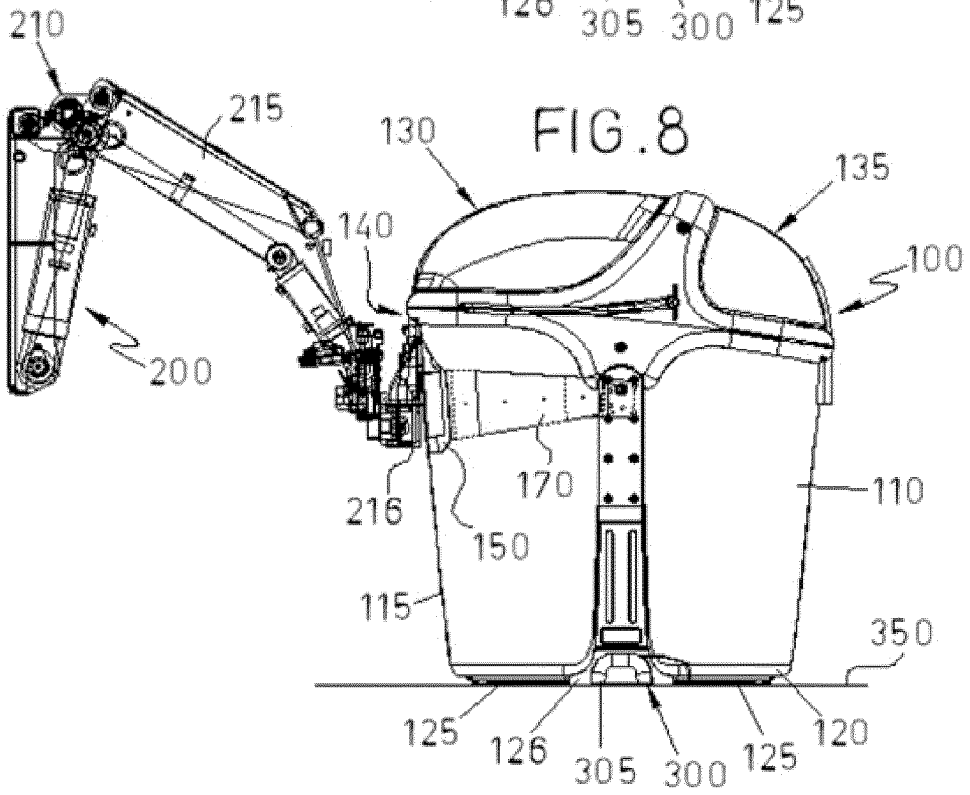
125
120

FIG.8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120

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2013/070532

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y A	ES 2099493T T3 (EDELHOFF POLYTECHNIK) 16/05/1997, claims, column 3 line 35 and figures.	1-8, 10-11 9
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☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
19/11/2013	**(20/11/2013)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer A. Martín Moronta Telephone No. 91 3495377

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INTERNATIONAL SEARCH REPORT

International application No.
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C (continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

International application No.
PCT/ES2013/070532

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2013/070532

CLASSIFICATION OF SUBJECT MATTER

B65F1/12 (2006.01)
B65F1/14 (2006.01)
B65F1/04 (2006.01)

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REFERENCES CITED IN THE DESCRIPTION

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