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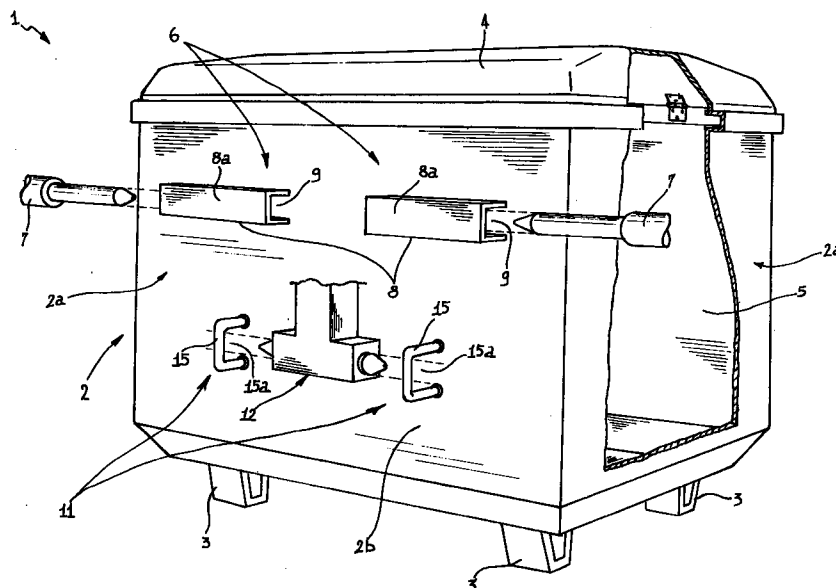
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(54) **A rubbish skip**

(57) A rubbish skip comprises a box-shaped body (2) defining a housing space (5) at the inside thereof and exhibiting a side wall (2a) with which anchoring means (6) is associated, which means is designed to engage corresponding grasping elements (7) of a handling equipment carried by a vehicle for refuse collection and transportation. The anchoring means (6) is comprised of an upper element (8) fastened to the side wall (2a) and

defining therewith a tubular horizontally-extending fitting seat (9), which seat receives a corresponding grasping element (7) at each end thereof. Also associated with the side wall (2a) of the skip (1) is locating means (11) interacting with an engagement member (12) carried by the handling equipment as well, and designed to carry out a skip overturning operation.

FIG. 1



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Description

The present invention relates to a rubbish skip, that is a container or bucket for holding refuse, of the type comprising a box-shaped body resting on the ground and defining, at the inside thereof, at least one housing space designed to receive said rubbish; and anchoring means associated with a side wall of said box-shaped body and arranged to engage at least one corresponding grasping element of a handling equipment carried by a vehicle designed to carry out collection and transportation.

It is known that, in order to ensure an efficient collection and disposal of municipal rubbish, rubbish skips have been increasingly more used which substantially consist of a box-shaped body, made of a plastic, fiber-glass or metal material and defining at the inside thereof a housing space designed to receive said rubbish. The rubbish skips of the above type are conveniently distributed on the ground so as to offer a plurality of fixed collection points; advantageously the increasingly wider use of the rubbish skips has made it possible to carry out a rational disposal of rubbish, enabling said rubbish to be collected in a differentiated manner, which will subsequently enable recycling of paper, paperboard, glass and plastics, which materials usually constitute most of the usual domestic and industrial waste products. In addition, emptying of said rubbish skips is also very practical and no human intervention is required.

More particularly, in order to enable a periodic emptying of the rubbish skips, collection vehicles are employed which are provided with a handling equipment carrying out the following operations: picking up of the skips from the ground, lifting of same above a collection box provided on board of a vehicle and overturning of the skips in order to discharge the refuse into the above vehicle box.

It is to be pointed out that, depending on the types of collecting vehicles, the handling equipment for the skips can operate on one side of the vehicle or at the front cab thereof. At all events, such a handling equipment is provided at the end with grasping elements engaging corresponding anchoring means associated with the skip which in this manner can be raised and overturned by the handling equipment, following the above described step sequence.

In skips currently in use provision is made for anchoring means having different structures depending on the solutions used each time.

In more detail, according to one solution of a known type particularly used for skips of a parallelepiped conformation, the above anchoring means comprises a pair of pins usually of a cylindrical conformation, each emerging from one of the two opposite sides of the skip. More particularly, said attachment pins are usually disposed in the plane of the longitudinal centre line of the skip close to the upper portion thereof.

When it is necessary to carry out emptying of the skip, the vehicle intended for such an operation is moved close to the skip and subsequently the handling equip-

ment is operated so that the attachment pins are engaged by said equipment and the necessary lifting and overturning steps are carried out. For the purpose, the handling equipment must be comprised of at least one pair of grasping elements operating in a cantilevered fashion relative to the vehicle and capable of reaching said attachment pins. In other words, in order to meet the structural requirements of the anchoring means present on the skips, it is necessary to devise handling apparatuses capable of greatly extending beyond the collection vehicle dimensions and, at the same time, of exerting a torque sufficient to overcome the force of inertia offered by the skip. Obviously these requirements bring about structural complexities sometimes of an important extent. In particular, the handling equipment must be accomplished by means of linkages of big sizes which, under operating conditions, are very bulky and therefore disadvantageous as far as the space management on board of the vehicle is concerned. In addition, it is also to be pointed out that the presence of elements projecting from the skip sides, such as the attachment pins, makes it impossible to dispose several skips in side by side relation and directly in contact with each other. Finally, it is to be pointed out that, due to their nature, the described attachment pins are bodies projecting from the skip and therefore are inconvenient in terms of accident prevention measures.

In fact, exactly for the purpose of overcoming the last mentioned drawback, other solutions were studied in the past according to which, in place of said attachment pins, provision was made for suitably shaped ribs in order to define a hooking seat designed to receive the grasping elements associated with the handling apparatus of the refuse collecting vehicle. These solutions too, however, exhibit all the drawbacks already emphasized in connection with the skips provided with side attachment pins.

In order to solve the above shortcomings at least partly, skips have been recently used in which the anchoring means are positioned at the front face of the skip itself, that is at the face directly oriented towards the handling apparatus.

In particular, in the last mentioned known type of skip, the anchoring means comprises a plate-like element fastened to the front face of the skip so as to define one or more pocket seats the opening of which is turned downwardly and into which the grasping elements associated with the handling equipment can be inserted. As one can easily understand, this solution has many advantages as compared with the previously described solutions in that it enables more skips to be disposed in side by side relation, directly in contact with each other, which expedient is surely advantageous for the purpose of reducing bulkiness. In addition, the presence of anchoring means operating on the front wall of the skip offers the facility of using handling apparatuses comprising linkages of greatly reduced sizes as compared with those used in the prior art and therefore having a more compact structure, capable of being moved more easily and occupying

less room both under operating conditions and rest conditions.

However the above listed unquestionable advantages of the last mentioned type of skip are combined with several inconveniences.

In fact, in order to prevent disengagement between the handling equipment and the skip during the overturning step of the latter, suitable stop members are required. Usually, within the pocket seat, undercuts are provided which are capable of engaging corresponding stop lugs conveniently carried by the grasping elements of the handling equipment. This solution however is rather complicated from a structural point of view and very often unreliable from an operating standpoint because the exact coupling between the grasping elements of the handling equipment and the anchoring means carried by the skip can be hardly checked.

It is also to be noted that, since the pocket seat has an access opening directed downwardly, the latter, due to its own nature, cannot be inspected with ease; therefore, if debris or other materials have partly obstructed the seat, malfunction and inaccurate couplings are likely to occur. Finally, still referring to the structure of the pocket seat, it will be recognized that the grasping elements, before carrying out the movement for lifting the skip, must be necessarily lowered under the pocket level and then moved upwardly so as to be correctly fitted into the pocket itself. Obviously, this requirement adversely affects the time necessary for executing the whole cycle involving emptying of the skip.

Under this situation, the fundamental object of the present invention is to substantially solve all the drawbacks present in the known art.

In particular, it is a fundamental object of the invention to provide a rubbish skip for holding refuse provided with anchoring means located on the front face of the skip, which anchoring means together with a structure of easy and cheap accomplishment, at the same time ensures a high reliability when it is coupled with the handling equipment and promotes a reduction in time for the execution of the skip emptying cycle.

The foregoing and further objects that will become more apparent in the course of the present description are substantially attained by a skip for holding rubbish, characterized in that said anchoring means comprises at least one upper element secured to said side wall and defining a tubular fitting seat of a substantially horizontal extension arranged to receive said at least one grasping element.

Further features and advantages will be more fully understood from the detailed description of some preferred embodiments of a skip for holding rubbish in accordance with the present invention, given hereinafter by way of non-limiting example with reference to the accompanying drawings in which:

- Fig. 1 is a perspective view of one embodiment of a rubbish skip according to the invention;

- Figs. 2, 3 and 4 are fragmentary side views concerning a second, third and fourth embodiment respectively of the rubbish skip of the invention;
- Fig. 7 is a front view of the skip shown in Fig. 1;
- Fig. 8 is a side view of the skip shown in Fig. 1;
- Figs. 5, 9, 11 and 13 are side views of further embodiments of a skip in accordance with the invention; and
- Figs. 6, 10, 12 and 14 are fragmentary side views of the skips shown in Figs. 5, 9, 11 and 13 respectively.

Referring to the drawings, a rubbish skip that is a container for holding refuse in accordance with the present invention has been generally identified by reference numeral 1.

Skip 1 comprises a box-shaped body 2 resting on the ground by conventional supporting members such as for example support feet 3. Depending on requirements, the box-shaped body 2 can be made of a plastic, fiberglass or a metal material and is generally provided with a lid 4 for closing a housing space 5 defined at the inside of the box-shaped body 2 and designed to receive rubbish.

The box-shaped body 2 comprises a side wall 2a with which anchoring means 6 is associated, said anchoring means being designed to engage corresponding grasping elements 7 being part of a handling equipment (not shown, in that it is the object of a European Patent Application filed on same date by the same applicant) carried by a conventional vehicle for refuse collection and transportation.

Advantageously, the anchoring means 6 comprises at least one upper element 8 fixed to the side wall 2a and defining, in cooperation with said wall, a tubular fitting seat 9, having a substantially horizontal extension, arranged to correspondingly receive at least one of said grasping elements 7. Actually, as shown in the accompanying figures, the grasping elements are preferably two in number, each of them operating at a respective end of the tubular seat 9.

Such grasping elements 7 by their fitting into the corresponding tubular seat 9 bring into effect the mutual engagement between the handling equipment and skip 1.

It is to be pointed out that preferentially the upper element 8 is fastened to a front portion 2b of the side wall 2a. This front portion 2b directly faces the handling equipment thereby enabling an easier action by the grasping elements 7.

The anchoring means 6 that is the upper element 8, can take different structural conformations depending on the requirements that may exist each time.

According to a preferential solution shown for example in Figs. 2, 3 and 4, the upper element may consist of a section member having a substantially C-shaped transverse section. Such a section member is rigidly engaged to the side wall 2a of the skip, for example by welding, bolting or other conventional systems and defines a tubular seat 9 having a substantially parallele-

pipel configuration having its major extension in the horizontal direction. In order to facilitate fitting of the grasping elements 7 at the opposite ends of the tubular seat 9, said seat exhibits an oversized transverse section as compared with the section of the grasping elements that, in this manner, are fitted with play in the tubular seat.

It is to be pointed out that, during the skip lifting, said skip generally has a tendency to oscillate by effect of its own weight and, as a result, the grasping elements 7 in turn have a tendency to rotate about their own axes within the tubular seat 9. Under this situation, it is advantageous for the upper element 8 to be made in the form of a section member the transverse section of which has a curved configuration, as shown in the embodiments in Figs. 5, 6, 9, 10, 13 and 14.

In some cases the upper element 8 may be advantageously made of two halves 8a opposing symmetrically relative to a vertical middle plane 10 of the skip and each defining a respective fitting seat 9 designed to receive the corresponding grasping element 7. In more detail, halves 8a can be connected to each other at the above middle plane 10, as shown in Fig. 11, or be mutually spaced apart from the middle plane itself, as shown for example in Figs. 1 and 13.

At all events, such halves 8a preferably have a tapering configuration towards the vertical middle plane 10 so as to cause a corresponding taper of the respective fitting seat 9. By virtue of this particular conformation, an easy insertion of the grasping element can be achieved because the inlet opening of each half 8a is sufficiently oversized relative to the actual section of the grasping element itself, while at the same time locking of the grasping element 7 in the tubular seat 9 is ensured, due to the fact that the section of said tubular seat becomes smaller as it comes closer to said vertical middle plane 10.

The rubbish skip 1 being the object of the present invention is also comprised of locating means 11 carried by the side wall 2a of the skip as well, preferentially close to the front portion 2b below the upper element 8. Such a locating means 11 is adapted to interact with an engagement member 12 carried by the handling apparatus too and designed to make the skip carry out its overturning step, in cooperation with the action of the grasping elements 7.

In the same manner as above described for the anchoring means 6, the locating means 11 too can be embodied according to different forms.

In particular, as shown in Fig. 4, the locating means 11 may comprise a mere abutment plate 13 fixedly fastened to the front portion 2b of the side wall 2a of the skip 1. In this case, the engagement member 12 consists of a stopper acting by thrust on the abutment plate 12 when it is necessary to carry out overturning of the skip in order to discharge the refuse into the case or box associated with the collection vehicle. However, when this solution, which is certainly simple from a structural point of view, is adopted, the skip is required to be able to come back

spontaneously, after being emptied, to the condition preceding overturning.

According to more complicated embodiments, the locating means 11 comprises a section member 14 extending in a substantially horizontal direction and having a C-shaped transverse section, as shown in Fig. 3, or an inverted L-shaped transverse section as shown in Fig. 2. In all cases, the section member 14 is fixedly secured to the front portion 2b of the side wall 2a of the skip and interacts with at least one engagement member 12 which may for example consist of an element insertable into the seat 14a defined between the section member 14 and the side wall 2a of the skip 1. In this manner, the engagement member 12 is capable of controlling overturning of the skip 1 and recalling the latter to the starting position once emptying of the refuse has been completed.

In accordance with a further embodiment, the locating means 11 can consist of a first handle element 15 vertically engaged to the side wall 2a of the skip 1 substantially at the vertical middle plane 10. According to this solution, shown in Figs. 5 and 6, the engagement member 12 consists of a stopper associated at the end with an actuator having a horizontally movable rod adapted to be inserted in a loop 15a defined between the handle 15 and the side wall 2a of the skip.

Alternatively, where the skip 1 exhibits an elongated parallelepiped structure, the locating means 11 may comprise a pair of first handle elements 15 vertically engaged to the front portion 2b of the side wall 2a of the skip 1 and disposed symmetrically to the vertical middle plane 10 of the skip itself, as shown in Figs. 1 and 13. Obviously, in this case, the engagement member 12 will be provided at the end with two actuators the respective rods of which are moved horizontally to be each fitted into the corresponding loop 15a defined between each handle 15 and the side wall 2a of the skip.

Finally, referring to the embodiment shown in Fig. 9, the locating means 11 may consist of a second handle element 16 horizontally engaged to the front portion 2b of the side wall 2a of the skip. Obviously, said engagement member 12, in order to be able to cooperate with such a horizontal handle element, shall be provided at the end with an actuator having a vertically movable rod and susceptible of insertion into the loop 16a defined between the horizontal handle 16 and the front portion 2b of the side wall 2a of the skip 1.

The invention achieves important advantages.

It is to be pointed out first of all that, due to the tubular structure of the fitting seat 9, coupling between the grasping elements 7 and the upper element 8 is very efficient during the whole raising and overturning operation of the skip.

In addition, since the tubular seat has a horizontal extension, it can be easily inspected and therefore cleaning and servicing operations are facilitated and a reliable coupling is always ensured.

Still with reference to the structure of the tubular fitting seat, it is to be pointed out that, since the latter has

a horizontal extension, engagement with the grasping elements 7 is carried out without said grasping elements being required to be moved upwardly from below the anchoring means 6, which measure was necessary in the solutions of the traditional type. On the contrary, by virtue of this new particular feature, the whole skip emptying cycle can be carried out in a very reduced period of time.

In addition, positioning of the anchoring means 6 and locating means 11 close to the front portion 2b of the side wall 2a of the skip 1 is very advantageous because in this manner the handling equipment exhibits linkages of reduced bulkiness as compared to those of the known art and, at the same time, can operate on the skip in a much easier manner. In addition to the above, thanks to the particular arrangement of the anchoring means and locating means 11, the skips can be disposed side by side, directly in contact with each other, so that the room they require will be greatly reduced.

It is to be pointed out that the skip in question is also very advantageous in its most specific aspects.

In greater detail, in the case in which an upper element divided into two halves is provided, a better distribution of the loads during the raising and overturning steps is ensured, in particular when the skip exhibits an elongated conformation.

In addition, when the two halves 8a have a tapered configuration, it is apparent that anchoring of the skip 1 to the grasping elements 7 is improved, without on the other hand being reduced the easy insertion of the grasping elements in the tubular seat 9.

Finally, referring to the locating means 11, the solutions involving one or more horizontally or vertically disposed handles is very advantageous. In fact, by merely providing an actuator associated with the engagement member 12 of the handling equipment, it is possible to achieve an efficient coupling and carry out the overturning operations with great ease.

Obviously many modifications and variations may be made to the present invention. In particular, provision may be made for a skip 1 devoid of the locating means 11. In this case, in order to be able to execute the necessary handling operations relating to the skip, the upper element 8 will be shaped so as to define a tubular fitting seat 9 having a shape conforming to the outer surface of the grasping elements 7.

More particularly, the tubular seat 9 and grasping elements 7 shall exhibit mutually matching circular or polygonal cross sections also susceptible of variation along the longitudinal extension of the upper element 8.

Claims

1. A rubbish skip, that is a container or bucket for holding refuse, comprising:

- a box-shaped body (2) resting on the ground and defining at the inside thereof at least one

housing space (5) designed to receive said rubbish; and

- anchoring means (6) associated with a side wall (2a) of said box-shaped body (2) and arranged to engage at least one corresponding grasping element (7) of a handling equipment carried by a vehicle designed to carry out collection and transportation,

characterized in that said anchoring means (6) comprises at least one upper element (8) secured to said side wall (2a) and defining a tubular fitting seat (9) of a substantially horizontal extension arranged to receive at least one grasping element (7).

2. A rubbish skip according to claim 1, characterized in that said upper element (8) is fastened to a front portion (2b) of said side wall (2a) directly facing said handling equipment.

3. A rubbish skip according to claim 1, characterized in that said upper element (8) comprises a section member of a substantially C-shaped transverse section, said section member being fixedly engaged to said side wall.

4. A rubbish skip according to claim 1, characterized in that said upper element (8) comprises a section member the transverse section of which has a curved conformation, said section member being fixedly engaged to said side wall.

5. A rubbish skip according to claim 1, characterized in that said upper element (8) comprises two halves (8a) disposed symmetrically opposed relative to a vertical middle plane (10) of the skip (1), each of said halves (8a) defining a respective fitting seat (9) designed to receive a corresponding one of said grasping elements (7).

6. A rubbish skip according to claim 5, characterized in that said halves (8a) are separated from each other and mutually spaced apart.

7. A rubbish skip according to claim 5, characterized in that each of said halves (8a) exhibits a configuration tapering towards said vertical middle plane in order to cause a corresponding taper of the respective fitting seat (9).

8. A rubbish skip according to claim 1, characterized in that the tubular fitting seat defined by said upper element substantially conforms to an outer surface of said grasping element.

9. A rubbish skip according to claim 8, characterized in that said tubular seat has a transverse section of substantially circular conformation.

10. A rubbish skip according to claim 8, characterized in that said tubular seat has a transverse section of polygonal conformation.
11. A rubbish skip according to claim 1, characterized in that it further comprises locating means (11) carried by said side wall (2a) at a lower level than said upper element and arranged to interact with an engagement member (12) carried by the handling equipment.
12. A rubbish skip according to claim 11, characterized in that said locating means is associated with a front portion (2b) of said side wall (2a).
13. A rubbish skip according to claim 11, characterized in that said locating means (11) comprises an abutment plate (13) rigidly fastened to the side wall (2a) of the skip.
14. A rubbish skip according to claim 11, characterized in that said locating means (11) comprises a first handle element (15) vertically engaged to the side wall (2a) of the skip (1) substantially at a vertical middle plane (10) of said skip.
15. A rubbish skip according to claim 11, characterized in that said locating means (11) comprises a pair of first handle elements (15) vertically engaged to the side wall (2a) of the skip (1) and disposed symmetrically to a vertical middle plane (10) of the skip itself.
16. A rubbish skip according to claim 11, characterized in that said locating means (11) comprises a second handle element (16) horizontally engaged to said side wall (2a) of the skip.
17. A rubbish skip according to claim 11, characterized in that said locating means (11) comprises a section member (14) extending substantially in a horizontal direction and having a substantially C-shaped transverse section, said section member (14) being rigidly engaged to the side wall of the skip (1).
18. A rubbish skip according to claim 11, characterized in that said locating means (11) comprises a section member (14) extending substantially in a horizontal direction and having a substantially inverted L-shaped transverse section, said section member (14) being rigidly engaged to the side wall of the skip (1).

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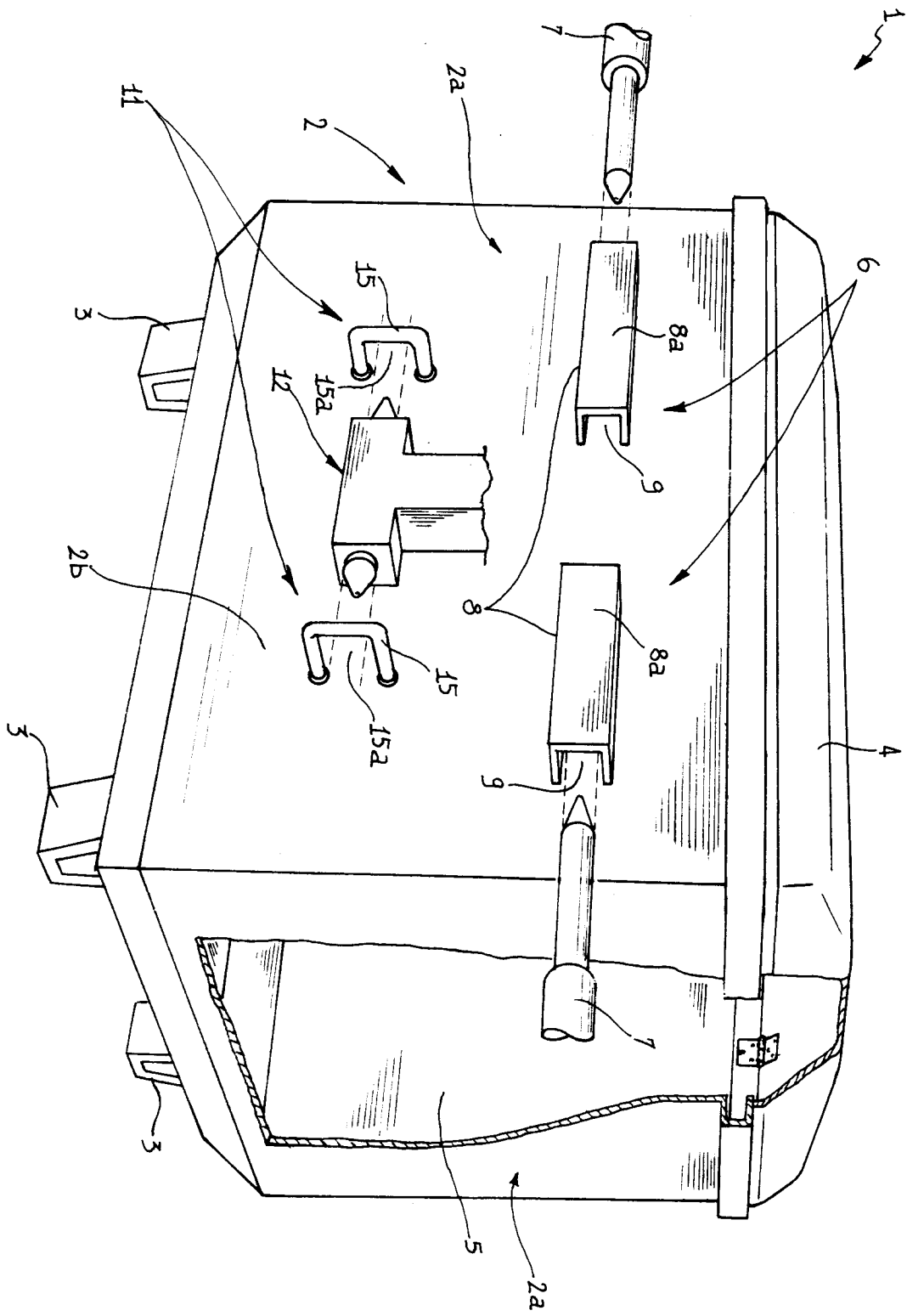


FIG. 1

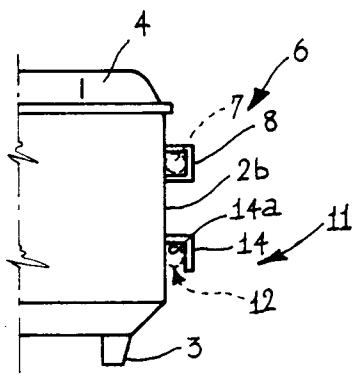


FIG. 2

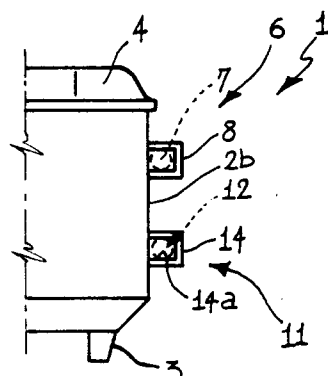


FIG. 3

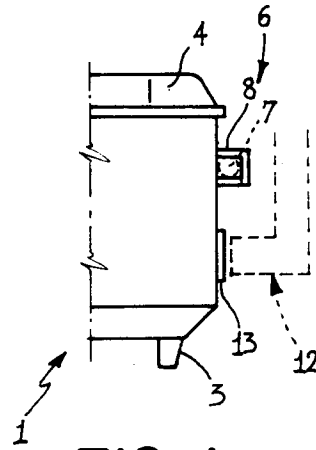


FIG. 4

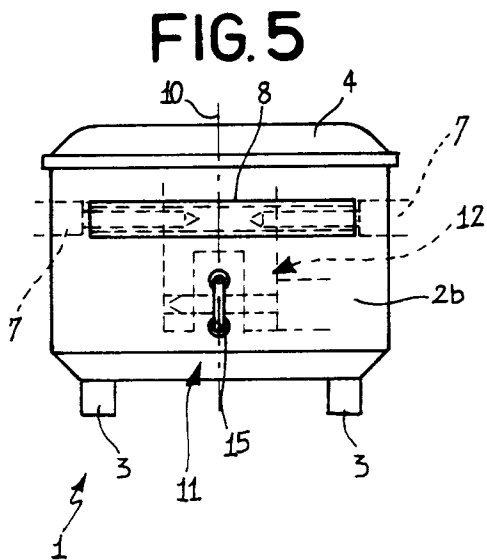


FIG. 5

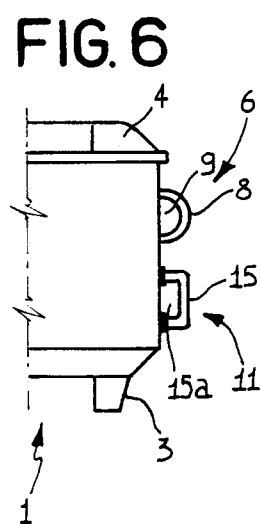


FIG. 6

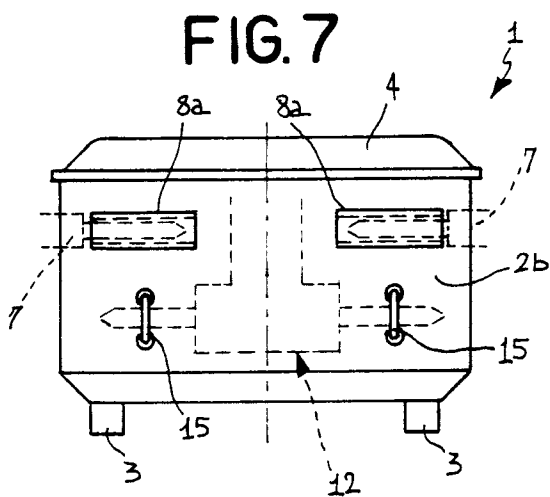


FIG. 7

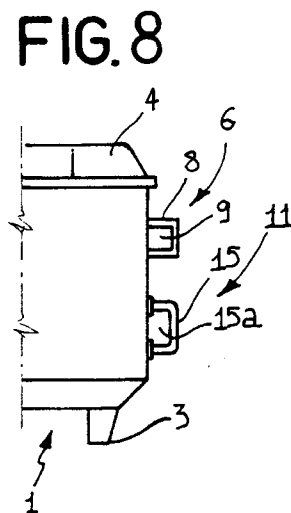
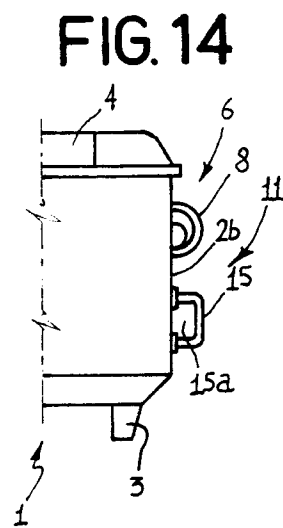
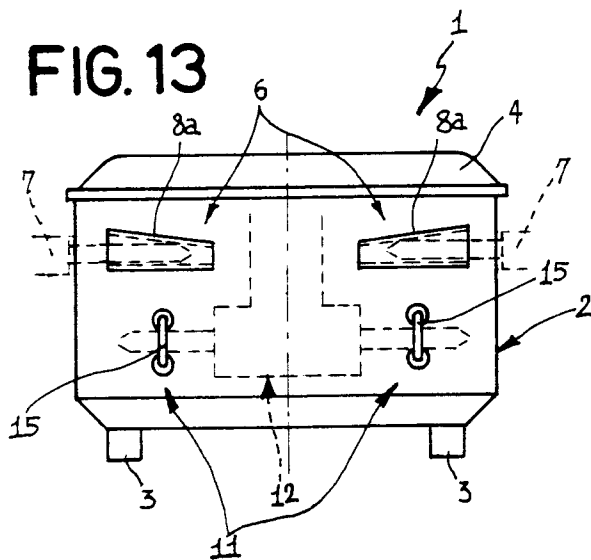
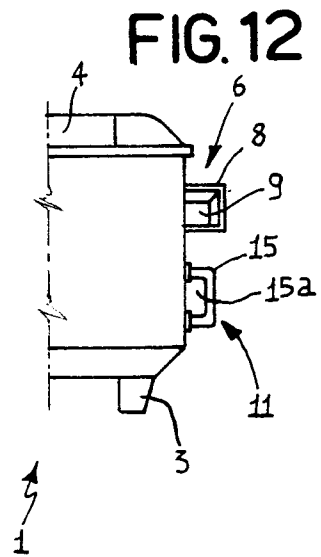
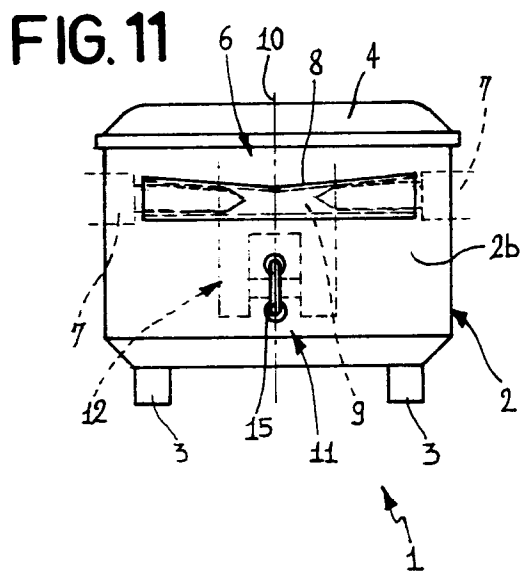
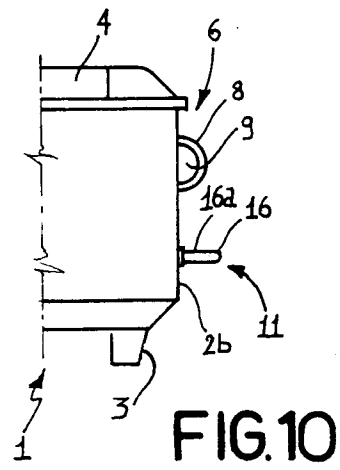
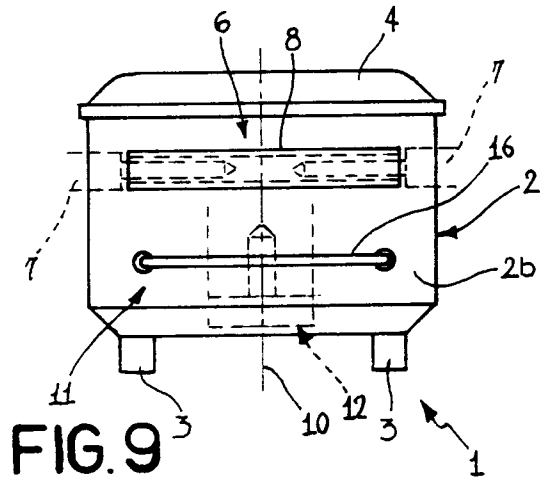


FIG. 8





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0514

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US-A-4 726 616 (SCHMIDT) * figures 1,4 *	1,3,5-8, 10	B65F1/12
X	US-A-4 741 658 (ZELINKA ET AL.) * figures 3,6,7 *	1,2,11, 12,16	
X	FR-A-2 439 728 (GIORGI ET AL.) * figures 1,2,3 *	1,2,4, 11,12,17	
X	DE-U-77 10 913 (SULO EISENWERK STREUBER & LOHMANN) * figure 5 *	1,2	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65F
Place of search		Date of completion of the search	Examiner
THE HAGUE		29 March 1995	Martínez Navarro, A.
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