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## (54) Container for collecting used household oil

(57) Container for the collection of used household oil, comprising an input window (1) through which receptacles may be introduced into the container (100), a receptacle compartment where said receptacles are deposited, an output window (3) through which receptacles may be supplied outside, at least one receptacle storage compartment where the receptacles to be supplied outside are stored, and actuating means. The actuating means comprise an actuator upon which an user acts and control means adapted for detecting said actuation and to cause, when said actuation is detected, the receptacle introduced through the input window (1) to be deposited in the receptacle compartment and the supply of a receptacle stored in the storage compartment outside through the output window (3).

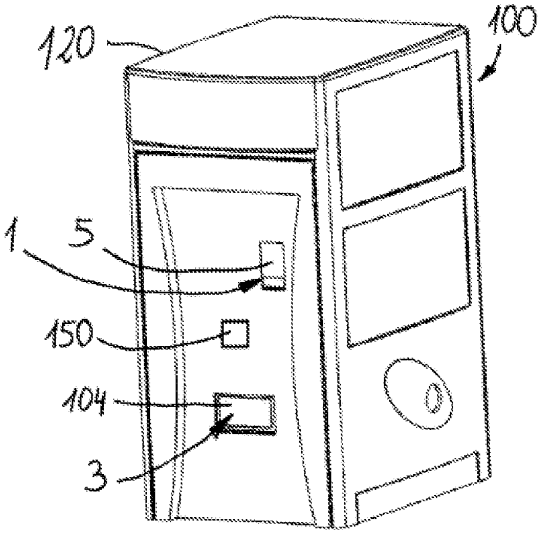


Fig. 1

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## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to containers for the collection of used household oil, and more specifically to containers that are designed to supply a receptacle outside, when collecting said oil.

### PRIOR ART

**[0002]** The used oil generated in households following its use, hereinafter referred to as used household oil, is a pollutant. As a consequence, if said oil is disposed of in a household wastepipe, for example, said oil contributes to the contamination of water and the subsoil. In response to this problem, the collection of this type of oil is being is increasing, different methods being used for this purpose.

**[0003]** One of the methods used is by means of a service provided by a number of local councils and which involves the collection of used household oil at specific times and places. This method is not always convenient for the user as it is not always possible to reach the specified locations on the specified dates and, furthermore, the amount of used household oil stored in the home between collection dates may present an inconvenience.

**[0004]** To address these drawbacks there is another known method of locating different containers in different places, thus allowing the user to dispose of used household oil in said containers at their convenience. Some of these containers are designed to receive used household oil directly, and not in receptacles, which may prove awkward for the user, as they have to pour the oil contained in a receptacle into the container. Due to the properties of oil, this may be an untidy and awkward operation. Other types of these containers are designed to collect the receptacle directly without the user having to pour the oil directly, although they do have the drawback of leaving the user without a receptacle in which they may store the oil generated at home.

**[0005]** These drawbacks are solved in the container disclosed in the application ES 2303425 A1, said container beind adapted to return an empty receptacle to the user after he has placed a receptacle inside said container. To achieve this, the container comprises a mechanism consisting of a series of elements, the user having to cause the rotation of an axis of rotation of said mechanism to generate the supply of the empty receptacle. The possible dirt generated over time and with use by, for example, an improperly closed receptacle containing oil and placed inside the container may, for example, impede the rotation of said axis of rotation, thereby requiring greater effort on the part of the user to cause it to rotate.

### BRIEF DISCLOSURE OF THE INVENTION

**[0006]** It is an object of the invention to provide a container for the collection of used household oil as disclosed in the claims.

**[0007]** The container of the invention is designed to collect used household oil, and comprises an input window through which receptacles containing used household oil may be placed in the container, a receptacle compartment in which said receptacles are stored, an output window through which empty receptacles may be supplied outside, and at least one receptacle storage compartment where empty receptacles are stored for their supply through the output window. The container also comprises actuating means, which, when are actuated, may cause the receptacle introduced through the input window to be deposited in the receptacle compartment and maty cause a receptacle stored in the receptacle storage compartment to be supplied through the output window.

**[0008]** The actuating means comprise an actuator that the user acts on, and control means in order to detect said action and, when they detect said action, to cause the receptacle introduced through the input window to be deposited in the receptacle compartment and a receptacle stored in the receptacle storage compartment to be supplied through the output window.

**[0009]** Hence, the user may dispose the used receptacle in the container and receive an empty receptacle for its subsequent use in a simple and convenient way, without this involving any effort on their part or inconvenience, as it is the control means which have the task of generating the supply of an empty receptacle and not the user directly. In addition, the use of a smaller number of elements and interactions between them is required, thereby enabling both the assembly and possible repair of the container.

**[0010]** These and other advantages and characteristics of the invention will be made evident in the light of the drawings and the detailed description thereof.

### DESCRIPTION OF THE DRAWINGS

**[0011]**

Figure 1 is a perspective view of an embodiment of the container of the invention.

Figure 2 is a perspective view of the interior of the container of Figure 1, without a casing covering it.

Figure 3 shows an input housing of the container of Figure 1, without an input cover.

Figure 4 shows an input housing of Figure 3, with the input window opened.

Figure 5 is a rear view of the input housing of Figure 3.

Figure 6 is a perspective view of a receptacle storage compartment of the container of Figure 1.

Figure 7 is a rear view of the receptacle storage compartment of Figure 6.

Figure 8 is a perspective view of an output housing of the container of Figure 1.

Figure 9 is an exploded view of the output housing of Figure 8.

Figure 10 is a perspective view of the interior of the container of Figure 1, without the casing covering it and with a platform in a folded position.

DETAILED DISCLOSURE OF THE INVENTION

**[0012]** Figures 1 and 2 show an embodiment of the container 100 of the invention, which is designed to be used to collect used household oil. The container 100 comprises an input window 1 through which a user may introduce a receptacle, preferably full of used household oil, in the container 100, a receptacle compartment 2 where the receptacles placed in said container 100 are deposited through the input window 1, an output window 3 through which a receptacle stored beforehand in said container 100 may be supplied outside, and at least one receptacle storage compartment 4 where said receptacles, preferably empty, may be stored inside the container 100 so that they may be supplied outside through the output window 3. Said container 100 also comprises actuating means, which, when are actuated by a user, may cause the receptacle introduced through the input window 1 to be deposited in the receptacle compartment 2 and an empty receptacle stored in the storage compartment 4 to be supplied through the output window 3. The inside of the container 100 is covered and protected by a casing 120.

**[0013]** The actuating means comprise an actuator that the user acts on when he wishes to place a receptacle in the container 100, and control means (not shown in the figures) adapted to detect said action and to cause, when said action is detected, the receptacle introduced through the input window 1 to be deposited in the receptacle compartment 2 and the supply outside of a receptacle stored in the storage compartment 4 through the output window 3. In a preferred embodiment of the invention, the container 100 comprises first detection means 130, communicated with the control means, for detecting whether the user has introduced a receptacle through the input window 1 or not, said control means being capable of allowing said receptacle to be deposited in the receptacle compartment 2 and a receptacle stored in the storage compartment 4 to be supplied through the output window 3 only if said introduction has been detected. In the preferred embodiment, said container 100 also comprises second detection means (not shown in the figures), communicated with the control means, for detecting the absence or presence of receptacles in the storage compartment 4, said control means preventing a receptacle from being deposited in the receptacle compartment 2 when no receptacle is detected in said storage compartment 4, with the result that the control means enable receptacles to be deposited in the receptacle compartment 2 and an empty receptacle to be supplied through the output window 3 only if, when they detect that a user acts on the actuator, they also detect that said user has introduced a receptacle into the container 100 through the input window 1 and that there is at least one receptacle stored in the storage compartment 4. As a result, a user will always have access to a receptacle in which they may dispose the used household oil he generates, as when he deposits a used receptacle in the container 100 they receive an empty receptacle for its subsequent use, said used receptacle not being deposited when the container 100 is unable to supply an empty receptacle. Both detection means may be the same or may be different from each other, and may comprise, for example, presence sensors or any other type of conventional sensor that serves for that purpose.

**[0014]** The container 100 of the invention is designed to house receptacles containing used household oil to enable the subsequent treatment of said oil, and to return another empty receptacle to the user. However, it is evident that said container 100 may also be used to house other types of contents, such as car oil or any type of paint.

**[0015]** The container 100 comprises a first actuator (not shown in the figures) that preferably comprises an electric motor and which, controlled by the control means, may cause the receptacle introduced by the user through the input window 1 to be deposited in the receptacle compartment 2. Said container 100 also comprises a second actuator (not shown in the figures) that preferably comprises an electric motor and which, controlled by the control means, may generate the supply of a receptacle stored in the storage compartment 4 through the output window 3. It is thus the control means that have the function of generating the supply of an empty receptacle through said output window 3 and not the user, thus making the operation simple and convenient for the user.

**[0016]** The container 100 also comprises an input housing 16 shown in figures 3 to 5, where a user disposes the receptacle they introduce in said container 100 through the input window 1, the first detection means 130 being capable of detecting that a receptacle has been introduced through said input window 1, preferably detecting the presence of said receptacle in the input housing 16. In the preferred embodiment the actuator comprises an input cover 5 that covers the input window 1, preventing access to the input housing 16 unless acted on by a user, although it may also be the case that said actuator comprises a push-button, for example, and the control means detect if it is pressed and cause, then, the input window 1 to be opened. A user causes the input

cover 5 to move by acting on it and thus opens the input window 1, the control means being capable of detecting said movement by means of a sensor (not shown in the figures) preferably disposed in the vicinity of said input window 1 for such a purpose. Said input cover 5 preferably moves longitudinally, being displaced on guides (not shown in the figures). The user disposes the receptacle on a movable base 8 of the input housing 16, which acts as a support for said receptacle when it is in said input housing 16. In order to cause the receptacle disposed on the movable base 8 to be deposited in the receptacle compartment 2, the first actuator 130 causes the movement of said movable base 8 with the result that the receptacle loses its support and falls into said receptacle compartment 2, preferably via a ramp 15 that connects the input housing 16 to the receptacle compartment 2. Furthermore, in the preferred embodiment the movement of the movable base 8 is rotational, said movable base 8 pivoting in relation to a shaft (not shown in the figures) fixed on the container 100 when it is moved. When the first actuator 130 stops acting on the movable base 8, said movable base 8 may return to its original position due to the force of the spring (not shown in the figures), for example, although preferably it is linked to the first actuator by means of a connecting-rod mechanism 9, with the result that it is the actuator that causes said return. The container 100 may also comprise a receptacle sensor (not shown in the figures), preferably disposed in the vicinity of the input window 1, for detecting when a user brings a receptacle up to said input window 1. The control means are communicated with said receptacle sensor, enabling the movement of the input cover 5 only if they detect the presence of said receptacle, thereby reducing or eliminating the risk of foreign objects being introduced into the input housing 16. The actuator may also be disposed at such a height that because of its weight and size etc and said height, a handicapped user may be able to reach it and operate it easily.

**[0017]** As it is shown in figures 6 and 7, the storage compartment 4 comprises a storage compartment housing 40 where a receptacle is disposed in order to be supplied, and at least one fastening member 11 to hold said receptacle in the storage compartment housing 40 before it is supplied, the second actuator, controlled by the control means, causing a movement of said fastening member 11 in order to release said receptacle and to enable it to be supplied outside. The storage compartment housing 40 comprises at least one side cavity 40a through which said receptacle exits the storage compartment 4 when it is supplied, the fastening member 11 preventing said exit when it holds said receptacle in said storage compartment housing 40. The storage compartment housing 40 also comprises a storage compartment base 12 on which the receptacle housed in said storage compartment housing 40 is disposed, said storage compartment base 12 comprising at least one sloping surface 12a on which said receptacle slides when it is supplied, it then exiting through the side cavity 40a. The storage compartment base 12 preferably comprises a substantially triangular shape, comprising two opposing sloping surfaces 12a, with the receptacle being disposed on a vertex 12b of said sloping surfaces 12a, it being capable of sliding on one of the sloping surfaces 12a when it is released from the fastening members 1. Thus, the storage compartment housing 40 preferably comprises two opposing side cavities 40a, the receptacle being capable of exiting via one of the side cavities 40a depending on which sloping surface 12a it slides down. The fastening member 11 preferably comprises a rod for each side cavity 40a to prevent the receptacle from exiting through the corresponding side cavity 40a, both rods moving in conjunction with each other. Each rod is connected at both ends to two facing walls 41 of the storage compartment housing 40, extending all the way along the side cavity 40a and thus preventing the receptacle from exiting through said side cavity 40a, the control means causing said rod to slide in order to free said side cavity 40a when an external receptacle is to be supplied. Each of the walls 41 comprises at least one groove 41 a to guide the displacement of said rod.

**[0018]** The container 100 may also comprise an output housing 105, shown in Figures 8 and 9, where the receptacle originating from the storage compartment 4 is disposed for its supply outside, and a ramp 13 that connects said storage compartment 4 to said output housing 105. The user may access said output housing 105 through the output window 3 to collect said receptacle. The container 100 also comprises an output cover 104 to cover the output window 3, the control means preventing the opening of said output cover 104 and, therefore, the access to the output housing 105 if the supply of a receptacle outside is prevented. As a result, the output housing 105 can only be accessed when a receptacle has been introduced into said container 100 beforehand and supply has been enabled due to the detection of the presence of at least one receptacle in the receptacle storage compartment 4, thereby eliminating or reducing the risk of foreign objects being introduced into the output housing 105. The output cover 104 may, preferably, tilt in relation to a shaft (not shown in the figures) acted on by a user wishing to collect a receptacle deposited in the output housing 105, the control means being capable of preventing or enabling said tilting. The second detection means may be disposed in the storage compartment housing 40 of said storage compartment 4, or they may also be disposed on the ramp 13. In this case, the control means may comprise, for example, a counter in order to count the receptacles being supplied, and are thus capable of detecting when the receptacle being supplied at each moment is the last one, thus being able to determine whether there are more receptacles in said receptacle storage compartment 4 or not. It is evident that in this case, the control means also compare the result of the counting with the number previously stored in a memory (preferably included in said control means or external to them) and which corresponds with the number of recep-

tacles stored initially in said receptacle storage compartment 4.

**[0019]** The output housing 105 preferably comprises a housing piece 105b where the receptacle is housed when it reaches said output housing 105 and where the user may access to collect a supplied receptacle, a conduit 105a through which the receptacle reaches the housing piece 105b and which is connected to the ramp 13, and a support piece 105c joined to the housing piece 105b and disposed beneath said housing piece 105c. The housing piece 105b comprises a plurality of holes 105b', with the result that if dirt (e. g. oil) reaches the output housing 105, said dirt falls on the support piece 105c through said holes 105b', thereby reducing the risk of the user encountering dirt when they access to collect the receptacle. The housing piece 105b is joined to the conduit 105a by means of a clip-type joint, for example, with the result that it may easily be released from and joined to said conduit 105a for its replacement and/or cleaning, for example. Similarly, the support piece 105c may also be joined to said housing piece 105b by means of a clip-type or an equivalent joint, with the result that it may easily be released from and joined to said housing piece 105b.

**[0020]** The storage compartment 4 also comprises a substantially rectangular shape and is disposed in a substantially vertical manner on the container 100. The receptacles are disposed in said storage compartment 4 in a substantially horizontal manner, said storage compartment 4 being capable of housing a number of receptacles depending on the length of the storage compartment 4, said receptacles being stacked in said storage compartment 4 in a vertical manner, one on top of the other. In the preferred embodiment, the rods of the fastening member 11 are disposed in a substantially horizontal manner, being displaced vertically in order to release the receptacle to be supplied.

**[0021]** The receptacle storage compartment 4 is disposed on a folodable platform 108 that comprises a perimeter surface 108a linked to a structure 110 of the container 100 in such a way that it is free to rotate. Said platform 108 preferably comprises a square or rectangular shape, the perimeter surface 108a corresponding to one of the sides of said square or rectangle. The opposite side 108b of said platform 108 is connected to the structure 110 by means of connection means (not shown in the figures), said connection being capable of being disconnected, in order to effect manually the rotation of the platform 108, said platform 108 ending in a folded position, as shown in Figure 10. This thus enables the reloading of the storage compartment 4 as access may easily be gained to a reloading aperture 4a that comprises the storage compartment 4 in the upper section, empty receptacles being introduced into said storage compartment 4. The container 100 also comprises at least one hydraulic cylinder 111 or equivalent means, that cause the platform 108 to return to its original position automatically when, once the platform 108 rotates, said platform 108 is released.

**[0022]** The container 100 preferably comprises a plurality of storage compartments 4, each storage compartment 4 comprising a substantially rectangular shape, at least one second actuator and at least one fastening member 11, said storage compartment 4 also being disposed in a substantially vertical manner on the container 100. In this case, the second detection means are preferably disposed on the ramp 13, a sensor (or equivalent means) being sufficient to detect the presence of the container 100 in all the storage compartments 4. The supply process may thus be as follows: firstly, the control means act on the same second actuator to cause the supply of a receptacle stored in a storage compartment 4 when required. When said control means detect that the last receptacle corresponding to a storage compartment 4 has been supplied, the next time they are required for such a purpose they act on the second actuator corresponding to the next storage compartment 4, the counting process beginning again. Finally, when they detect that the last receptacle of the last storage compartment 4 has been supplied, said control means determine that there are no receptacles left in the container 100 to be supplied and thus prevent receptacles from being deposited in the receptacle compartment 2 until at least one of the storage compartments 4 is refilled. When the person incharge of refilling the receptacles carries out his task, he must, of course, indicate this operation to the control means. The receptacle compartment 2 is adapted to be removed easily from the container, thus allowing the receptacles filled with used household oil deposited in it to be collected easily.

**[0023]** The control means, the actuators and the possible detection means and/or sensors used in the container 100 need electrical energy to operate. As a result, said container 100 may comprise connection means (not shown in the figures) in order to connect it to the mains supply and thus supply electrical energy to said control means and said actuators, although it preferably comprises at least one battery (not shown in the figures), whose function is to supply said electrical energy. The drawback with using a battery is that the electrical energy stored in it is limited, the battery having to be charged regularly or replaced by another one. However, it does offer the advantage, for example, of allowing the container 100 of the invention to be positioned anywhere, thereby obviating the need to check whether there is a mains supply or mains socket in the vicinity.

**[0024]** The container 100 may also comprise display means 150 shown in Figure 1, by means of which it can be indicated if receptacles are present or not in the storage compartment 4 and, therefore, whether said container 100 is operative or not, and may even indicate the number of receptacles stored in said storage compartment 4 at each point in time, for example. The display means 150 may comprise a screen, for example, and the control means may be responsible for showing the information on said screen.

## Claims

1. Container for the collection of used household oil, comprising
an input window (1) through which receptacles may be introduced into the container (100),
a receptacle compartment (2) where said receptacles are deposited,
an output window (3) through which receptacles may be supplied outside,
at least one receptacle storage compartment (4) where the receptacles to be supplied outside are stored, and
actuating means, which, when acted on, may cause a receptacle to be deposited in the receptacle compartment (2) and another receptacle to be supplied outside,
**characterised in that**
the actuating means comprise
an actuator that a user acts on, and
control means designed to detect said action and to cause, when said action is detected, the receptacle introduced through the input window (1) to be deposited in the receptacle compartment (2) and the supply of a receptacle stored in the storage compartment (4) outside through the output window (3).

2. Container according to claim 1, comprising a first actuator for causing, by means of the control means, the receptacle introduced through the input window (1) to be deposited in the receptacle compartment (2), and a second actuator for causing, by means of said control means, the supply of a receptacle stored in the storage compartment (4) outside through the output window (3).

3. Container according to claim 2, comprising an input housing (16) where the receptacle is disposed when it is introduced into the container (100) through the input window (1), said receptacle being disposed on a movable base (8) disposed in said input housing (16), the first actuator causing a movement of said movable base (8) in order to deposit said receptacle in the receptacle compartment (2).

4. Container according to claim 3, wherein the first actuator causes the rotary movement of the movable base (8).

5. Container according to any of claims 2 to 4, wherein the storage compartment (4) comprises a storage compartment housing (40) where a receptacle is disposed in order to be supplied, and at least one fastening member (11) to hold said receptacle storage compartment housing (40), the second actuator causing a movement of said fastening member (11) in order to release said receptacle so that it may be supplied outside.

6. Container according to claim 5, wherein the storage compartment housing (40) comprises at least one side cavity (40a) through which said receptacle exits the storage compartment (4) on being supplied, the fastening member (11) preventing said exit when it holds said receptacle in said storage compartment housing (40).

7. Container according to claim 6, wherein the storage compartment housing (40) comprises a storage compartment base (12) on which the receptacle housed is disposed in said storage compartment housing (40), said storage compartment base (12) comprising at least one sloping surface (12a) on which said receptacle slides when it is supplied.

8. Container according to claim 7, wherein the storage compartment base (12) comprises a substantially triangular shape, comprising two opposite sloping surfaces (12a).

9. Container according to any of claims 1 to 8, wherein the actuator comprises an input cover (5) to cover the input window (1), a user displacing said input cover (5) when he acts on the actuator to open said input window (1), the control means being capable of detecting said displacement.

10. Container according to claim 9, wherein the input cover (5) is designed to be displaced longitudinally.

11. Container according to any of claims 1 to 10, wherein the storage compartment (4) comprises a substantially rectangular shape and is disposed in a substantially vertical manner on the container (100), the receptacles in said receptacle storage compartment (4) being disposed in a substantially horizontal manner.

12. Container according to any of claims 1 to 11, comprising a platform (108) on which the storage compartment (4) is disposed, said platform (108) being connected to a structure (110) of the container (100) in such a way, that it may cause said platform (108) to pivot.

13. Container according to claim 12, comprising at least one hydraulic cylinder (111) in order to cause the platform (108) to return to its original position once it has been pivoted.

14. Container according to any of claims 1 to 13, comprising a plurality of storage compartments (4).

15. Container according to any of claims 1 to 14, comprising at least one battery for powering the actuating means.

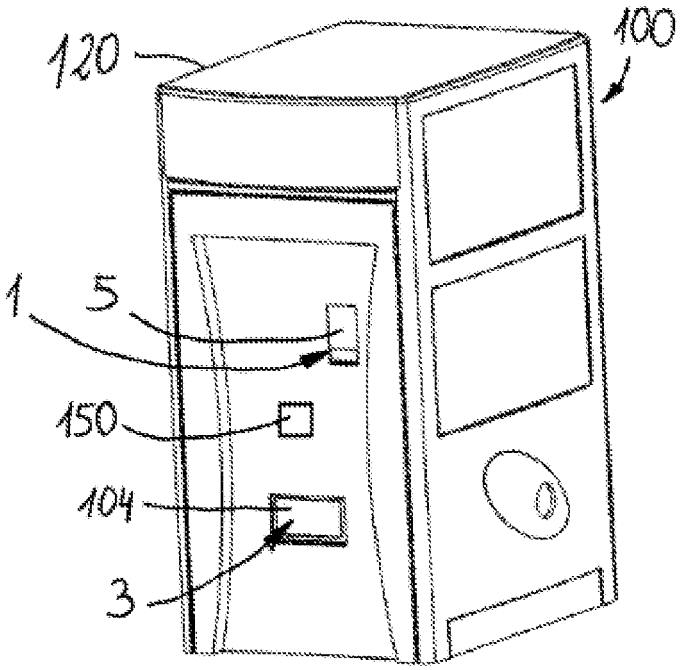


Fig. 1

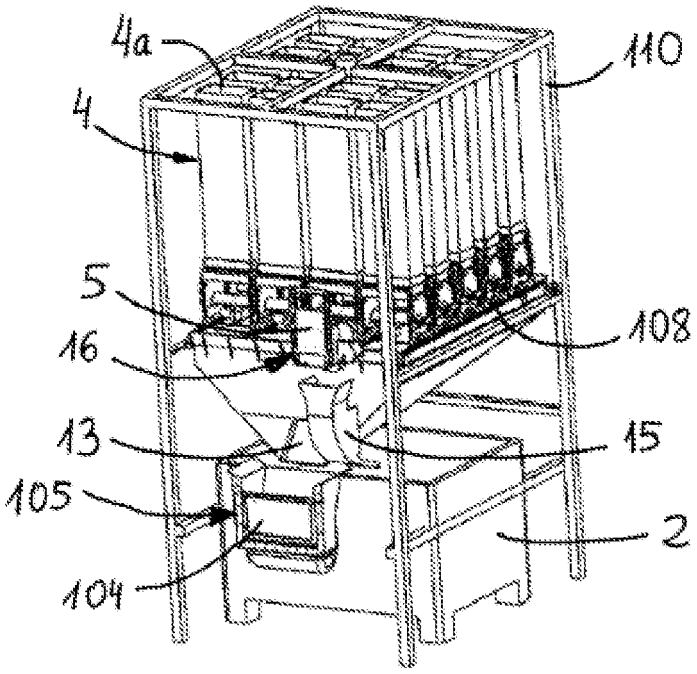


Fig. 2

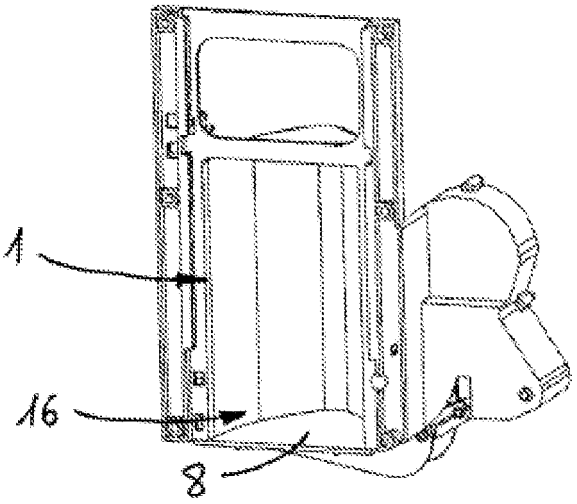


Fig. 3

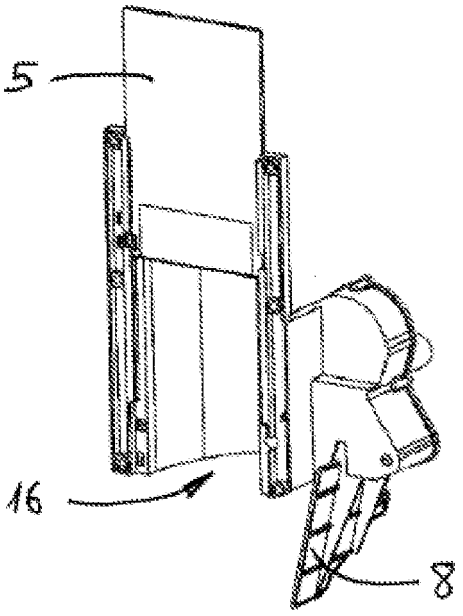


Fig. 4

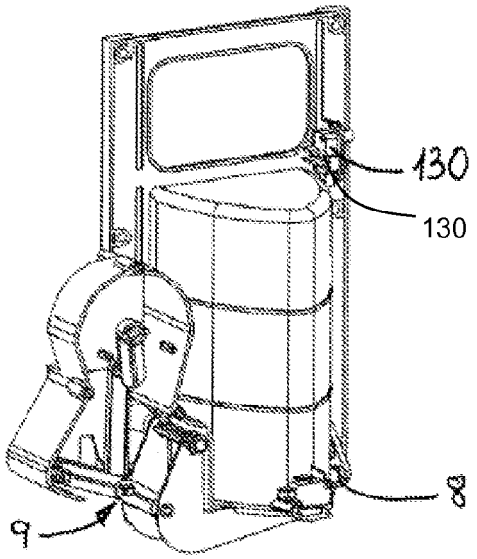


Fig. 5

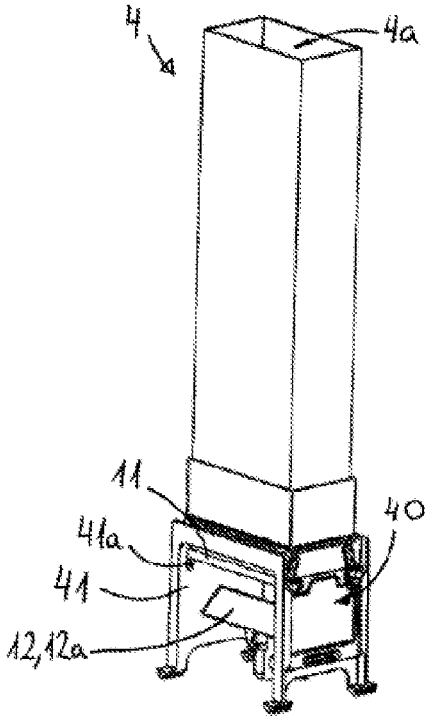


Fig. 6

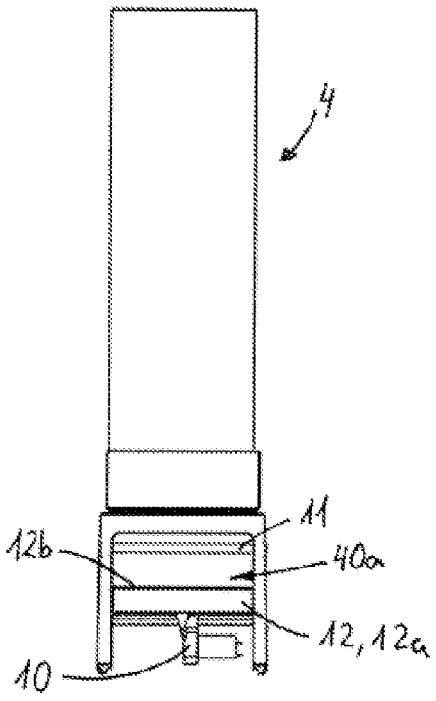


Fig. 7

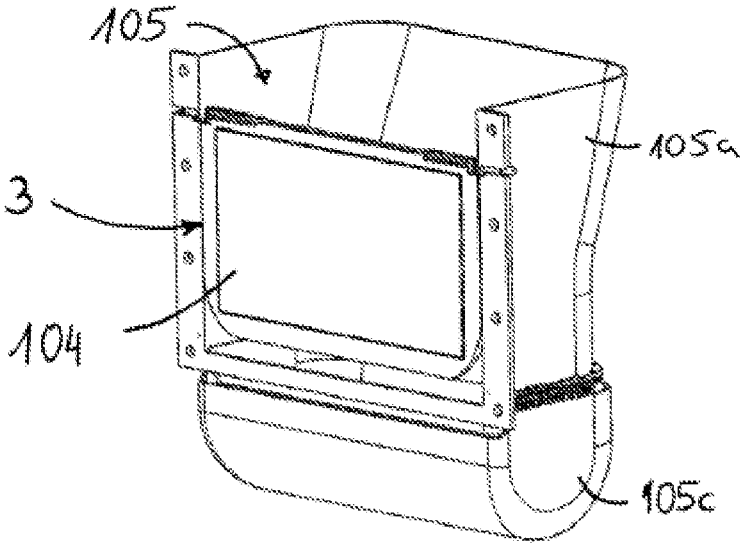


Fig. 8

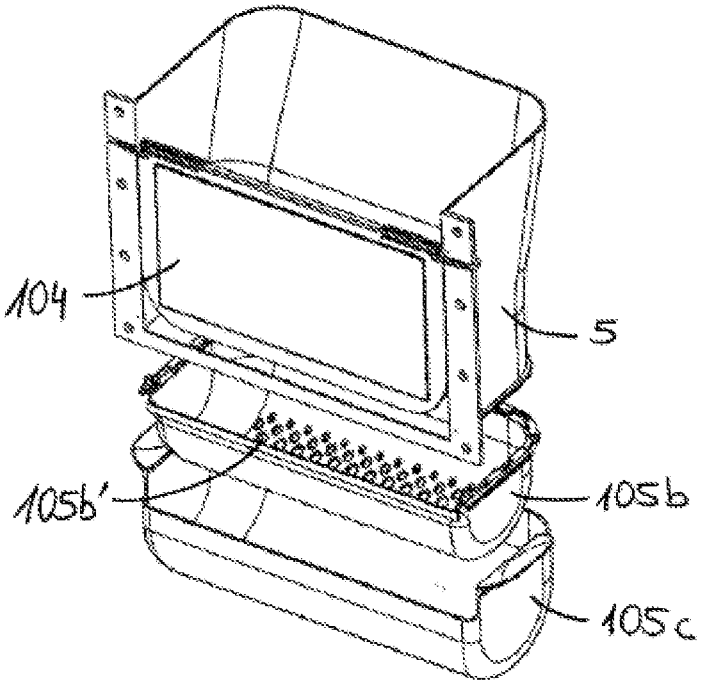

Fig. 9

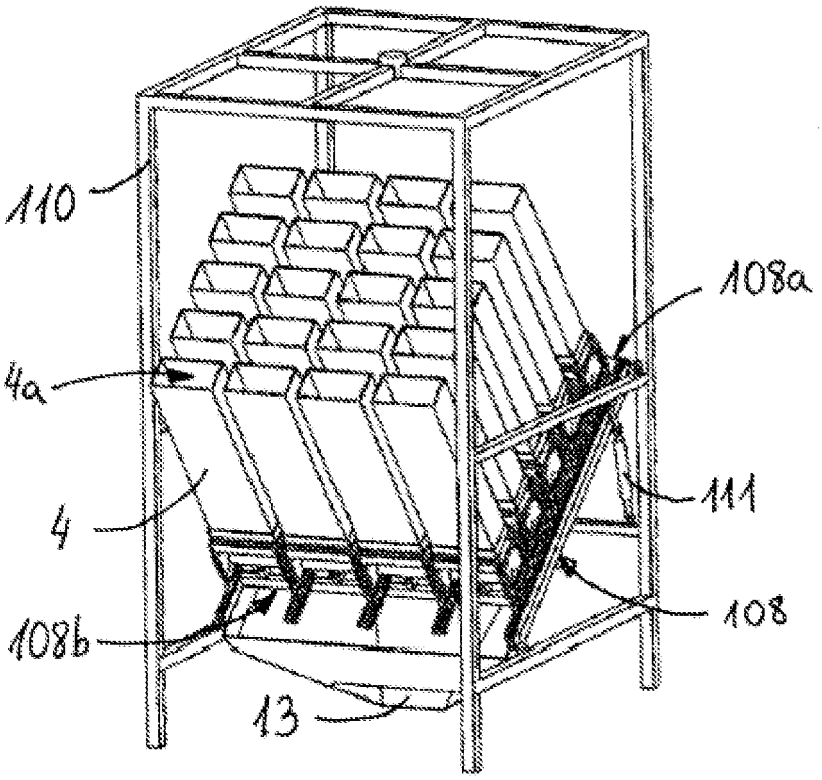


Fig. 10

Europäisches Patentamt
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# EUROPEAN SEARCH REPORT

Application Number
EP 09 38 2009

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
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