(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 351 489 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
25.07.2018 Bulletin 2018/30

(51) Int Cl.:
B65F 1/12 *(2006.01)*

(21) Application number: **18153193.0**

(22) Date of filing: **24.01.2018**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD TN

(30) Priority: **24.01.2017 IT 201700007588**

(71) Applicant: **Foresti, Antonio Luigi Piero Maria**
84019 Vietri sul Mare (SA) (IT)

(72) Inventor: **Foresti, Antonio Luigi Piero Maria**
84019 Vietri sul Mare (SA) (IT)

(74) Representative: **Fezzardi, Antonio et al**
Studio Ferrario Srl
Via Collina, 36
00187 Roma (IT)

(54) BULK REFUSE CONTAINER WITH LIFTING PINS WHICH CAN BE MANUALLY MOUNTED

(57) A bulk refuse container or bin (C) with lifting pins (PS) which can be fastened on the side of the body of said bulk refuse container (C) comprises, in combination: a bin or bulk refuse container (C), the body of which is provided with at least one seat (F) prepared at the position of each lifting pin (PS), in which seat (F) the respective pin (PS) can be fastened by means of a respective backplate (CP) on which said pin (PS) can be manually screwed; said pin (PS) and said respective backplate (CP) being made of plastic material as the bulk refuse container (C), or being made of any other suitable material.

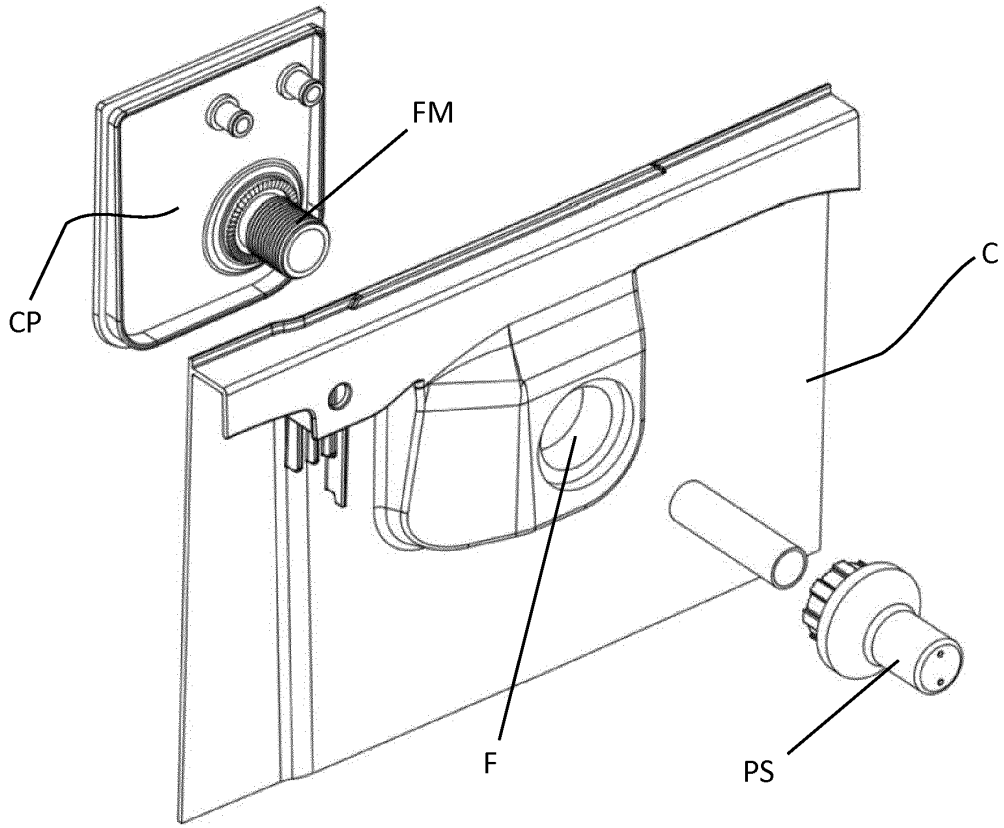

FIG. 2

EP 3 351 489 A1

Description

[0001] The present invention substantially relates to the field of bulk refuse containers of the type which is to be periodically moved and lifted for emptying, and more specifically the ones made of plastic material.

[0002] There are currently known various types of bulk refuse containers made of plastic material provided with two lifting pins arranged on two opposite sides and positioned at heights and distances which are regulated by very precise standards, such as for example Standard EN 840, according to which the bin lifting system is to consist of a pair of pins, each of which has an diameter of about 40 mm, with predetermined length and volume.

[0003] Each lifting pin in such bulk refuse containers of known type usually is integrated in a support base having thickness and sizes such to position the pin itself within the required tolerances.

[0004] The support base which comprises each pin, hereinafter also simply indicated as "support", has various shapes and forms from one bin to the next bin and according to the manufacturer, and usually is fastened to the side wall of the bin (or bulk refuse container) by means of shear and/or expansion rivets if the support is made of plastic/metal. In certain cases in which the support to be fastened is made of plastic, the securing occurs by means of a congruous number of self-tapping screws, preferably (but not exclusively) at least 4.

[0005] The shapes of these supports generally tend to be roundish and wide in order to best distribute the thrust caused by the weight of the material contained inside the bin that is lifted. As separate bodies are involved: bin and respective pins integrated in their own supports, the stress mainly is supported by the elements with which each support is fastened to the side wall of the bin, that is by the screw heads.

[0006] It is important to note that usually the bins are always shipped with the supports and therefore with the related pins already assembled because the securing of such supports is carried out using electric or pneumatic screwdrivers or with riveting machines, they also being electric or pneumatic. All these tools obviously may be used only with electric and/or pneumatic systems, while almost always the deliveries are made at yards not provided with such services.

[0007] It is therefore apparent that the presence of the support (and of the related lifting pin) induces an increase of the plan volumes of each bin or bulk refuse container and this results in the fact that a smaller number of items may be loaded in a same loading space, which means increased transport expenses.

[0008] Another problem of known bulk refuse containers, such as for example the ones described in US-A-1929607, is given by the fact that in such a document, each lifting pin is fastened to a backplate which is made integral with the body of the bulk refuse container and therefore in case of damage, in addition to the pin and the backplate, also the bulk refuse container itself is damaged, which is the most costly/expensive part to replace. Moreover, US-A-1929607 describes a bulk refuse container with reinforcements fastened to the wall with peened bolts, in which among other things, the parts assembled are fastened by means of welding to make them unremovable, while as is better seen below, lifting pins and respective backplates are provided in the present invention, which are intentionally removable in order to easily replace them in case of breaking, without the body of the bulk refuse container being damaged.

[0009] It is the main object of the present invention to overcome the aforesaid problems by providing an innovative lifting pin for bulk refuse containers or bins which can be fastened manually and directly to the bulk refuse container without the need for tools, in which said bulk refuse container is provided with respective side seats or holes provided with corresponding reinforcement areas for distributing the mechanical stresses caused by lifting the bulk refuse container by means of the pins themselves.

[0010] This was obtained according to the invention, by making a bin or bulk refuse container provided with at least one seat or hole made at the position of each lifting pin, in which seat or hole the respective pin can be fastened by using a respective backplate (or shield) onto which said pin can be directly manually screwed by the operator without the aid of any tools.

[0011] A better comprehension of the invention is possible with the following detailed description and with reference to the accompanying drawings which illustrate a preferred embodiment by way of nonlimiting example.

[0012] In the drawings:

figure 1 is a partial 3D view of the external lifting area of a bulk refuse container provided with lifting pins according to the present invention;
figure 2 is an exploded view corresponding to fig. 1;
figure 3 is a partial 3D view of the internal lifting area of a bulk refuse container provided with lifting pins according to the present invention;
figure 4 is an exploded view corresponding to fig. 3;
figure 5 is an image of a whole bin, in which a "detail A" is noted which corresponds to fig. 1.

[0013] According to the present invention and with reference to the aforesaid figures, there is provided a bin body C which has, on each side, a hole F to which the lifting pin PS can be fastened by means of screwing on a specific backplate CP which thus is firmly restrained to the body of the bulk refuse container, thus providing a valid lifting means of the bulk refuse container for the emptying operations of the content thereof.

[0014] According to a peculiar feature of the invention, the area of the side wall of the bulk refuse container C about hole F is conveniently reinforced and sized so that once pin PS is fastened with the related backplate CP, pin PS is positioned in the position desired, for example the one conforming with the heights 1 and 33 of the stand-

ard mentioned above.

[0015] In the embodiment shown by mere way of example, the securing of pin PS occurs by means of a female thread FF on pin PS and a male thread FM on backplate CP, so that these two elements at least partly interpenetrate each other.

[0016] It is worth noting that said "female/male" threads may also be "male/female", that is male on pin PS and female on backplate CP.

[0017] A further peculiar feature of the invention consists of the fact that the locking of pin PS on backplate CP at the end of the screwing is carried out by means of a specific retaining system. For example, a crown of serrated front teeth could conveniently be provided on pin PS and on backplate CP so that once they are completely screwed onto one another, said respective front toothed crowns mutually engage, thus hindering the undesired unscrewing thereof.

[0018] Alternatively, the securing of pin PS on backplate CP may be of the "bayonet" or coupling type or of any type of thread or by means of a metal or non-metal middle pin, etc.

[0019] It is also preferable to provide, inside the lifting pin PS, a reinforcing coaxial cylindrical element, preferably (but not exclusively) tubular, made of metal or plastic material or material of other kind.

[0020] A first advantage of the present invention consists of the fact that the product recyclability is promoted by eliminating metal securing systems known to date because the physical separation of the components of the item at the end of its life is no longer required. In other words, the latter may be regenerated without having to provide any disassembly activity as instead currently is required to avoid polluting the raw material recovered.

[0021] It is worth noting that where the connection in current systems between bin body and pin support is carried out by means of metal screws, the screws may cause such conditions whereby the main component (which is the most costly) of the assembl y - and that is the body of the bulk refuse container - is damaged in the case of anomalous thrust. A second advantage of the present invention is that the new system which is described is studied in order to discharge such anomalous thrusts and therefore possible damage only onto the added component - that is mounted on the body of the bulk refuse container - thus protecting the main component. Moreover, the replacement cost would have less impact due to the reduced weight of the components according to the invention, which are to be replaced in these cases.

[0022] Another advantage is given by the fact that, also in the case of presence of metal screws in the securing system according to the present invention, these screws would damage only backplate CP and never the bin body which, as mentioned, is the most costly part.

[0023] It is also worth noting that in order to best distribute the stresses between bulk refuse container support and body, the supports currently known are usually quite large. However, it is also well known that the production of large items requires the use of larger systems and therefore with an increased energy consumption. A further advantage of the invention is that the innovative solution described hereto allows the use of smaller systems with lower energy consumption.

[0024] The invention also permanently resolves the problem of distributing/transmitting the mechanical thrusts onto the structure of the body of the bulk refuse container C. Indeed, such a problem substantially is resolved, there being provided a reinforced area about each hole F on the side walls of the bulk refuse container C.

[0025] Due to the assembly/securing simplicity, the present invention does not require electric or pneumatic tools, rather possibly a simple face spanner wrench.

[0026] Advantageously, the aforesaid assembly/securing simplicity allows the transport of the bins C with the pins PS disassembled, thus obtaining an apparent reduction of the total volume of the bin and the subsequent increase of the load capacity. This also results in the reduction of the number of transport trips to be carried out over an average period of time.

[0027] Finally, backplate CP preferably is provided with one or more protruding notches which, during the assembly on bin C, are adapted to be inserted into corresponding housings in the bin itself to prevent undesired rotations of the backplate during the screwing of the lifting pin PS on the male thread FM.

Claims

1. A bulk refuse container or bin (C) with lifting pins (PS) which can be fastened on the side of the body of said bulk refuse container (C), **characterized in that** it comprises, in combination: a bin or bulk refuse container (C), the body of which is provided with at least one hole or seat (F) prepared at the position of each lifting pin (PS), in which hole or seat (F) the respective pin (PS) can be fastened by means of a respective backplate (CP) on which said pin (PS) can be manually screwed; said pin (PS) and said respective backplate (CP) being made of plastic material as the bulk refuse container (C), or being made of any other material suitable for the purpose; wherein said pin (PS) can be fastened outside the bulk refuse container (C) and said backplate (CP) can be fastened inside the bulk refuse container (C), and wherein said pin (P) and backplate (CP) can be fastened to each other to be tightened on a respective wall of the bulk refuse container so as to avoid damaging it in the event of knocks or breaks of the pin (PS) and/or of the backplate (CP).

2. A bulk refuse container according to the preceding claim, **characterized in that** it provides a container body (C) wherein the area of the side wall of the bulk refuse container about each hole (F) is reinforced

and sized so that once the pin (PS) is fastened with the related backplate (CP), the pin (PS) is positioned in the position desired .

3. A bulk refuse container according to one of the preceding claims, **characterized in that** the securing of the pin (PS) occurs by means of a female thread (FF) on the pin (PS) and a male thread (FM) on the backplate (CP), or vice versa; wherein said threads are coaxial to each other so that said pin (PS) and said backplate (CP) at least partly interpenetrate each other.

4. A bulk refuse container according to one of the preceding claims, **characterized in that** the locking of the pin (PS) at the end of the screwing thereof on the backplate (CP) occurs by means of a self-locking retaining system.

5. A bulk refuse container according to the preceding claim, **characterized in that** said retaining system comprises a crown of serrated front teeth provided on the pin (PS) and on the backplate (CP), so that once they are completely screwed onto one another, said respective front toothed crowns mutually engage, thus hindering the undesired unscrewing.

6. A bulk refuse container according to either of claims 1 or 2, **characterized in that** the securing of the pin (PS) on the backplate (CP) is of the "bayonet" or coupling type or of any type of thread or by means of a metal or non-metal axial pin.

7. A bulk refuse container according to one of the preceding claims, **characterized in that** a reinforcing coaxial cylindrical element is provided inside the lifting pin (PS).

8. A bulk refuse container according to the preceding claim, **characterized in that** said reinforcing coaxial cylindrical element is tubular.

9. A bulk refuse container according to one of the preceding claims, **characterized in that** a reinforced area is provided about each hole (F) on the side walls of the bulk refuse container (C) for the correct distribution/transmission of the mechanical thrusts on the structure of the body of the bulk refuse container (C), thus obtaining that the sizes of the backplate (CP) and of the respective lifting pin (PS) are small with respect to the ones of the known supports, so that said backplate (CP) and said pin (PS) can be molded by means of molding systems with a lower energy consumption.

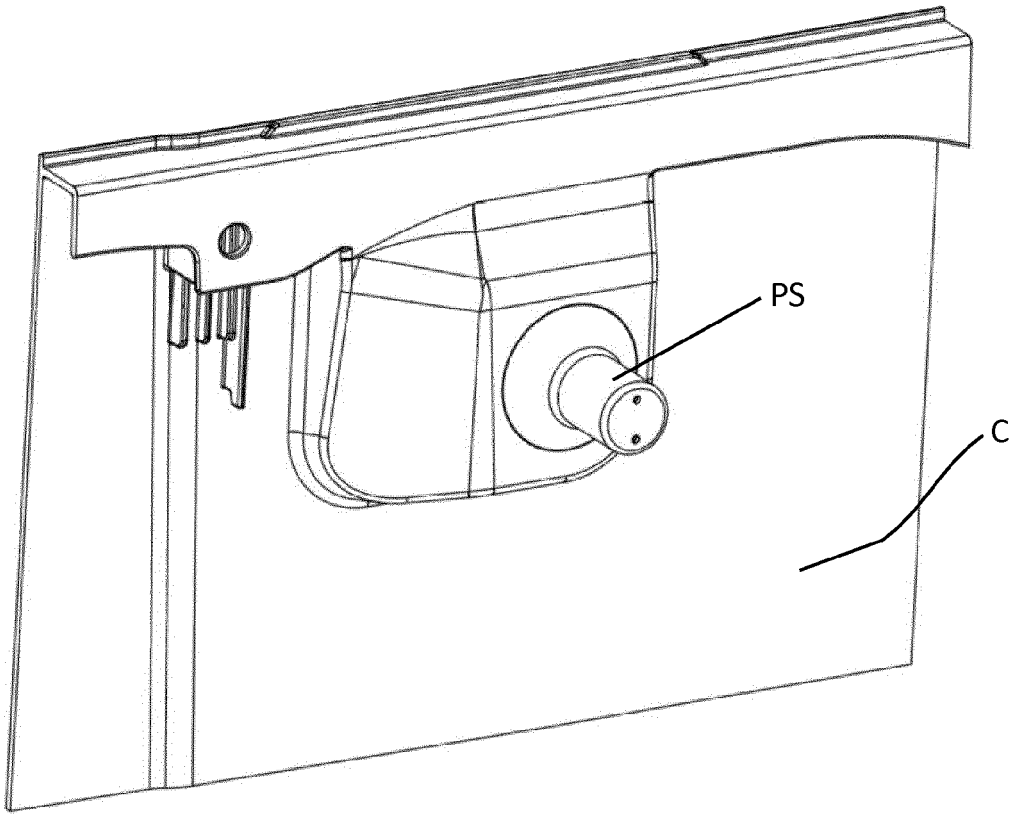

FIG. 1

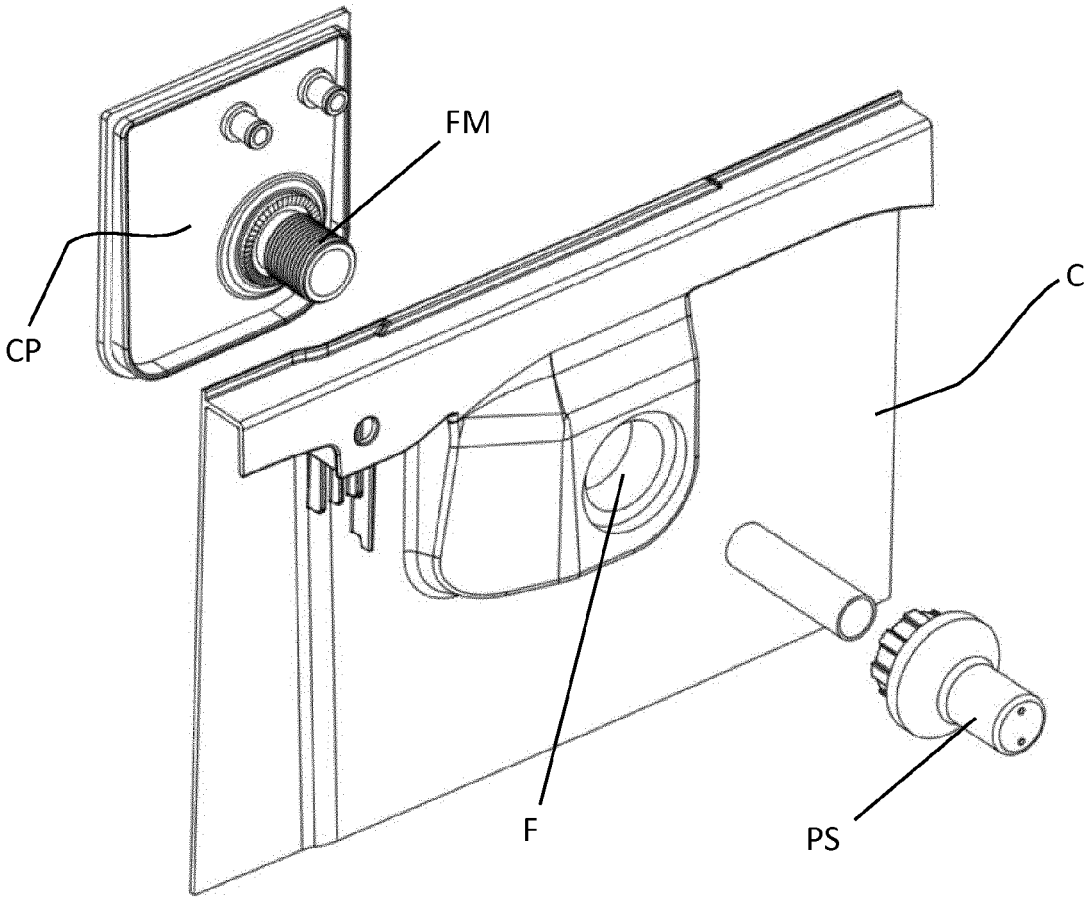

FIG. 2

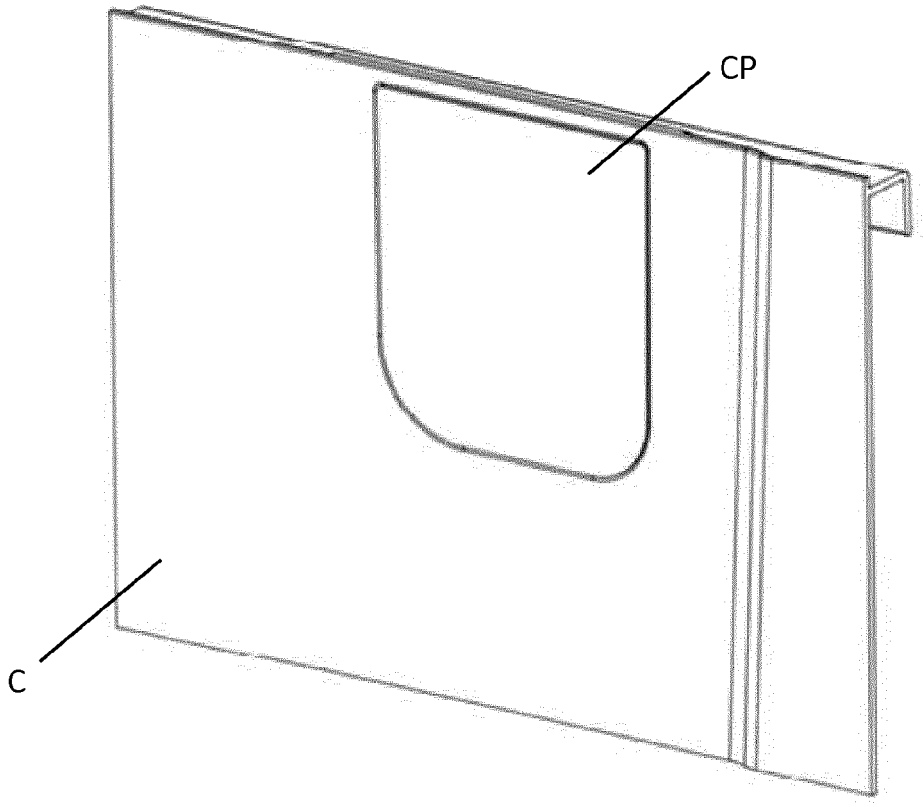

FIG. 3

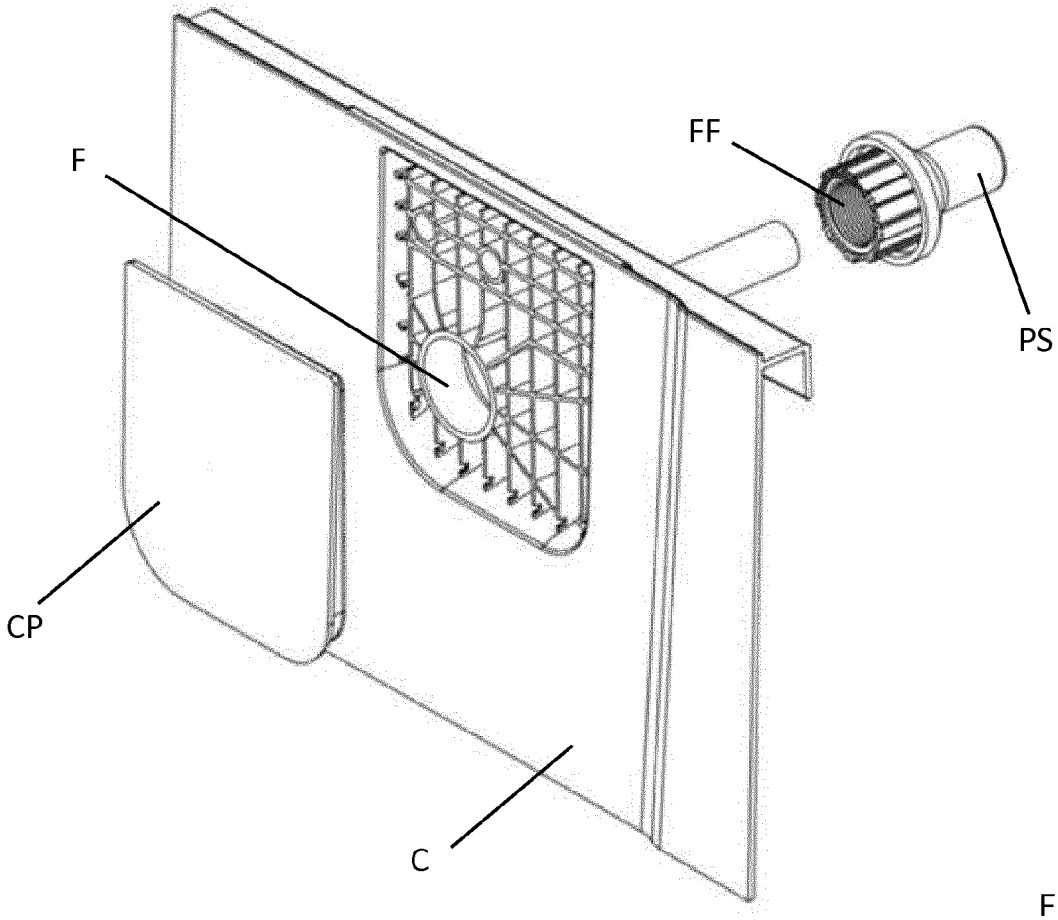

FIG. 4

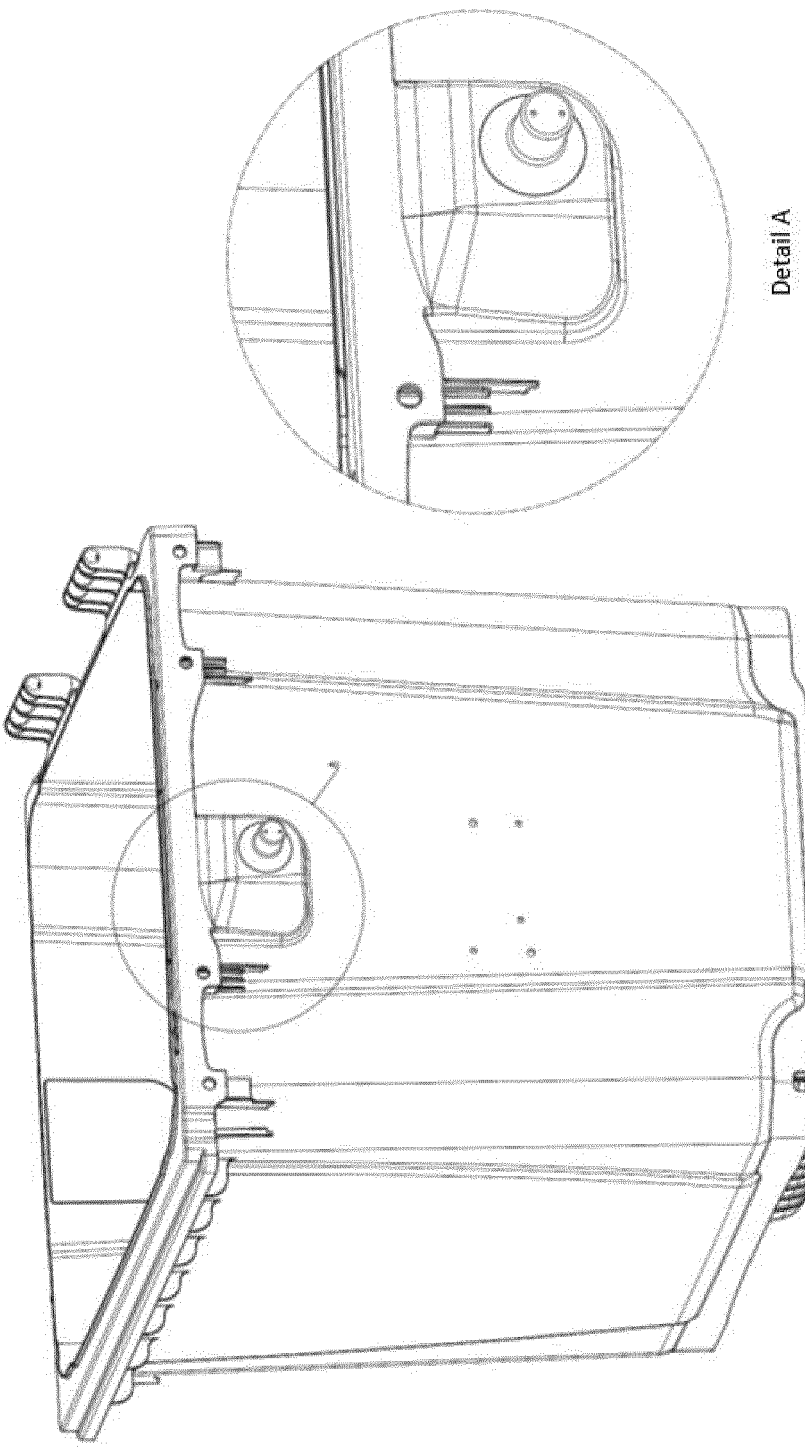

FIG. 5

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 18 15 3193

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 1 929 607 A (P. POLLOCK ET AL.) 10 October 1933 (1933-10-10) * page 3, line 95 - line 144 * * figures 9-12 *	1-9	INV. B65F1/12
A	FR 2 850 639 A1 (COMPAGNIE PLASTIC OMNIUM) 6 August 2004 (2004-08-06) * page 4, line 15 - page 5, line 12 * * figure 1 *	1-9	
A	DE 202 05 927 U1 (SULO UMWELTTECHNIK GMBH & CO. KG) 4 July 2002 (2002-07-04) * page 6, line 15 - page 8, line 4 * * figures 1-4 *	1-9	
			TECHNICAL FIELDS SEARCHED (IPC) B65F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	14 May 2018	Smolders, Rob

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 18 15 3193

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

14-05-2018

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 1929607 A	10-10-1933	NONE	
FR 2850639 A1	06-08-2004	NONE	
DE 20205927 U1	04-07-2002	DE 20205927 U1 EP 1354825 A1	04-07-2002 22-10-2003

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 1929607 A **[0008]**