



(11) **EP 2 194 005 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**09.06.2010 Bulletin 2010/23**

(51) Int Cl.:  
**B65F 1/00** *(2006.01)* **B65F 1/12** *(2006.01)*  
**B65D 90/20** *(2006.01)*

(21) Application number: **09398017.5**

(22) Date of filing: **02.12.2009**

(84) Designated Contracting States:  
**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 SE SI SK SM TR**  
Designated Extension States:  
**AL BA RS**

(30) Priority: **02.12.2008 PT 1038008**

(71) Applicant: **Sopsa-Representações E Comércio,  
LDA**  
**4050-294 Porto (PT)**

(72) Inventor: **The designation of the inventor has not  
yet been filed**

(74) Representative: **Pereira da Cruz, Joao  
J. Pereira da Cruz, S.A.  
Rua Vitor Cordon, 14  
1249-103 Lisboa (PT)**

(54) **Device for separating/retaining leakage water**

(57) This invention relates to a device intended for separating and retaining leakage water, which is to be placed inside urban solid waste containers (but which can be extracted/moved), the said device comprising an impervious bag (2) in PVC canvas, having in its lower end a kind of "Trunk" (5) whereby and whereto the liquids originating from the deposited refuse, or the liquids that have already been introduced in that form, i.e. the so-called lixiviates, will flow and accumulate, the said bag being within an outer bag (1). The motion of the afore-

mentioned trunk (5) is controlled by means of a set comprising eight eyelets (8) which are sewed next to the lower end of the said trunk, wherein a polyethylene cable (6) is passed through and controlled by the system's operator with the aid of a cable fast trapping system (3) as well as of a set of pulleys and loops (7), which is positioned at the top of the bag and fixed to the aluminium ring supporting the impervious bag/sleeve (6).

**EP 2 194 005 A1**

## Description

### Scope of the invention

[0001] This invention relates to a combined device for separating and retaining liquids resulting from urban waste (refuse) deposits in surface, buried or semi-buried containers.

[0002] The system wherein the device is integrated consists of a buried or semi-buried polyethylene pit with a variable volumetry (usually from 1 to 5 m<sup>3</sup>), which is covered by a polyethylene or other material lid, whose partial opening allows the refuse to be introduced by the user into a removable bag, which is then put inside the pit, having the same volumetry of the latter.

[0003] By using special equipment, the household-refuse collection services will regularly remove the said bag from within the pit and discharge its whole content into an appropriate loading vehicle.

### Prior art

[0004] According to the current state of the art, there is not a practical and effective way of ensuring that the liquid portion of the waste (refuse) deposited in the containers is separately retained. As a consequence, deposits are formed at the bottom of the containers (which must be regularly removed by using suction pumps or other not so practical means) and there are often incidental leakages in the public highway during the daily collection operation.

[0005] The most similar document to this invention is the WO 2008/104660, which relates to a process for degrading waste in an assembly that comprises at least one container, said process comprising the following steps: depositing the waste in the container; and recovering the lixiviate from the housing into a basin. The process is **characterized in that** it further comprises the step of sequentially humidifying the waste in the container by dispensing a liquid that contains the collected lixiviate. As can be concluded from the above, the said invention is completely distinct from the one which is now applying for protection. Actually, it is a process by which lixiviates are collected, rather than a bag allowing lixiviates to be separated/retained. Furthermore, as can be understood when reading the description of the said patent's process, lixiviates are collected in containers and not in bags, this feature not only distinguishing both technologies but also making the said device to be much more complex and costly than the object of this invention.

### Summary of the invention

[0006] With the invention which is the object of this patent application, the use of the urban waste collection system can be substantially improved, thus avoiding all the cleaning operations above mentioned and also offering to the collection services the possibility to transport

liquids (lixiviates) and solids separately until arriving at the usual place of discharge.

[0007] The combined device for separating and retaining lixiviates comprises the following:

- 1) One bag/sleeve made of impervious PVC canvas, attached to an aluminium ring;
- 2) Eight stainless steel loops/eyelets at the lower end of the bag/sleeve;
- 3) One polyethylene rope/cable;
- 4) A cable fast trapping mechanism of the Clam-Cleat-type
- 5) A set of pulleys and loops, serving to guide and aid the sliding of the cable.

[0008] It should be noted that this device operates together with the solids' retention bag, which largely contributes to the formation of the liquids deposit ("trunk") and to the separation of both, solids and liquids.

### Brief description of the drawings

[0009] The following description is based upon a preferred embodiment that is illustrated in the enclosed drawings, these drawings representing with a non-limiting character:

- Figure 1, a view of the device in the position for retaining solids and liquids;
- Figure 2, a view of the device in the position for emptying liquids; and
- Figure 3, a view of the device in the position for discharging solids.

### Detailed description of the invention

[0010] As can be observed, the combined device for separating/retaining lixiviates, which was designed to be integrated in a urban solid waste collection system being introduced in surface, buried or semi-buried containers, is basically **characterized in that** it is comprised of an outer bag (1), an impervious inner bag (2) which is provided with a trunk (5), both bags being fastened to a metallic ring, and the opening and closing means (7 e 8) of the said bags.

[0011] The above mentioned trunk (5) of the inner bag (2) is projected outward from the outer bag (1), through a hole which is arranged at the bottom of the said outer bag (1), and it is kept in a raised position for retaining the liquids (figure 1) and assumes a discharge position for releasing the said liquids (figure 2), these two positions being activated by means of a cable (6).

[0012] In Figures 1 to 3, the operation of the combined device can be observed, which is hereunder explained in more detail:

- The phase A, "separate retention of solids and liquids", represents the fully closed set of 2 bags (1 and

2), wherein the separate retention of solids and liquids is shown;

- The phase B, "discharge of liquids", represents an intermediate state in which the outer bag (1) remains closed and the impervious inner bag (2) that contains the liquids is in the discharging position;
- The phase C, "discharge of solids", represents the full opening of both bags (1 and 2) and the resulting discharge of solids.

**[0013]** The opening and closing means provided with the bags comprise eyelets (7 and 8), to the outer (1) and inner (2) bags respectively, in addition to cables passing through the said eyelets.

**[0014]** The impervious inner bag (2) is made of PVC and is placed inside the solids retention bag (1), thanks to a system of eyelets (being sewed at an area next to each end of each one of the bags (7) and (8)) through which will pass the polyethylene cables being controlled by the system's operator by means of a cable fast trapping mechanism (3) and (4). The said bag (2) forms in its end a "trunk" (5) which will serve as a deposit for the existing liquids in the system. The separate handling of this "trunk" (5) whose opening/closure is the operator's responsibility, is in fact very easy thanks to the system of loops and pulleys provided for that purpose at the top and fixed to the aluminium ring (6).

**[0015]** With reference to Figure 1, the importance of the trapping mechanisms of the rope/cable and of the eyelets/pulleys which guide the sliding of the cable can be understood, since they allow the user to not only lift and lower the "trunk" of the liquids deposit, but also create separate retention sections.

**[0016]** The invention is integrated in a urban waste (refuse) storage system, which is comprised of a pit and of the relevant polyethylene lid, wherein a set of two bags/sleeves is introduced and attached to an aluminium ring which sustains them by fitting to the mouth of the pit.

Captions of the figures

**[0017]**

- Caption 1 corresponds to the outer bag/sleeve;
- Caption 2 corresponds to the impervious inner bag/sleeve;
- Caption 3 corresponds to the fast acting mechanism for rope - opening/closure control of the impervious inner bag and of the trunk/liquids deposit;
- Caption 4 corresponds to the fast acting mechanism for rope - opening/closure control of the outer bag;
- Caption 5 corresponds to the "trunk" which is formed at the lower end of the impervious inner bag serving as a liquids' deposit;
- Caption 6 of the Figure 1 corresponds to the set of eyelets/loops/pulleys comprising the lifting system of the trunk;
- Caption 7 corresponds to the set of loops/eyelets

wherein the rope slides in order to allow for the closure/opening of the outer bag;

- Caption 8 corresponds to the set of loops wherein the rope slides in order to allow for the closure/opening of the impervious inner bag and of its trunk;
- Caption 9 corresponds to the solid waste which is stored in the bag;
- Caption 10 corresponds to the liquids retained in the trunk/deposit of the impervious bag.

## Claims

1. A combined device for separating/retaining lixivates, integrated in a urban solid waste collection system, which is to be introduced in surface, buried or semi-buried containers, said device being **characterized in that** it comprises an outer bag (1), an inner bag (2) that is liquid-tight and is provided with a trunk (5), both of the bags being attached to a metallic ring, and the opening/closing means (7 and 8) of the said bags.
2. A combined device for separating/retaining lixivates according to the previous claim, **characterized in that** the said trunk (5) of the inner bag (2) is projected outward from the outer bag (1) through a hole which is arranged at the bottom of the said outer bag.
3. A combined device for separating/retaining lixivates according to the previous claims, **characterized in that** the opening and closing means of the bags comprise eyelets (7 and 8), to the outer (1) and inner (2) bags respectively, in addition to cables passing through the said eyelets.
4. A combined device for separating/retaining lixivates according to the previous claims, **characterized in that** the said trunk (5) is kept in a raised position for retaining the liquids and assumes a discharge position for releasing the said liquids, these two positions being activated by means of a cable (6).
5. A combined device for separating/retaining lixivates according to claim 4, **characterized in that** the discharge of the solid waste takes place after the discharge of liquids and whenever the opening and closing means of both bags (1 and 2) are opened.
6. A combined device for separating/retaining lixivates according to claim 1, **characterized in that** the bags (1 and 2) have the appropriate size based on the type of container in which it will be used, preferably with a volumetry of 1 to 5 m<sup>3</sup>.
7. A combined device for separating/retaining lixivates according to claim 1, **characterized in that** the outer bag (1) is made of PVC canvas and the said cables

are of polyethylene.

8. A combined device for separating/retaining lixiviates according to the claim 1, **characterized in that** it includes a trapping system (3) of the cable which is aimed at controlling the inner bag (2) and the respective trunk (5).

10

15

20

25

30

35

40

45

50

55

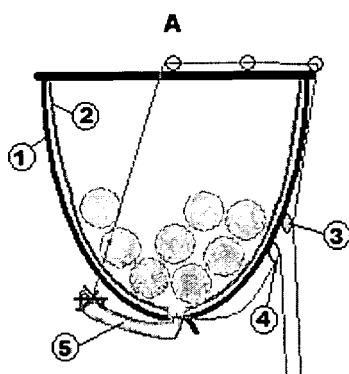


Fig. 1

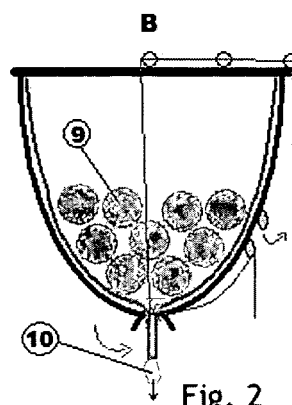


Fig. 2

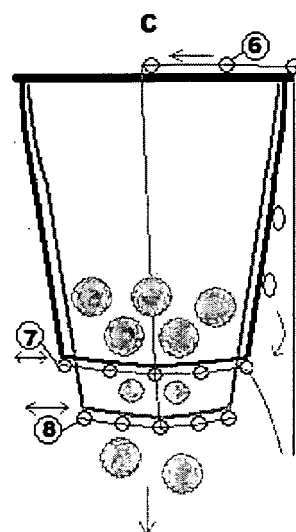


Fig. 3



## EUROPEAN SEARCH REPORT

Application Number  
EP 09 39 8017

| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | WO 2006/032073 A1 (DEVISE PROPERTIES PTY LTD) 30 March 2006 (2006-03-30)<br>* page 8, line 19 - page 10, line 26 *<br>* figures 1,4-6,10,11 *<br>----- | 1-8                                               | INV.<br>B65F1/00<br>B65F1/12<br>B65D90/20       |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | WO 99/51511 A1 (BISSY FÖRSÄLJNINGS AB) 14 October 1999 (1999-10-14)<br>* the whole document *<br>-----                                                 | 1-8                                               |                                                 |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EP 1 944 249 A1 (GCBC SARL) 16 July 2008 (2008-07-16)<br>* paragraph [0019] - paragraph [0026] *<br>* figures 1-3 *<br>-----                           | 1-8                                               |                                                 |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | FR 2 690 144 A1 (IMPALA) 22 October 1993 (1993-10-22)<br>* page 5, line 1 - page 8, line 27 *<br>* figures 1-5 *<br>-----                              | 1-8                                               |                                                 |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US 3 961 655 A (F. NATTRASS ET AL) 8 June 1976 (1976-06-08)<br>* column 2, line 18 - column 4, line 36 *<br>* figures 1-18 *<br>-----                  | 1-8                                               | TECHNICAL FIELDS SEARCHED (IPC)<br>B65F<br>B65D |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                        |                                                   |                                                 |
| Place of search<br>The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                        | Date of completion of the search<br>18 March 2010 | Examiner<br>Smolders, Rob                       |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                                                        |                                                   |                                                 |

 2  
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 39 8017

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.

18-03-2010

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|---------------------|----------------------------|---------------------|
| WO 2006032073 A1                          | 30-03-2006          | AU 2004323564 A1           | 30-03-2006          |
| WO 9951511 A1                             | 14-10-1999          | AU 3857399 A               | 25-10-1999          |
|                                           |                     | SE 510889 C2               | 05-07-1999          |
|                                           |                     | SE 9801176 A               | 05-07-1999          |
| EP 1944249 A1                             | 16-07-2008          | FR 2911124 A1              | 11-07-2008          |
| FR 2690144 A1                             | 22-10-1993          | NONE                       |                     |
| US 3961655 A                              | 08-06-1976          | BE 819657 A1               | 31-12-1974          |
|                                           |                     | CA 1005023 A1              | 08-02-1977          |
|                                           |                     | CY 911 A                   | 07-10-1977          |
|                                           |                     | DD 118041 A5               | 12-02-1976          |
|                                           |                     | DE 2444303 A1              | 30-04-1975          |
|                                           |                     | DK 486174 A                | 26-05-1975          |
|                                           |                     | ES 224552 U                | 01-03-1977          |
|                                           |                     | FR 2243881 A1              | 11-04-1975          |
|                                           |                     | GB 1455874 A               | 17-11-1976          |
|                                           |                     | HK 17878 A                 | 07-04-1978          |
|                                           |                     | IE 40021 B1                | 28-02-1979          |
|                                           |                     | IL 45677 A                 | 30-11-1977          |
|                                           |                     | IN 140781 A1               | 18-12-1976          |
|                                           |                     | IT 1032533 B               | 20-06-1979          |
|                                           |                     | JP 50055481 A              | 15-05-1975          |
|                                           |                     | LU 70910 A1                | 24-02-1975          |
|                                           |                     | MY 8478 A                  | 31-12-1978          |
|                                           |                     | NL 7412104 A               | 19-03-1975          |

**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**

- WO 2008104660 A [0005]