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(71) Applicant: **Perez Salazar, Jose Luis**
08930 Sant Adria del Besos, Barcelona (ES)

(72) Inventor: **Perez Salazar, Jose Luis**
08930 Sant Adria del Besos, Barcelona (ES)

(74) Representative: **Espiell Gomez, Ignacio**
R. Volart Pons y Cia., S.L.
Pau Claris, 77 2^o 1^a
08010 Barcelona (ES)

(54) **CLEANING DEVICE FOR URBAN WASTE BINS AND THE LIKE**

(57) Disclosed is a cleaning device for urban waste bins and the like, which comprises at least: a bag (2) of waterproof material of a size suitable for covering the top of a waste bin (3) to be cleaned and which has an access opening (4) at the bottom (2a), which opening, once the bag (2) has been placed covering the waste bin (3), is situated at the top and is suitable for the passage of a handle of a steam applicator element (5); a steam applicator element (5) and/or sprayer, suitable for introducing steam and/or spraying water mixed with cleaning and/or disinfectant products, from a liquid-containing tank (6) provided with means (7) for producing the steam and/or spraying; and a radial-bristle brush (8) for scrubbing the inside of the waste bin (3). Preferably, the waterproof bag (2) is reusable and extendable, such that its dimensions can be adapted to different sizes of waste bin (3).

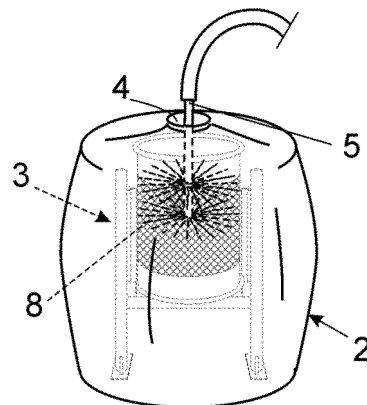


FIG. 4

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Description**OBJECT OF THE INVENTION**

[0001] The invention, as stated in the title of the present specification, relates to cleaning equipment for urban waste bins and the like which contributes, to its intended use, advantages and features, which are described in detail further on, which imply an improvement in the current state of the art.

[0002] The object of the present invention lies in a cleaning equipment which, especially designed to clean urban waste bins or other containers or similar elements, is distinguished by essentially comprising a waterproof bag to cover the waste bin and a brush to clean and apply steam therein, achieving, among other advantages, more effective cleaning with less water consumption and avoiding splashes and unwanted inconvenience to passers-by.

FIELD OF APPLICATION OF THE INVENTION

[0003] The field of application of the present invention falls within the industry sector dedicated to the manufacture of equipment, appliances, accessories and cleaning devices, focusing particularly on those in urban areas.

BACKGROUND OF THE INVENTION

[0004] Currently, in most municipalities, to clean waste bins, equipment with a KSRcher-type pressurized water cleaning system, is normally used, consisting of a gun connected to a tank supported on a vehicle and with which water or water with detergent is applied under high pressure on the waste bin to be cleaned. Furthermore, in the case of tilting waste bins, it is usually necessary to hold them upside down, for example with a bar or the like that acts as a stop, to apply pressurized water therein and make the dirt fall out of the bin.

[0005] The problem with this system, in addition to a large consumption of water and the fact that the vehicle is not always suitable for passing through narrow streets or sidewalks, is mainly the inconvenience it represents for other passers-by, since a large amount of water is splashed and everything around the waste bin gets wet, including vehicles, facades, etc. Furthermore, the problem of water splashes is even greater, if possible, when it is windy, since the jet of water can wet pedestrians, even when they are many meters away from the operator who handles the pressurized water gun.

[0006] On the other hand, if the compressor turns off or has any operating or heating problems, the gun can no longer be used. Finally, another drawback is the use of boilers to carry out deeper cleaning of stains, graffiti or others, where if the boiler does not work correctly, they cannot be removed.

[0007] The objective of the present invention is, therefore, the development of a new equipment and system

for cleaning waste bins to avoid these drawbacks.

[0008] Furthermore, and as a reference to the current state of the art, at least the applicant is unaware of the existence of any other cleaning equipment for urban waste bins and like, or of any other invention of similar application, which presents technical and structural features that are the same or similar to those presented by that which is claimed herein.

DESCRIPTION OF THE INVENTION

[0009] The cleaning equipment for urban waste bins and the like proposed by the invention is configured as the ideal solution to the aforementioned objective, the characterizing details that make it possible and that distinguish it being conveniently included in the final claims that accompany this description.

[0010] Specifically, what the invention proposes, as noted above, is cleaning equipment that is especially designed to clean urban waste bins or other containers or similar urban elements, which is essentially distinguished by comprising a waterproof bag, sized to completely cover at least one waste bin and a brush to clean and apply steam therein, achieving, among other advantages, more effective cleaning with less water consumption and preventing splashes and unwanted inconvenience to passers-by.

[0011] More specifically, the equipment of the invention comprises at least the following elements:

- A plastic bag or other waterproof material, which can be reusable and has an access hole to allow the handle of an applicator element to pass through it;
- An applicator element, i.e. sprayer, suitable for introducing steam and spraying cleaning or disinfection products, from a container tank with means to produce said steam and/or spray; and
- A brush with radial plastic bristles which, optionally, is incorporated into the nozzle itself of the steam applicator element.

[0012] In addition, the equipment optionally provides for the inclusion of a vacuum cleaner with a brush at the end of the suction nozzle.

[0013] Therefore, the steps of the bin cleaning process are as follows:

- Firstly, after placing the bag on the waste bin arranged vertically, without tilting, and so that the mouth of the bag is open downwardly, practically touching the ground, the inside is sprayed, introducing the nozzle of the applicator through the opening provided for this purpose at the bottom of the bag and which is now located at the top of the bin.
- Next, steam is applied to the inside of the waste bin, causing the dirt to soften.
- Then, the inside of the waste bin is brushed.
- In this process, water from the steam falls onto the

support or crossbar and legs of the waste bin, which also softens any dirt they may have.

- Once the waste bin is cleaned with steam, and after removing the bag, the interior solid waste is vacuumed.
- Preferably, a small brush is attached to the suction nozzle with which the crossbar and support legs of the bin are scrubbed, at the same time vacuuming up any solid and liquid waste that may have been left impregnating said support or the ground under the waste bin.

[0014] The equipment of the invention provides multiple advantages over systems currently used for the same purpose, where the following stand out particularly:

- The water vapor is concentrated therein, so that it helps, together with the brushes, to clean and disinfect the waste bin without having to tilt it.
- Significant water savings and disinfectant product savings are achieved, especially on windy days.
- It is a silent system, since the steam and suction are produced by an electrical system.
- The size of the equipment is very small, and it can be incorporated into a manual push cleaning cart, so it may gain access anywhere, even on sidewalks less than one meter wide and narrow streets in historic downtown areas, making hardly any noise at all.
- The size of the bag will be variable to adapt to different types or sizes of waste bins or containers, and it may also consist of an extendable bag to adapt its dimension to different needs, for example twin waste bins, which are installed in pairs.
- It allows the cleaning of graffiti or stains with a retractable gun with water or steam.
- Thanks to the bag, there is no splashing on pedestrians or elements adjacent to the waste bin.

DESCRIPTION OF THE DRAWINGS

[0015] To complete the description, and for the purpose of helping to make the features of the invention more readily understandable, this description is accompanied by a set of drawings constituting an integral part of the same, which by way of illustration and not limitation represents the following:

Figures 1 and 2 show schematic depictions of the urban waste bin cleaning system according to the current technique using a pressurized water gun;

Figure 3 shows a schematic front perspective view of an example of an urban waste bin with the bag comprised in the equipment object of the invention, which has been depicted once it has been incorporated on same, showing its dimension and parts as well as the mode of use;

Figure 4 shows a front perspective view of the waste bin with the bag shown in the preceding figure, in

this case depicted as including the cleaning and steam application brush therein;

Figure 5 shows a top plan view of the waste bin with the bag incorporated, showing the application of steam therein; and

Figure 6 shows a schematic side elevational view of an example of a cart for transporting cleaning equipment for urban waste bins and the like of the invention, showing the main elements it comprises.

PREFERRED EMBODIMENT OF THE INVENTION

[0016] In view of the aforementioned figures, and in accordance with the adopted numbering, one may observe therein a non-limiting exemplary embodiment of the cleaning equipment for urban waste bins and the like of the invention, comprising that which is described in detail below.

[0017] Thus, as seen in said figures, the equipment (1) of the invention comprises at least:

- a bag (2) made of waterproof material, of a size suitable for covering the top of a waste bin (3) intended to be cleaned, which has an access opening (4) at its bottom (2a), which, once the bag (2) has been placed covering the waste bin (3), is located at the top, suitable for the handle of a steam applicator element (5) to pass through it;
- a steam applicator element (5) and/or sprayer, suitable for introducing water vapor and/or spraying water mixed with cleaning and/or disinfection products, from a liquid-containing tank (6) provided with means (7) to produce said steam and/or spray; and
- a brush (8) with radial bristles to scrub the inside of the waste bin (3), which, preferably, can be incorporated in the nozzle of the steam applicator element (5).

[0018] Likewise, in a preferred embodiment, the equipment (1) also comprises a vacuum cleaner (9) with an interchangeable suction nozzle (10) to equip it with a brush or not.

[0019] Preferably, the waterproof bag (2) is reusable for multiple uses, although it is not ruled out that it may be a bag made up of a single-use plastic bag, that is, to be used and thrown away.

[0020] Optionally, the equipment comprises several bags (2) of different dimensions, to adapt to different types or sizes of waste bins (3).

[0021] Optionally, the bag (2) is extendable, for example by means of bellows-type walls, to adapt its dimension to different sizes of waste bin (3).

[0022] Preferably the steam and suction are generated by an electrical system.

[0023] To that end, the equipment preferably comprises an electric boiler (7) coupled to the tank (6) as a means to produce steam, and, where appropriate, the vacuum cleaner (9) is an electric vacuum cleaner.

[0024] Preferably, all the elements of the equipment (1) are incorporated into a small-sized cleaning cart (11), with a platform and manual push handle, which is equipped with batteries (12) to power the boiler (7) of the tank (6) and, where appropriate, the vacuum cleaner (9).

[0025] Preferably, the cart is also driven by an electric motor and has a platform (12).

[0026] Preferably, the tank (6) is small, having approximately a 100-liter capacity, and is equipped with a water intake to be refilled from the public water supply network.

[0027] Preferably, the tank (6) has a dispenser (13) prepared to mix the water it contains with any detergent or disinfectant.

[0028] Preferably, the steam applicator element (5) is suitable for coupling to an extendable telescopic gun for cleaning stains on the ground.

[0029] Figure 6 schematically shows a depiction of an example of the cart (11) with all the elements of the equipment (1) of the invention, where the bag (2) is incorporated in a rolled up form.

[0030] In turn, taking into account Figures 1 and 2, it can be seen how, according to the prior art, the waste bin (3) is cleaned by applying pressurized water with a gun (14) connected to a compressor (15), which causes a lot of water splashes (depicted by dotted lines).

[0031] Furthermore, to achieve good cleaning, according to the prior art, it is necessary to tilt the waste bin and keep it in an inverted position by using a support bar (16) or the like.

[0032] Having sufficiently described the nature of the present invention, as well as the ways in which it may be implemented, it is not considered necessary to elaborate on the explanation thereof in order for a person skilled in the art to understand the scope of the invention and the advantages derived therefrom.

Claims

1. Cleaning equipment for urban waste bins and the like, **characterized by** comprising at least:

- a bag (2) made of waterproof material, of a size suitable for covering the top of a waste bin (3) to be cleaned, which has an access opening (4) at its bottom (2a), which, once the bag (2) has been placed covering the waste bin (3), is located at the top, suitable for the handle of a steam applicator element (5) to pass through it;

- a steam applicator element (5) and/or sprayer, suitable for introducing water vapor and/or spraying water mixed with cleaning and/or disinfection products, from a liquid-containing tank (6) provided with means (7) to produce said steam and/or spray; and

- a brush (8) with radial bristles to scrub the inside of the waste bin (3).

2. Cleaning equipment for urban waste bins and the like according to claim 1, **characterized in that** the brush (8) can be incorporated into the nozzle of the steam applicator element (5).

3. Cleaning equipment for urban waste bins and the like according to claim 1 or 2, **characterized in that** it also comprises a vacuum cleaner (9) with an interchangeable suction nozzle (10) to equip it with a brush or not.

4. Cleaning equipment for urban waste bins and the like according to any of the preceding claims, **characterized in that** the waterproof bag (2) is reusable.

5. Cleaning equipment for urban waste bins and the like according to any of claims 1 to 3, **characterized in that** the bag (2) is for single use.

6. Cleaning equipment for urban waste bins and the like according to any of the preceding claims, **characterized in that** it comprises several bags (2) of different dimensions, to adapt to different types or sizes of waste bin (3).

7. Cleaning equipment for urban waste bins and the like according to any of the preceding claims, **characterized in that** the bag (2) is extendable, to adapt its dimension to different sizes of waste bin (3).

8. Cleaning equipment for urban waste bins and the like according to any of the preceding claims, **characterized in that** the steam and suction are generated by an electrical system.

9. Cleaning equipment for urban waste bins and the like according to any of the preceding claims, **characterized in that** it comprises an electric boiler (7), coupled to the tank (6) as a means to produce steam.

10. Cleaning equipment for urban waste bins and the like according to any of the preceding claims, **characterized in that** all the elements are incorporated in a cart (11) equipped with batteries (12) to power the boiler (7) of the tank (6) and, where appropriate, the vacuum cleaner (9).

11. Cleaning equipment for urban waste bins and the like according to claim 10, **characterized in that** the cart (11) is driven by an electric motor.

12. Cleaning equipment for urban waste bins and the like according to any of the preceding claims, **characterized in that** the tank (6) has approximately a 100-liter capacity, being equipped with a water intake to be refilled from the public water supply network.

13. Cleaning equipment for urban waste bins and the

like according to any of the preceding claims, **characterized in that** the tank (6) has a dispenser (13) prepared to mix the water it contains with any detergent or disinfectant.

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- 14. Cleaning equipment for urban waste bins and the like according to any of the preceding claims, **characterized in that** the steam applicator element (5) is suitable for coupling to a telescopic extendable gun.

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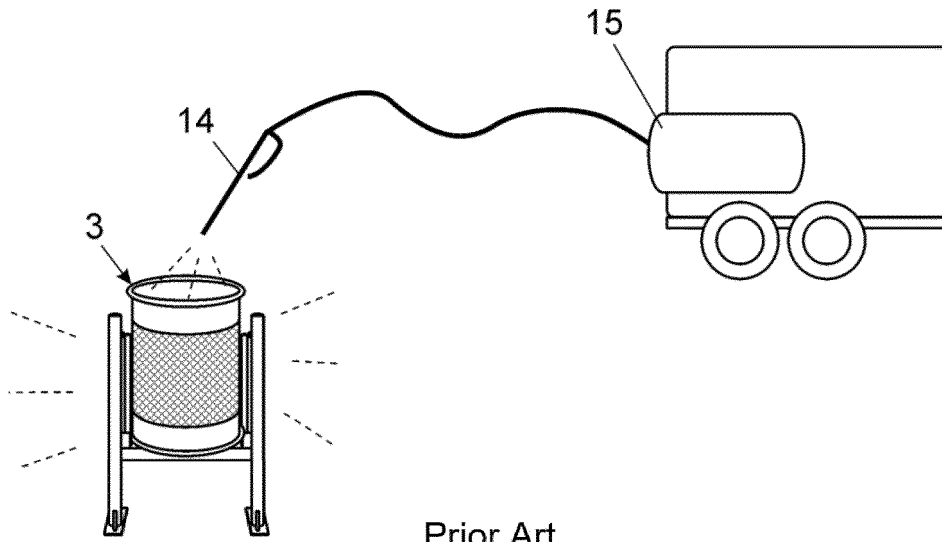
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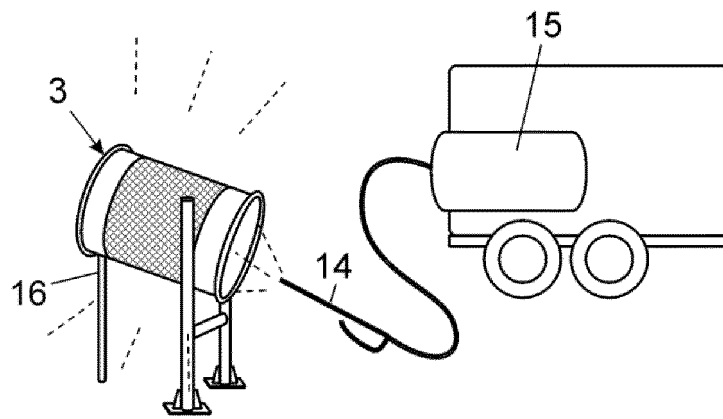
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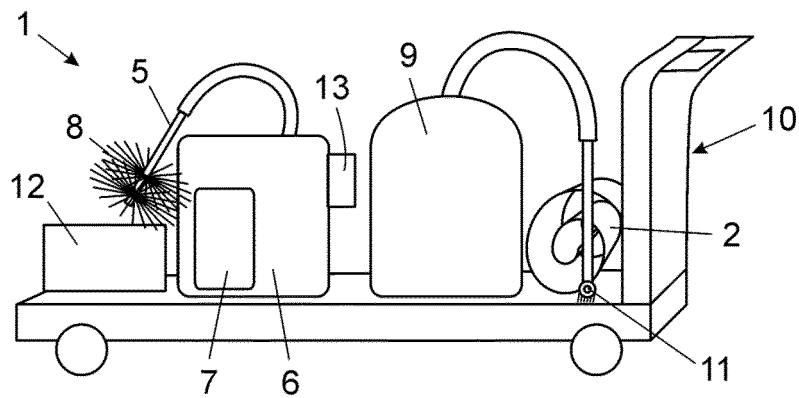
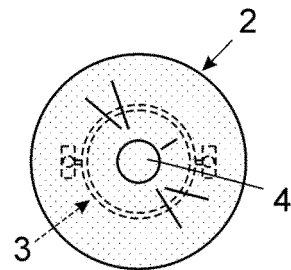
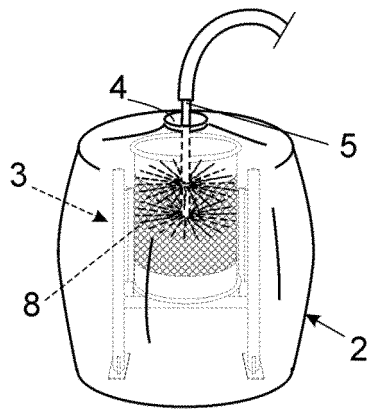
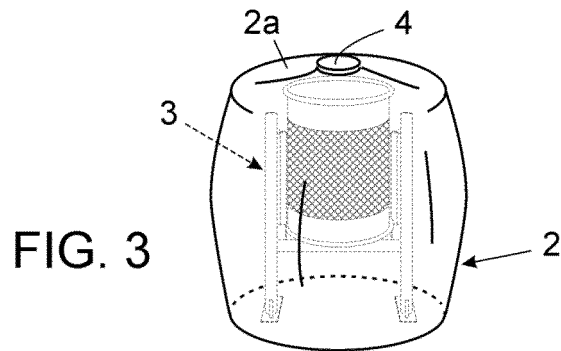
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Prior Art
FIG. 1



Prior Art
FIG. 2



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2022/070241

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A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65F, B08B

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

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

EPODOC, INVENES, WPI, INTERNET

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 207446900U U (WANG JILONG) 05/06/2018, Description. Figure: 1	1-14
A	CN 112588752 A (HANGZHOU YOUFEI TECH CO LTD) 02/04/2021, Description. Figure: 1	1-14
A	CN 109092830 A (LIN GUIQIN) 28/12/2018, Description. Figures: 1-3	1-14
A	CN 108941117 A (ANHUI FORMULA IND DESIGN AND SERVICE CO LTD) 07/12/2018, Description. Figure: 1	1-14
A	CN 207057214U U (CAO JUPING) 02/03/2018, Description. Figure: 1	1-14

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 Further documents are listed in the continuation of Box C.
 See patent family annex.

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* Special categories of cited documents: "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"P" document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search
20/07/2022Date of mailing of the international search report
(21/07/2022)Name and mailing address of the ISA/
OFICINA ESPAÑOLA DE PATENTES Y MARCAS
Paseo de la Castellana, 75 - 28071 Madrid (España)
Facsimile No.: 91 349 53 04Authorized officer
A. Garnelo Fernández
Telephone No. 91 3495461

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Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2022/070241

Information on patent family members

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Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
CN207446900U U	05.06.2018	NONE	
----- CN112588752 A	----- 02.04.2021	----- NONE	-----
----- CN109092830 A	----- 28.12.2018	----- CN109092830B B	----- 08.05.2020
----- CN108941117 A	----- 07.12.2018	----- NONE	-----
----- CN207057214U U	----- 02.03.2018	----- NONE	-----

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2022/070241

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CLASSIFICATION OF SUBJECT MATTER

B65F7/00 (2006.01)

B08B3/02 (2006.01)

B08B9/087 (2006.01)

B08B9/093 (2006.01)

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