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(11)

EP 3 804 601 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
14.04.2021 Bulletin 2021/15

(51) Int Cl.:
A47L 13/51 (2006.01) **A47L 13/58** (2006.01)

(21) Application number: **20200894.2**

(22) Date of filing: **08.10.2020**

(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:
KH MA MD TN

(30) Priority: **08.10.2019 IT 201900018212**

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(54) FLOOR CLEANING DEVICE

(57) A floor cleaning device (1) comprising a stick (2) with a cleaning head (3) at one end thereof; a lower tank (6); an upper tank (9) mounted inside and/or above the lower tank (6) and designed to contain a cleaning liquid; and a basket (18) adapted to receive the cleaning head (3) to be rinsed and carried by the upper tank (9) to move between a rest position, in which the basket (18) fluidi-

cally separates the upper tank (9) and the lower tank (6), and an operating position, in which the basket (18) fluidically connects the upper tank (9) with the lower tank (6) to allow the cleaning liquid to flow from the upper tank (9) to the lower tank (6) through the basket (18) so as to rinse the cleaning head (3) inside the basket (18).

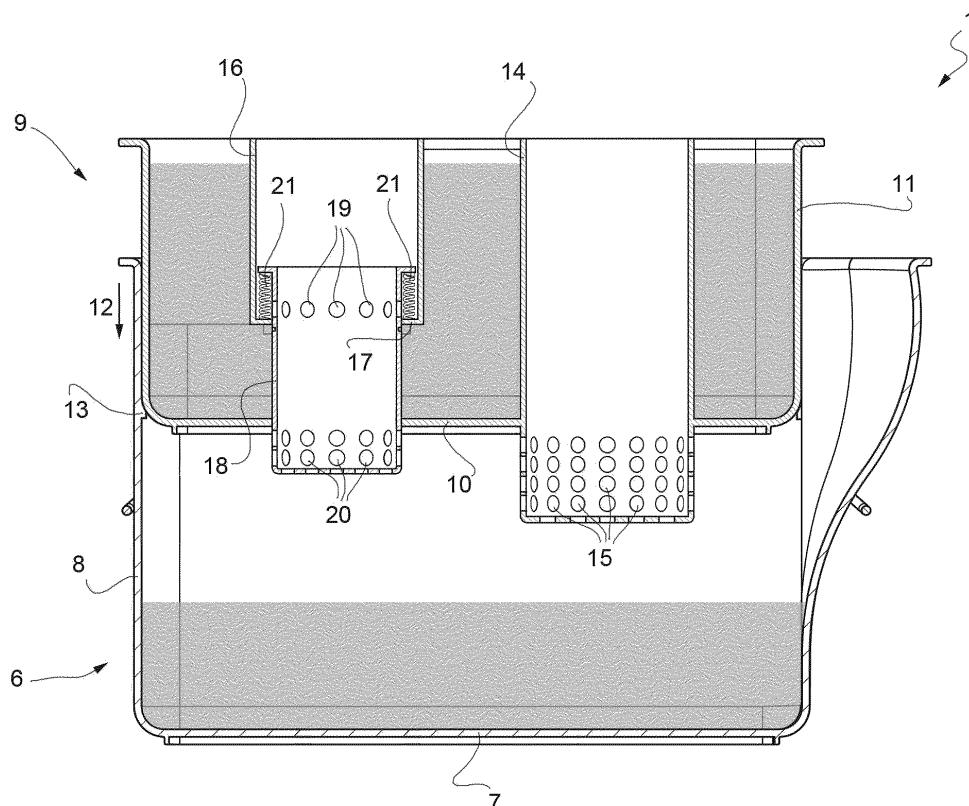


FIG. 3

Description**Cross-Reference To Related Applications**

[0001] This patent application claims priority from Italian patent application no. 102019000018212 filed on 08/10/2019.

Technical Field of the Invention

[0002] This invention relates to a floor cleaning device.

Background

[0003] In the floor cleaning sector, floor cleaning devices are known comprising a stick with a cleaning head at one end thereof; a tank for a cleaning liquid normally consisting of a mixture of water and detergent; and a basket mounted on the tank and fluidically connected to the tank to allow the cleaning head to be wrung.

[0004] Generally, the cleaning head comprises a stick attachment flange to allow the cleaning head to be attached to the stick and multiple bristles; and the basket has multiple openings to fluidically connect the tank and the basket.

[0005] The above-described known floor cleaning devices have some drawbacks mainly due to the fact that the cleaning liquid contained in the tank is contaminated by dirt discharged from the cleaning head when the latter is rinsed inside the tank and when it is wrung inside the basket.

[0006] As a result, the cleaning action is compromised by rinsing the cleaning head into the contaminated/dirty cleaning liquid contained in the tank.

[0007] A cleaning device that offers, in part, a solution to the above-described drawback is disclosed in US 2006/151054 A1 and comprises a stick with a cleaning head at one end thereof, an upper tank for a cleaning liquid, a lower tank, and a basket for rinsing the cleaning head. The upper and lower tanks are separated, and the basket can be fluidically connected to the upper tank to receive the cleaning liquid and can be emptied into the lower tank after the cleaning head has been rinsed in the basket. This solution, although better than solutions in which the cleaning head is rinsed in the same tank that contains the clean cleaning liquid, still has limitations, both in terms of rinsing effectiveness and in terms of operation complexity.

Subject and Summary of the Invention

[0008] The purpose of the present invention is to provide a floor cleaning device free from the above-described drawbacks and simple and inexpensive to manufacture.

[0009] According to the present invention, a floor cleaning device is provided, as claimed in the appended claims.

Brief Description of the Drawings

[0010] The present invention will now be described with reference to the accompanying drawings showing a non-limiting embodiment thereof, wherein:

Figure 1 is a schematic perspective view, with parts removed for clarity, of a preferred embodiment of the floor cleaning device according to the present invention;

Figure 2 is a schematic perspective view, with parts in cross-section and parts removed for clarity, of the floor cleaning device shown in Figure 1; and

Figures 3 and 4 are two cross-sections along the line III-III of a detail of the floor cleaning device shown in Figure 1, in two different operating positions.

Detailed Description of Preferred Embodiments of the Invention

[0011] With reference to Figures 1, 2, 3, and 4, reference numeral 1 references as a whole a floor cleaning device comprising an elongated stick 2 provided with a cleaning head 3 at one free end thereof.

[0012] The cleaning head 3 comprises a flange 4 to attach the cleaning head 3 to the stick 2, and multiple cleaning bristles 5 fixed to the flange 4.

[0013] The floor cleaning device 1 further comprises a lower tank 6, which, in the embodiment shown, has a cup shape and is delimited at the bottom by a substantially flat and horizontal bottom wall 7, and laterally by a substantially vertical side wall 8.

[0014] The floor cleaning device 1 further comprises an upper tank 9, which is removably inserted into the tank 6, extends into the tank 6, and is designed to contain a cleaning liquid consisting, for example, of a mixture of water and detergent.

[0015] The upper tank 9 is delimited at the bottom by a substantially flat bottom wall 10 and laterally by a substantially vertical side wall 11.

[0016] The upper tank 9 is slidably coupled to the lower tank 6 and is locked in a substantially vertical insertion direction 12 by at least one tooth 13, which protrudes from the side wall 8 inside the lower tank 6, and extends along the side wall 8 so as to stop the side wall 10 at a specified distance from the bottom wall 7.

[0017] The upper tank 9 is provided with a first basket 14, which, in the embodiment shown, has a cylindrical shape and extends through the upper tank 9 and the side wall 10 in the insertion direction 12, and projects into the lower tank 6.

[0018] The first basket 14 is fluidically separated from the upper tank 9, and has multiple connecting holes 15, which are formed on the outside of the upper tank 9, and fluidically connect the basket 14 and the lower tank 6.

[0019] The upper tank 9 is also provided with a body 16, which, in the embodiment shown, has a cylindrical cup shape, extends through the upper tank 9 in the in-

sertion direction 12, and has a height, measured parallel to the insertion direction 12, lower than the height of the upper tank 9, also measured parallel to the insertion direction 12.

[0020] The body 16 is delimited at the bottom by a bottom wall 17 arranged at a determined distance by the bottom wall 10.

[0021] The floor cleaning device 1 further comprises a second basket 18, which, in the embodiment shown, has a cylindrical shape and is carried by the upper tank 9, extends through the body 16 and the bottom walls 17 and 10 in the insertion direction 12, and projects into the lower tank 6.

[0022] The basket 18 is provided with multiple upper connection holes 19 and multiple lower connection holes 20.

[0023] The basket 18 is slidably coupled to the body 16 to move between a raised rest position (Figure 3), where the upper connection holes 19 are arranged inside the body 16 and outside the upper tank 9, the lower connection holes 20 are arranged inside the lower tank 6, and the lower and upper tanks 6, 9 are mutually fluidically separated by the basket 18, and a lowered operating position (Figure 4), where the upper connection holes 19 are arranged outside the body 16 and inside the tank 9, the lower connection holes 20 are arranged inside the tank 6, and the lower and upper tanks 6, 9 are mutually fluidically connected by the basket 18.

[0024] The basket 18 is moved, and normally kept, in the raised rest position by the thrust exerted by multiple springs 21 arranged between the body 16 and the basket 18.

[0025] The basket 18 is moved from the raised rest position to the lowered operating position by the thrust exerted on the basket 18 by the flange 4 of the cleaning head 3.

[0026] In use, the bristles 5 of the cleaning head 3 are wrung into the basket 14 in order to feed the contaminated/dirty cleaning liquid into the lower tank 6 through the connection holes 15.

[0027] At this point, the head 3 is moved inside the basket 18 and the basket 18 is moved from the raised rest position to the lowered operating position by means of the flange 4 so as to mutually fluidically connect the lower and upper tanks 6, 9 and cause the uncontaminated/clean cleaning liquid in the upper tank 9 to flow from the upper tank 9 to the lower tank 6, through the basket 18, so resulting in the bristles 5 being rinsed.

[0028] In other words, when the basket 18 is moved to the lowered operating position, the uncontaminated/clean cleaning liquid in the upper tank 9 first flows into the basket 18 through the upper connection holes 19 and then into the lower tank 6 through the lower connection holes 20.

[0029] The floor cleaning device 1 is advantageous compared to the known floor cleaning devices mainly due to the fact that basket 18 prevents the bristles 5 from immersing into the contaminated/dirty cleaning liquid

both in the lower tank 6 and in the uncontaminated/clean cleaning liquid in the upper tank 9, and allow the bristles 5 to be rinsed only with the uncontaminated/clean cleaning liquid in the upper tank 9.

[0030] In alternative embodiments not shown, the basket 14 may be omitted and the bristles 5 may be wrung and rinsed inside the basket 18; the basket 18 may be moved from the raised rest position to the lowered operating position directly by a user, e.g., via a foot pedal mechanism; and the cleaning head 3 may be replaced with a cleaning head with cleaning elements other than the bristles 5.

15 Claims

1. A floor cleaning device (1) comprising:

a stick (2) with a cleaning head (3) at one end thereof;

a lower tank (6);

an upper tank (9) mounted inside and/or above the lower tank (6) and designed to contain a cleaning liquid; and

a basket (18) adapted to receive the cleaning head (3) to be rinsed;

the floor cleaning device (1) is characterised in that the basket (18) is carried by the upper tank (9) to move between a rest position, in which the basket (18) fluidically separates the upper tank (9) and the lower tank (6), and an operating position, in which the basket (18) fluidically connects the upper tank (9) with the lower tank (6) to allow the cleaning liquid to flow from the upper tank (9) to the lower tank (6) through the basket (18) so as to rinse the cleaning head (3) inside the basket (18).

2. The floor cleaning device (1) of claim 1, wherein the basket (18) is movable from the rest position to the operating position under the thrust of the cleaning head (3).

3. The floor cleaning device (1) of claim 1 or 2, further comprising elastic thrust means (21) between the upper tank (9) and the basket (18) to move, and keep, the basket (18) in the rest position.

4. The floor cleaning device (1) of any one of the preceding claims, wherein the basket (18) extends through a bottom wall (10) of the upper tank (9) so as to protrude inside the lower tank (6).

5. The floor cleaning device (1) of any one of the preceding claims, wherein the basket (18) is provided with at least one first opening (20) for fluidically connecting the lower tank (6) and the basket (18), when the basket (18) is in the operating position.

6. The floor cleaning device (1) of any one of the preceding claims, wherein the basket (18) is provided with at least a second opening (19) fluidically separated from the upper tank (9) when the basket (18) is in the rest position and fluidically connected with the upper tank (9) when the basket (18) is in the operating position. 5
7. The floor cleaning device (1) of any one of the preceding claims, wherein the upper tank (9) is dismountably mounted inside and/or above the lower tank (6). 10
8. The floor cleaning device (1) of any one of the preceding claims, further comprising an additional basket (14) mounted inside and/or above the lower tank (6), fluidically separated from the upper tank (9), and fluidically connected with the lower tank (6) via at least a third opening (15) in the additional basket (14). 15 20
9. The floor cleaning device (1) of claim 8, wherein the additional basket (14) is carried by the upper tank (9) and extends through a bottom wall (10) of the upper tank (9). 25

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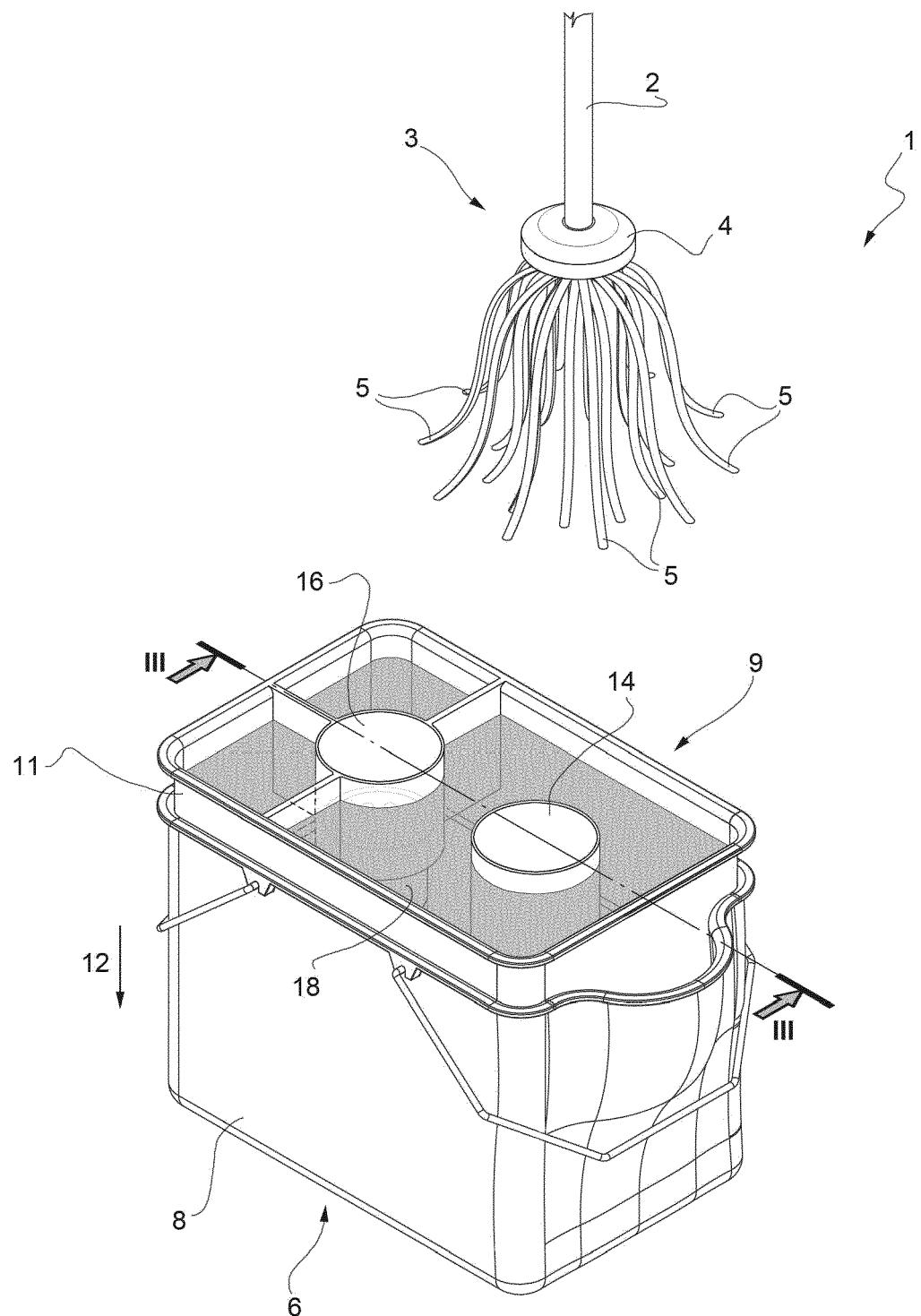


FIG. 1

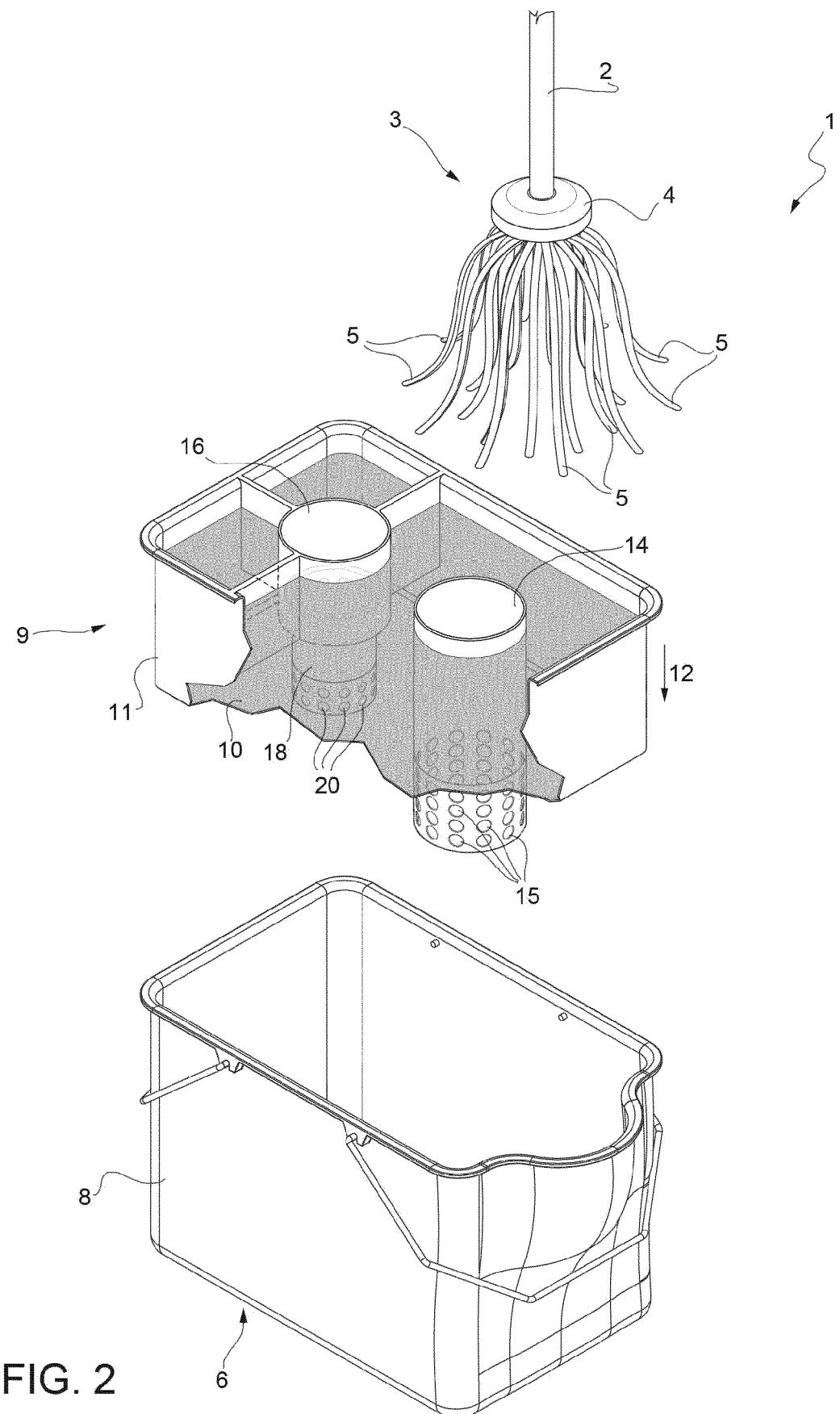


FIG. 2

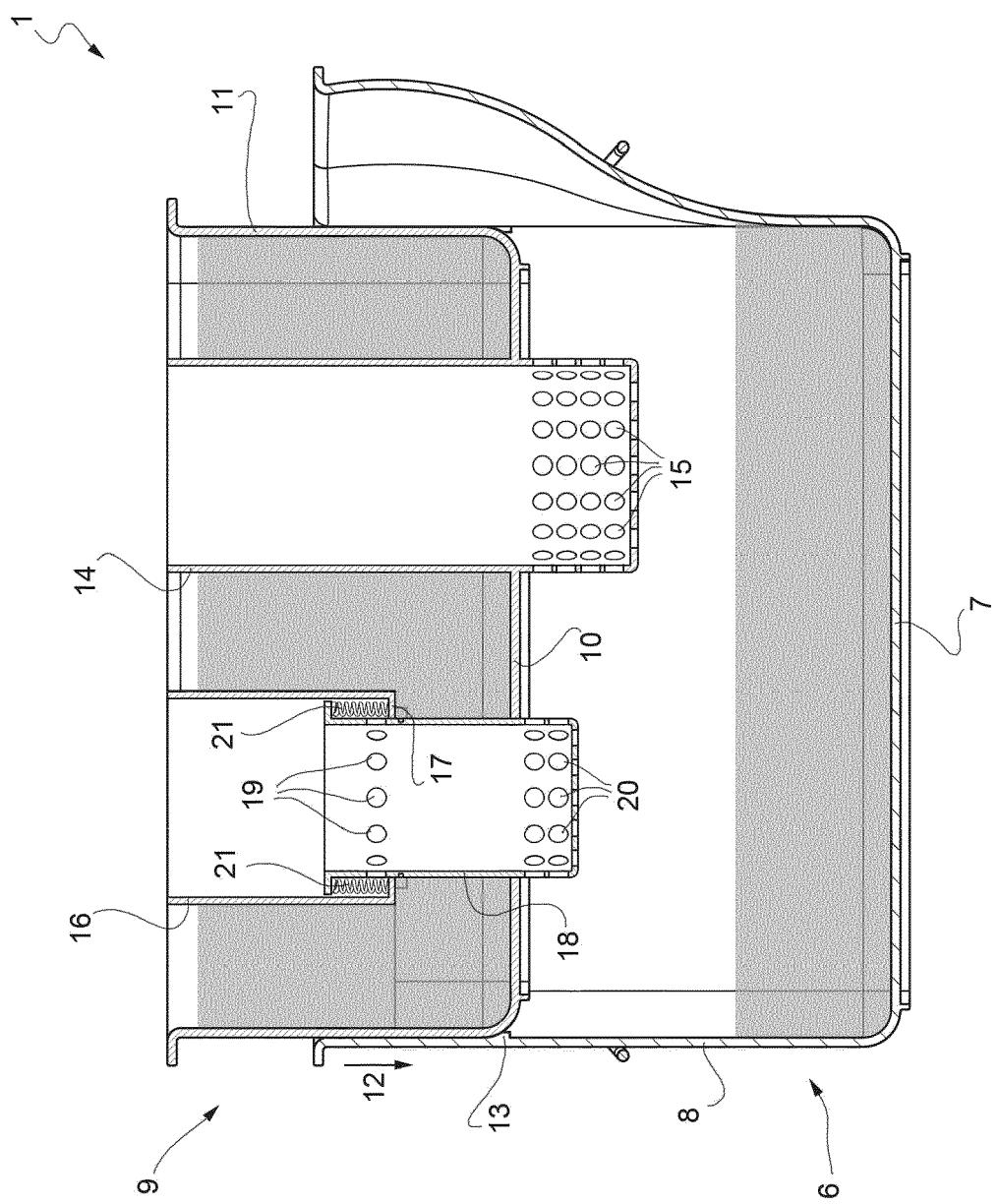


FIG. 3

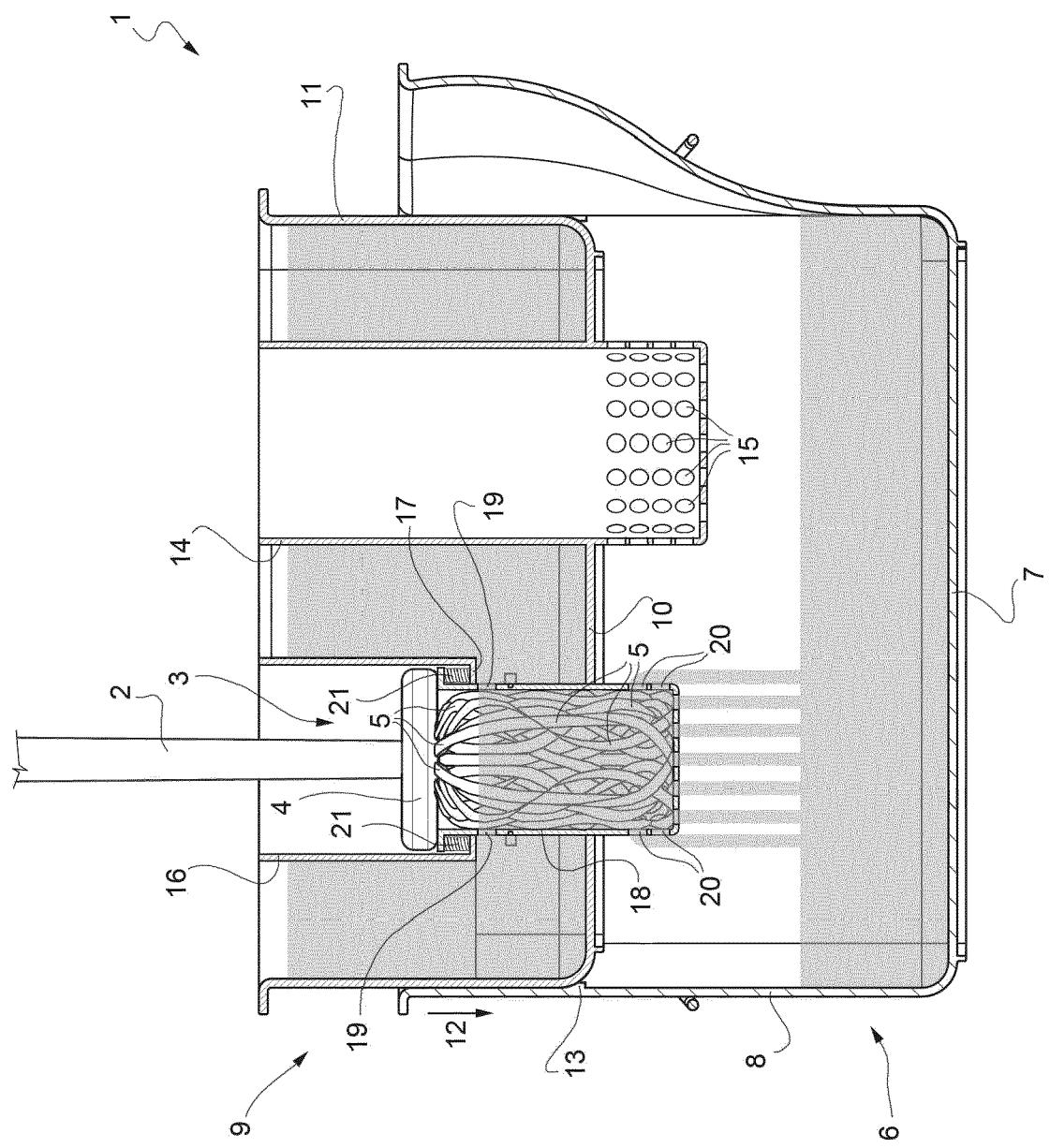


FIG. 4



EUROPEAN SEARCH REPORT

Application Number

EP 20 20 0894

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
10 A	US 2006/151054 A1 (DEATON LEVI [US]) 13 July 2006 (2006-07-13) * abstract * * figures 1,2,3A,3B * -----	1,7	INV. A47L13/51 A47L13/58
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50 2	The present search report has been drawn up for all claims		
55	Place of search Munich	Date of completion of the search 5 March 2021	Examiner Baumgärtner, Ruth
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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			

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

EP 20 20 0894

5 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.

05-03-2021

10	Patent document cited in search report	Publication date		Patent family member(s)	Publication date
15	US 2006151054 A1	13-07-2006	CA EP US WO	2537277 A1 1685027 A2 2006151054 A1 2005032323 A2	14-04-2005 02-08-2006 13-07-2006 14-04-2005
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- IT 102019000018212 [0001]
- US 2006151054 A1 [0007]