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(54) **Liquid bath cleaning apparatus**

(57) Liquid bath cleaning apparatus (10) comprising at least a container (11) provided with an accumulation tank (13) able to contain a liquid (15), a suction assembly (12) able to create a suction depression inside said container (11), and a pipe (17) to introduce the sucked-

in material into the container (11); in the apparatus at least one inner terminal end (18) of the introduction pipe (17) is positioned in a first position, wherein it is located directly in communication with the accumulation tank (13), and a second position wherein it is positioned distant from the tank (13).

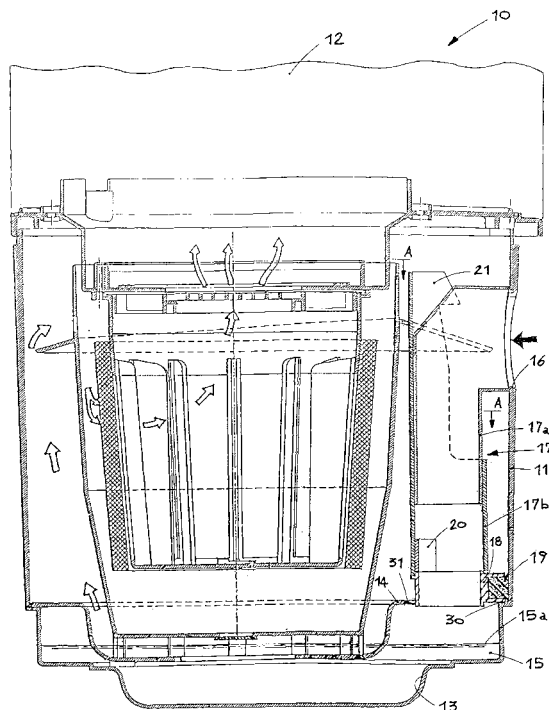


Fig. 1

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Description

FIELD OF THE INVENTION

[0001] The invention concerns a liquid bath cleaning apparatus, such as a vacuum cleaner or similar device, comprising at least a container, shaped so as to define an accumulation tank containing a liquid able to retain the dirt sucked in, an introduction pipe and a suction assembly provided with an electric motor. A device, which can be selected by the user, is able to put the introduction pipe in direct communication with the accumulation tank containing the liquid, when dust or other dry material is sucked in, or to hold the introduction pipe distant from the tank when any liquid is sucked in.

BACKGROUND OF THE INVENTION

[0002] The state of the art includes liquid bath cleaning apparatuses comprising a suction assembly associated with an accumulation tank containing a liquid, usually water, towards which the dirt sucked in is conveyed so as to be retained by said liquid.

[0003] In conventional apparatuses, the pipe which introduces the sucked-in air, containing the dirt, normally has its inner terminal part arranged permanently inside the tank which contains the liquid. This is a disadvantage, especially when the cleaning apparatus is used to suck in a liquid, whether it be water, soapy water, detergent or otherwise. In this case, in fact, the liquid sucked in is immediately mixed with the liquid bath contained inside the tank, making it dirty in a few seconds and creating a considerable bubbling inside the liquid bath itself.

[0004] The present Applicant has designed, tested and embodied this invention to overcome this shortcoming and to obtain further advantages.

SUMMARY OF THE INVENTION

[0005] The invention is set forth and characterized in the main claim, while the dependent claims describe other features of the invention.

[0006] One purpose of the invention is to achieve a liquid bath cleaning apparatus in which the user can easily select the function, that is to say, the path of the air sucked into the apparatus, before cleaning operations have begun, or during an interruption of said operations, according to the type of material, solid or liquid, which he intends to suck in.

[0007] In accordance with this purpose, an inner terminal end of the pipe to introduce the material sucked in can be easily positioned by the user in a position chosen from two different stable positions. In a first, lowered position, the terminal end is located directly in communication with the tank of liquid bath, while in a second, raised position, the terminal end is positioned distant from the mouth of the tank.

[0008] In this way, if the user intends to suck in any solid material, such as for example dust, sawdust, chips, crumbs, pieces of paper or suchlike, he will arrange the terminal end of the introduction pipe in the first position, whereas, vice versa, when he wants to suck in any liquid, he will arrange the terminal end of the pipe in the second position. In the second, raised position, the material sucked in suddenly slows down at outlet from the terminal end of the introduction pipe, so that even if it partly reaches the liquid bath contained in the containing tank, it does not cause any bubbling thereof.

[0009] Advantageously, the introduction pipe comprises a fixed first part connected with the outside of the apparatus, and a part able to move telescopically with respect to said fixed first part. The movable part comprises the terminal end which, as we said, can be put into direct communication with the tank containing the liquid bath or distanced therefrom.

[0010] A pad of elastic material, for example sponge, is put between the movable part of the introduction pipe and one wall of the container of the cleaning apparatus to ensure that both positions are stable.

[0011] Moreover, in the position where the terminal end of the introduction pipe is lowered, the pad acts as a sealing element and prevents the liquid contained inside the accumulation tank from leaking in an upward direction.

[0012] The movable part is also provided with an upper handle by means of which the user can easily move it from one position to the other.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] These and other characteristics of the invention will be clear from the following description of a preferential form of embodiment, given as a non-restrictive example, with reference to the attached drawings wherein:

Fig. 1 is a longitudinal section of a liquid bath cleaning apparatus according to the invention in a first working position;

Fig. 2 is a longitudinal section of the cleaning apparatus shown in Fig. 1 in a second working position;

Fig. 3 is a section from A to A of a detail of the cleaning apparatus according to the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0014] With reference to the attached Figures, a cleaning apparatus 10 according to the invention comprises a container 11, substantially cylindrical in shape, and a suction assembly 12 arranged, in removable fashion, on the container 11. Hook means, of a conventional type and therefore not shown in the drawings, are able to hold the container 11 and the suction assembly 12 together.

[0015] The container 11 is shaped so as to define, in its lower part, an accumulation tank 13, also substantially cylindrical in shape, into which a liquid 15, able to retain the dirt and dust sucked in, is able to be inserted.

[0016] The liquid 15, which can consist simply of water, advantageously reaches a defined level 15a.

[0017] The tank 13 is closed at the upper part by a transverse plate 14, which is assembled in removable fashion inside the container 11 and shaped so that it has a substantially horizontal circular crown on which an inlet aperture 30 is made.

[0018] On the peripheral edge of the transverse plate 14 and the aperture 30 a sealing packing 31 is assembled, for example made of rubber, which is able to prevent the liquid 15 from leaking from the tank 13, in an upwards direction.

[0019] The suction assembly 12 is of a conventional type and comprises an electric motor able to make a fan rotate; the fan is suitable to generate inside the container 11 the depression which achieves the functioning of the apparatus 10.

[0020] The container 11 is provided with a lateral aperture 16; a pipe 17 to introduce the sucked in material, whether solid or liquid, mixed with air, is connected to the aperture 16. The accessories used to collect the dirt and dust (hoses, brushes, lances and so on) are of a conventional type and therefore not shown in the drawings; they are able to be connected on the outer side of the aperture 16.

[0021] According to one characteristic of the invention, the pipe 17 comprises a fixed upper part 17a, shaped like an upside-down L, which is permanently associated with the aperture 16, and a lower part 17b, movable vertically with respect to the fixed part 17a. To be more exact, the lower part 17b is tubular and shaped so as to slide telescopically with respect to the vertical segment of the upper part 17a.

[0022] The lower part 17b is provided on the bottom with a terminal end 18, shaped so as to define laterally a horizontal fork to support an elastic sponge 19, which is permanently compressed against the inner wall of the container 11; at the lower part, the terminal end 18 is provided with a mouth mating in shape with the aperture 30 of the transverse plate 14.

[0023] The lower part 17b is also provided with a lower stop element 20 and an upper handle 21, by means of which the user can easily make the lower part 17b slide with respect to the upper part 17a.

[0024] To be more exact, the lower part 17b is movable between the following two stable positions: a first lowered position, shown in Fig. 1, wherein the terminal end 18 is in direct contact with the aperture 30 of the tank 13; and a second raised position, shown in Fig. 2, wherein the terminal end 18 is distant from the aperture 30 of the tank 13. In this second position the stop element 20 is in contact with the lower end of the upper part 17a.

[0025] According to the type of material which he has

to suck in, solid or liquid, the user can easily position the lower part 17b in one of the two stable positions by acting on the handle 21. This can be done comfortably and with great ease before starting the cleaning operation or during a momentary interruption thereof.

[0026] It is obvious that additions or modifications can be made to the cleaning apparatus 10 as described heretofore without departing from the spirit and scope of the invention.

[0027] It is also obvious that, although the invention has been described with reference to a specific example, a person of skill in the art shall certainly be able to achieve many other equivalent applications of the vacuum cleaner described above, all of which shall come within the field and scope of the invention.

Claims

1. Liquid bath cleaning apparatus comprising at least a container (11) provided with an accumulation tank (13) able to contain a liquid (15), a suction assembly (12) able to create a suction depression inside said container (11), and a pipe (17) to introduce the sucked-in material into said container (11), the apparatus being **characterized in that** at least one inner terminal end (18) of said introduction pipe (17) is able to be positioned in a first position, wherein it is located directly in communication with said accumulation tank (13), and a second position wherein it is positioned distant from said tank (13).
2. Cleaning apparatus as in Claim 1, **characterized in that** said introduction pipe (17) comprises a fixed first part (17a), connected to an inlet aperture (16) for the material sucked in, and a second part (17b) which is movable with respect to said fixed first part (17a).
3. Cleaning apparatus as in Claim 2, **characterized in that** said movable second part (17b) includes said terminal end (18).
4. Cleaning apparatus as in Claim 2, **characterized in that** said fixed first part (17a) is shaped like an upside-down L and comprises a substantially vertical lower segment.
5. Cleaning apparatus as in Claim 4, **characterized in that** said movable second part (17b) is tubular and shaped so as to be able to slide telescopically with respect to said vertical segment of said fixed first part (17a).
6. Cleaning apparatus as in Claim 3, **characterized in that** said terminal end (18) is shaped so as to define laterally a horizontal fork to support an elastic element (19), which is permanently compressed

against an inner wall of said container (11) to keep said movable second part (17b) stably in each of said two positions.

7. Cleaning apparatus as in Claim 1, **characterized in that** said terminal end (18) is shaped so as to define at the lower part a mouth mating in shape with that of an inlet aperture (30) of said accumulation tank (13). 5 10
8. Cleaning apparatus as in Claim 2, **characterized in that** said movable second part (17b) is provided with a stop element (20) able to define said second position. 15
9. Cleaning apparatus as in Claim 2, **characterized in that** said movable second part (17b) is provided with an upper handle (21) by means of which a user can easily make said movable second part (17b) slide manually with respect to said fixed first part (17a), in order to position said terminal end (18) in each of said two positions. 20 25 30 35 40 45 50 55

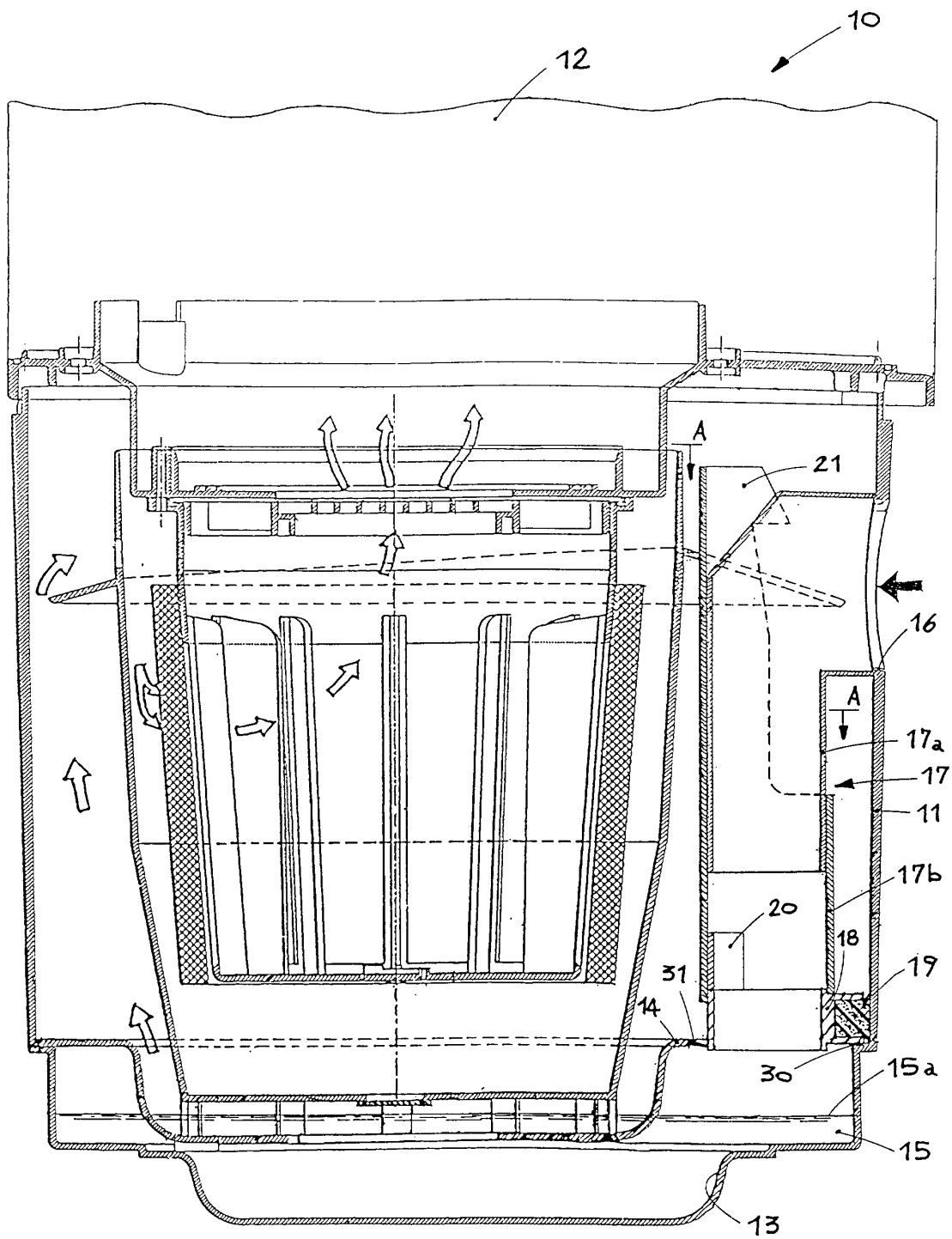
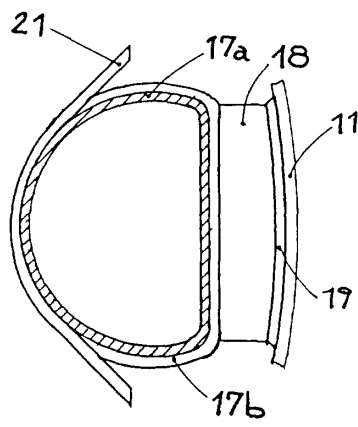
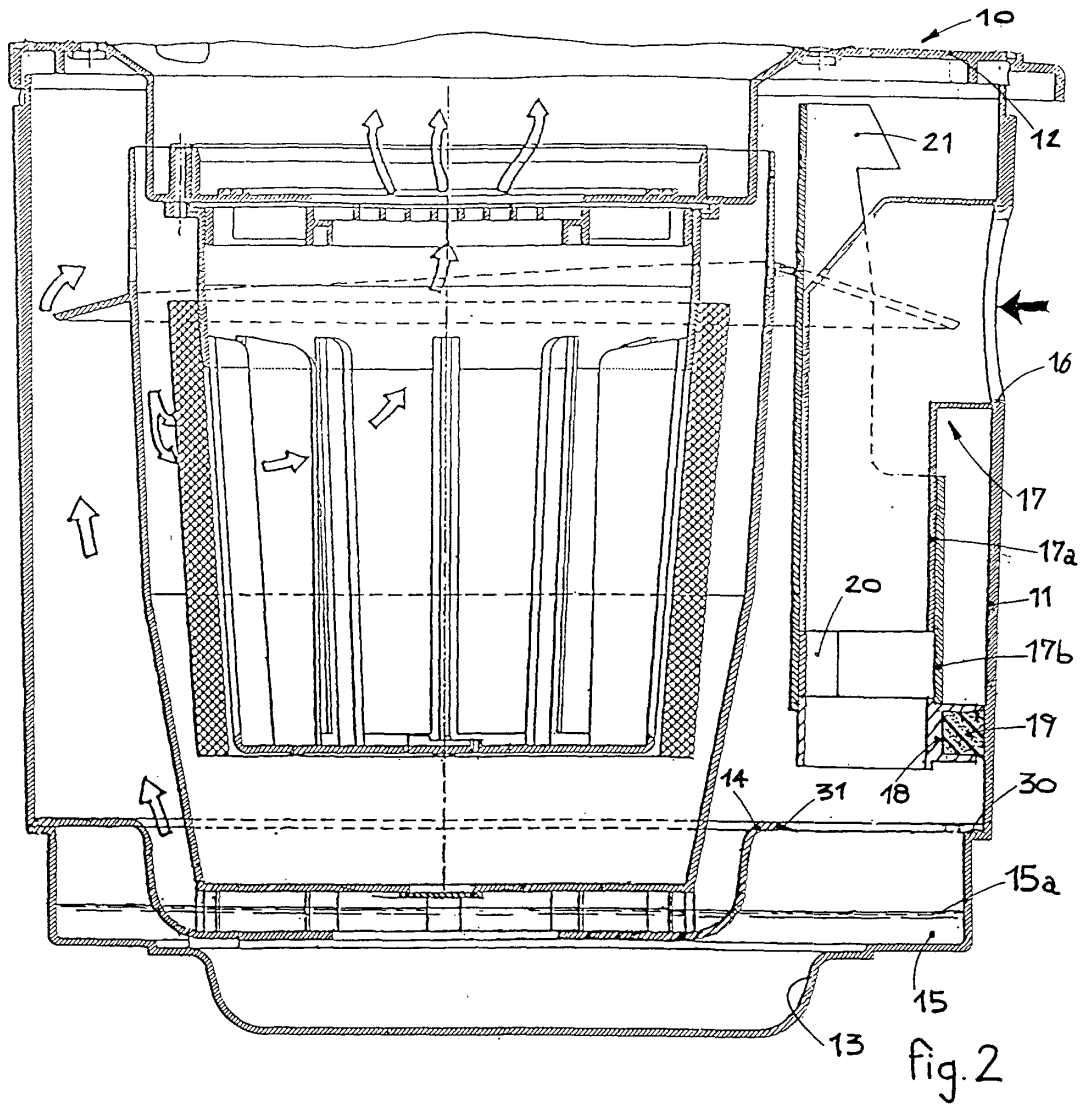


fig. 1





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Application Number
EP 01 12 3823

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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 8 January 2002	Examiner Bourseau, A-M
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

EPO FORM 1503 03 92 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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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
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