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(71) Applicant: **Central General Marcas S.L.**
17820 Banyoles (ES)

(72) Inventor: **Pages Pages, Josep**
17820 Banyoles (ES)

(74) Representative:
SUGRANES - VERDONCES - FERREGÜELA
Calle Provenza, 304
08008 Barcelona (ES)

(54) Sanitary device

(57) Sanitary, collecting and discharging device for domestic residual waters which is characterised in that the collecting chamber is a receptacle fitted with at least one residual waters inlet and an outlet mouth, connected to a receptacle that functions as a suction chamber and adapted for receiving the sealed and removable anchoring of a grinder-pump fixed to said receptacle by fixing means and in that the outlet mouth is provided with closing means, all arranged in such a way that, by acting on the closing means from the outside, the flow of residual waters is interrupted and the residual waters are prevented from penetrating the receptacle, so that the extraction of the pump can be done without having any contact with said residual waters, in addition the device is provided with an outer cover, adapted to be removably coupled to the collecting chamber, creating a compartment which is adapted for housing the grinder-pump in its interior, the condenser, the level sensors and the cleansing pipe, hiding said components when the device is installed, but easing access to them, should they need repairing, just by removing the outer cover.

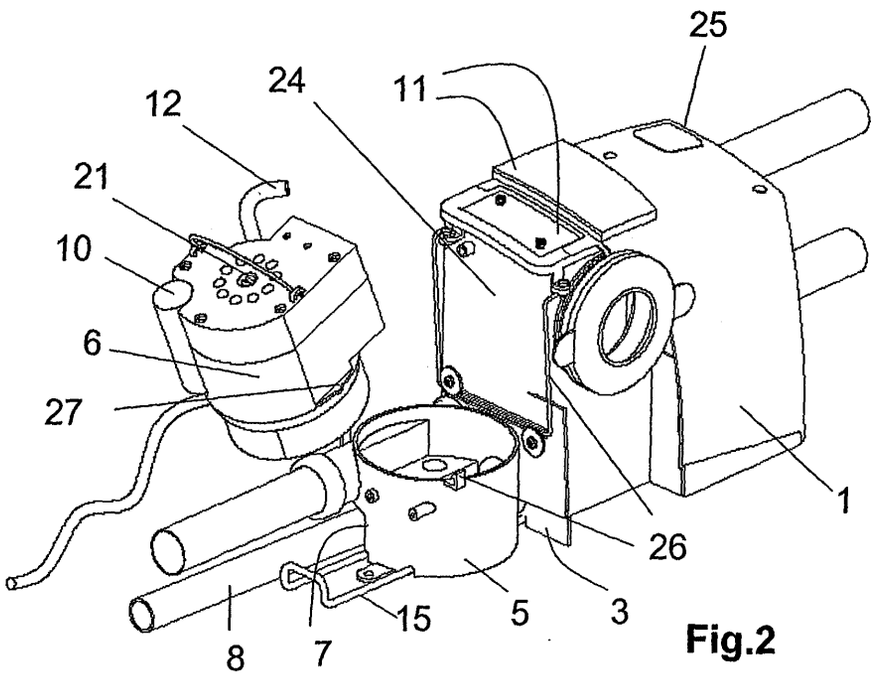

Fig.2

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Description

Technical field of the invention

[0001] The invention refers to a sanitary, collecting and discharging device for domestic residual waters.

Background to the invention

[0002] Sanitary grinders are devices, which allow for the discharge of wastewater wherein just one power point and water inlet are needed. In a house, for example, a sanitary grinder allows for the installation of a bathroom at any point in the house as the grinder would be able to impel all the completely liquidised faecal material to the nearest chute and thus discharge the waste waters without the need to have an appropriate drainage outlet for such purpose. Therefore, the small-sized sanitary grinders allow for the installation of a bathroom in places where beforehand, an installation of this type was not envisaged, whether in a private house, in a gymnasium, in a caravan or trailer, in a bar, etc.

[0003] The existing embodiments of sanitary grinders (also called septic grinders) are based on enclosed receptacles, made of plastic material, which act as a tank or collector for bath or kitchen waters (WC, washbasin, shower, bath, etc) and which house an impeller group within.

[0004] Some embodiments are equipped with a wall, which acting as if it were a partition, separates said receptacle into two compartments, placing the faecal waters inside one of them, and in the other, the impeller group.

[0005] The latter is generally made up of an electric motor, whose shaft is coupled at its end to a pump fitted with knives or cutting elements, integral to its axis, intended for grinding the faecal material, such as the toilet paper remains present in residual waters. The pump's power should be such that it has to be capable of impelling the residual waters to a distance and exceed a charge loss that is sufficient to discharge said waters into the appropriate place or intended for such purpose.

[0006] The documents WO 0208610 and EP 1098042 both describe similar embodiments, wherein an inlet pipe channels the residual waters, putting them into a closed receptacle within whose interior a grinder-pump is arranged, which impels the dirty waters and waste once ground up, through an outlet pipe towards the device exterior. In both cases, a pump shaft is used which is fitted with grinding means suitable for the type of material being dealt with. In the same way, although the pump might be easily extractible, in order to have access to it, the cover of the receptacle containing the residual waters has to be opened since the impeller group is situated in the same receptacle. In the case of the first document, the receptacle base is arranged in such a way that the residual waters flow through a conduit to a small chamber situated just below the pump's suction in order to make for a proper working of the device. Nevertheless, if one wishes to have access to the impeller group without having to view the residual water or suffer the annoying effects of the smell, which they give off, it is always necessary to carry out the operation with the tank or receptacle empty. Regrettably, when access to the impeller group is needed, it tends to be in the cases in which it breaks down or there is some problem in its working and therefore, the receptacle contains the residual waters which the pump has not been able to impel due to its failing to work.

[0007] Therefore, on those occasions when the pump does not work, the residual waters build up inside the receptacle. For this reason, the job of extracting the pump can be unpleasant and rather irksome and difficult.

[0008] The document EP 0611851 describes a similar embodiment, but this time the device is provided with two different compartments, the first one being the one that receives the dirty or waste water, whereas the second one houses the impeller group and a pressure sensor, which determines when the pump should work according to the pressure that exists in the first compartment. However, this arrangement does not avoid the aforementioned problems as, in the event of the pump breaking down, due to its being horizontal-shafted, it will remain primed due to the amount of waste water that has accumulated, thus complicating once more the job of changing, maintaining or just extracting the pump.

[0009] Furthermore, the existing devices are not easily adaptable to places in which one tries to put the device. The geometric configurations are not adapted enough to locate the device in the reduced space that is left free behind a W.C. bowl, as well as the fact that they do not offer different possibilities of finding the outlet of the waters impelled by the pump, which may create discharge problems due to the changes of direction, bends and other operations that have to be carried out to avoid or get round the different accessories that may be found around them (a bath, a shower, a radiator, a bidet, etc).

[0010] Therefore, it is herein pointed out that there is a need for a device which, although small-sized, allows the water outlet to be positioned according to requirements, and moreover, wherein one has quick access to the motor, the pump can be extracted, change the condenser, unblock the shaft, etc, without needing to have any contact with the residual water deposited in the receptacle.

Explanation of the invention

[0011] Disclosed herein, and with the aim of providing a simultaneous solution to all these problems and drawbacks, is a sanitary, collecting and discharging device for domestic residual waters, of the type comprising at least one inlet, or mouth, of residual water; a collecting chamber of residual waters; an electric motor whose

shaft is coupled at its end to a grinder-pump; level-sensors which control the pump's working; and an exterior outlet for discharging the residual waters.

[0012] Essentially, the device of the invention is characterised in that the collecting chamber, which is independent from the rest of the components making up the device, is fitted with at least one residual waters inlet and an outlet provided with closing means and adapted for receiving the inlet pipe of a receptacle, the upper mouth of which is, in turn, adapted for receiving the sealed and removable anchoring of a grinder-pump with the help of fixing means, said receptacle forming an enclosed chamber which acts as a suction chamber of the grinder-pump and which impels the residual waters towards the exterior outlet and the impulsion pipe, all arranged in such a way that, by acting on the closing means from the outside, the flow of residual waters is interrupted and the residual waters are prevented from penetrating the receptacle, so that the extraction of the pump can be done without having any contact with said residual waters.

[0013] According to another feature of the invention, the device is provided with an outer cover, adapted to be removably coupled to the collecting chamber, creating a compartment which is adapted for housing the grinder-pump in its interior, the condenser, the level sensors and the cleansing pipe, hiding said components when the device is installed, but easing access to them, should they need repairing, just by removing the outer cover (9).

[0014] According to a preferred embodiment, the device is provided with fixing means of the grinder-pump to the receptacle, which comprise at least two rods that pivot vertically over the lateral face of the collecting chamber facing the grinder-pump, so that when they are in a normal position to said face, they rest on lugs arranged on the surface of the grinder-pump body and are anchored in respective parts which, as if it were a hook, are arranged in the receptacle.

[0015] According to another aspect of the invention, the collecting chamber base is essentially concave and starts from the section of the outlet mouth situated below the lowest point of said base, the collecting chamber base being equipped with a semi-cylindrical protuberance, in the projecting direction of the outlet mouth, lower in length to the collecting chamber base, through whose interior a closing element moves, activated from the exterior of the collecting chamber and adapted for completely plugging the outlet mouth or leaving the through section free of any obstacle, allowing the residual waters to flow through it.

[0016] According to another aspect of the invention, the rear vertical flat surface presents a prolonged slot, in a vertical direction, which allows the impulsion pipe to pass through towards the exterior and in a vertical direction, in such a way that it does not project from the rear vertical flat surface and the lateral walls of the device present respective notches to allow the impulsion pipe to pass through, thus the device is adapted to allow the extraction of residual waters through one of its sides or by its upper end, the rear surface of the device being adjacent to the wall where positioned.

Brief description of the drawings

[0017] A preferred embodiment of the device in dynamic measurement to the relative position of an object, is represented in the attached drawings by way of non-limiting example. In said drawings,

Fig. 1 is a perspective view of the sanitary device of the invention;
Fig. 2 is a perspective view, without the cover, of the device in Fig. 1; and
Fig. 3 is a perspective view of the rear part of the lower part of the collecting chamber of the device.

Detailed description of the drawings

[0018] The description, which follows, refers to the aforementioned drawings, making it possible to appreciate in detail the different parts, which a preferred embodiment of the invention is made up.

[0019] Outwardly, and according to the preferred embodiment in Fig. 1, the sanitary device of the invention appears to be a single structure, enclosed, of limited size and adapted to be installed behind a W.C. and with its rear face 16 adjoining a wall.

[0020] The device in the figure is fitted with several residual water inlets to a collecting chamber 1, connected to the outside environment through a filter 25 and an anti-discharge valve for releasing the gases that can be generated in its interior and an outer cover 9. Specifically, in the embodiment in Fig. 1, three possible inlets for grey water exist (those arising from any bathroom accessory or electrical appliance) 17, 18 and 19 as well as an inlet mouth 2, frontal and at a height in keeping with current regulations, for the entrance of fetid waters that come from a W.C. bowl. The device is also fitted with the elements 20 needed for fixing it to the floor and has fixing means 30 of the cover 9 to the receptacle or collecting chamber 1. In the example in the picture, these fixing means are represented in the form of screws, although they can be any other type, as long as it is easy to remove the cover 9 from the device to have access to the different components that are below said cover.

[0021] Fig. 2 shows the device in Fig. 1, without the cover 9. As can be appreciated, direct access can be had, and without complications, to the different components of the device. In fact, the level sensors 11, the grinder-pump 6, the condenser 10 and the cleansing pipe 11 can be observed. Of particular interest is the arrangement of the condenser 10, which is easily accessible as it is on the outside of the grinder-pump 6, it being very frequent in this type of device to have to change

this component. Also interesting is the fact that the grinder-pump 6 has on its upper face and in a visible way, a head of the rotation shaft motor that activates the impeller of the grinder-pump 6, said head being provided with a slot 21, so that when said shaft gets blocked, it can be unblocked easily, without extracting the pump, from the outside and with the aid of a basic tool.

[0022] In Fig. 2, it can also be observed how the receptacle 5 acts as a union between the outlet mouth 3 of the collecting chamber 1 and the grinder-pump 6 removably coupled and in a hermetic way on its upper mouth. Moreover, this receptacle functions as a suction chamber, for which it is fitted within with a series of partitions or protuberances intended to ease the flow of the waters and the action of the grinder-pump 6 knives.

[0023] In order to assure that the anchoring of the grinder-pump 6 on the receptacle 5 is watertight, the device is equipped with fixation means 26. In the embodiment in Fig. 2, the fixation means 26 comprise two rods adapted for rotating on a vertical plane and arranged over the lateral face of the collecting chamber 1 facing the grinder-pump 6, so that when they are in normal position to said face, they rest on lugs arranged on the surface of the grinder-pump 6 body and are anchored in respective parts which, as if they were a hook, are arranged in the receptacle 5. Obviously, the means of anchoring the pump to the receptacle can be of another kind, such as pins, pincer-shaped threaded elements, etc.

[0024] In the event of it being necessary to extract the grinder-pump 6 from the device, for example in the case of breakdown, it will be necessary to activate the handle 15, easily accessible from the device exterior, before or after separating the cover 9 from the rest of the device. The handle 15, makes it possible to close or open, from the outside, the outlet mouth 3 of the collecting chamber 1, so that all fluid communication is closed between the collecting chamber 1 and the receptacle 5. When this occurs, the grinder-pump can be extracted without having any contact with the waters accumulated in the collecting chamber, without needing to de-install the device, since it can remain in its place of location while the necessary operations on the pump are carried out, nor dismounting the residual waters inlet mouths 2, 17, 18, 19 or the exterior outlet mouth 7.

[0025] In the example in Fig. 3, the closing means 4, which make it possible to perform this operation and which are to be found in the collecting chamber interior are shaded in (as, in fact, they are not visible from the exterior). The closing means comprise a plug 22 housed inside the collecting chamber 1 and a shaft 23, integral to the plug, activated from the exterior by the handle 15. Said plug 22 completely blocks the outlet mouth 3, or on the contrary, leaves the section of said outlet mouth 3 totally free. The plug 22 moves around the interior of the semi-cylindrical protuberance 13 of the base of the collecting chamber 1 and is fitted with a shaft 23, coaxial to the semi-cylindrical protuberance 13 whose first end is joined to the plug 22 and its second end is joined to the handle 15 through a through orifice made in the base of the collecting chamber 1, located in the base opposite to the outlet mouth 3 of the semi-cylindrical protuberance 13.

[0026] In order to ease the flow of the residual waters towards the outlet mouth 3, the collecting chamber 1 is essentially concave, being part of the section of the outlet mouth 3 situated below the lowest point of said base.

[0027] In the same Fig. 3, it can be observed how the rear surface 16 has a vertical notch 29, intended for receiving the fitting of the impulsion pipe 8 towards the exterior, in a vertical direction and without projecting from the flat rear vertical surface 16. This feature, together with the notches made in the outer cover 9 and in the opposite side of the device, make it possible to extract the residual waters by one of the sides, by its upper end and even by its rear part if necessary, although for this latter case, it were necessary for the wall to be provided with a hole for the pipe to pass through.

[0028] It should be pointed out that the constructive details, sizes and shapes are completely independent of the scope of the invention, all possible variations of the previous ones being under the protection of the scope of the claims.

Claims

1. Sanitary, collecting and discharging device for domestic residual waters, of the type comprising at least one inlet, or mouth, of residual water; a collecting chamber of residual waters; an electric motor whose shaft is coupled at its end to a grinder-pump; level-sensors which control the pump's working; and an exterior outlet for discharging the residual waters, **characterised in that** the collecting chamber (1), which is independent from the rest of the components making up the device, is fitted with at least one residual waters inlet (2) and an outlet mouth (3) provided with closing means (4) and adapted for receiving the inlet pipe of a receptacle (5), the upper mouth of which is, in turn, adapted for receiving the sealed and removable anchoring of a grinder-pump (6) fixed to the receptacle (5) by fixing means (26), said receptacle forming a closed chamber which acts as a suction chamber of the grinder-pump (6), which impels the residual waters towards the exterior outlet (7) and the impulsion pipe (8), all arranged in such a way that, by acting on the closing means from the outside, the flow of residual waters is interrupted and the residual waters are prevented from penetrating the receptacle, so that the extraction of the pump can be done without having any contact with said residual waters.

2. Device according to claim 1, **characterised in that** it is provided with an outer cover (9), adapted to be

removably coupled to the collecting chamber (1), creating a compartment which is adapted for housing the grinder-pump (6) in its interior, the condenser (10), the level sensors (11) and the cleansing pipe (12), hiding said components when the device is installed, but easing access to them, should they need repairing, just by removing the outer cover (9).

3. Device according to claims 1 and 2, **characterised in that** the fixing means (26) of the grinder-pump to the receptacle (5) comprise at least two rods, arranged over the lateral face of the collecting chamber (1) facing the grinder-pump (6), each of which is adapted for rotating, in a vertical plane, on one of its ends, so that when they are in a normal position to said face, they rest on lugs (27) arranged on the surface of the grinder-pump (6) body and are anchored in respective parts (28) which, as if it were a hook, are arranged in the receptacle (5).

4. Device according to the previous claims, **characterised in that** the collecting chamber (1) base is essentially concave and **in that** it starts from the section of the outlet mouth (3) situated below the lowest point of said base, the collecting chamber (1) base being equipped with a semi-cylindrical protuberance (13), in the projecting direction of the outlet mouth (3), lower in length to the collecting chamber (1) base, through whose interior a closing element (22) moves, activated from the exterior of the collecting chamber (1) and adapted for completely plugging the outlet mouth (3) or leaving the through section free of any obstacle, allowing the residual waters to flow through it.

5. Device according to the previous claims, **characterised in that** the rear vertical flat surface (16) presents a vertical notch (29), adapted for receiving the fitting of the impulsion pipe (8) towards the exterior and in a vertical direction, so that it is completely inserted in the notch without projecting from the rear vertical flat surface (16), and **in that** the lateral walls of the device present respective cuts to allow the impulsion pipe (8) to pass through, thus the device is adapted to allow the extraction of residual waters through one of its sides or by its upper end, the rear surface of the device being adjacent to the wall where positioned.

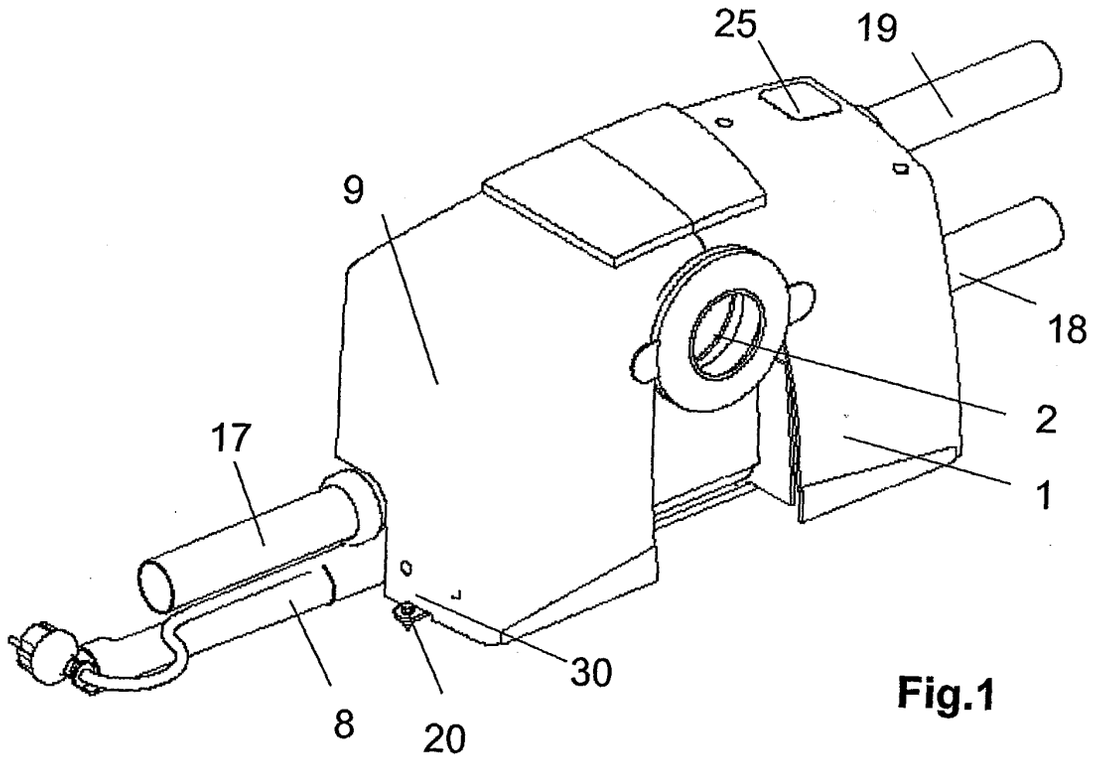

Fig.1

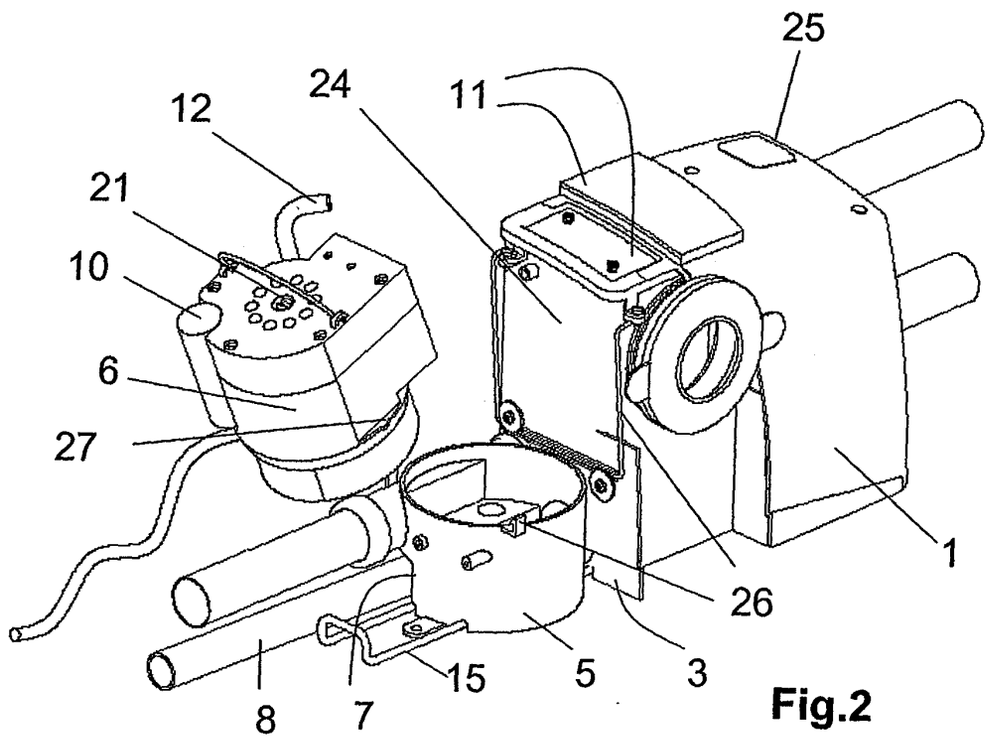

Fig.2

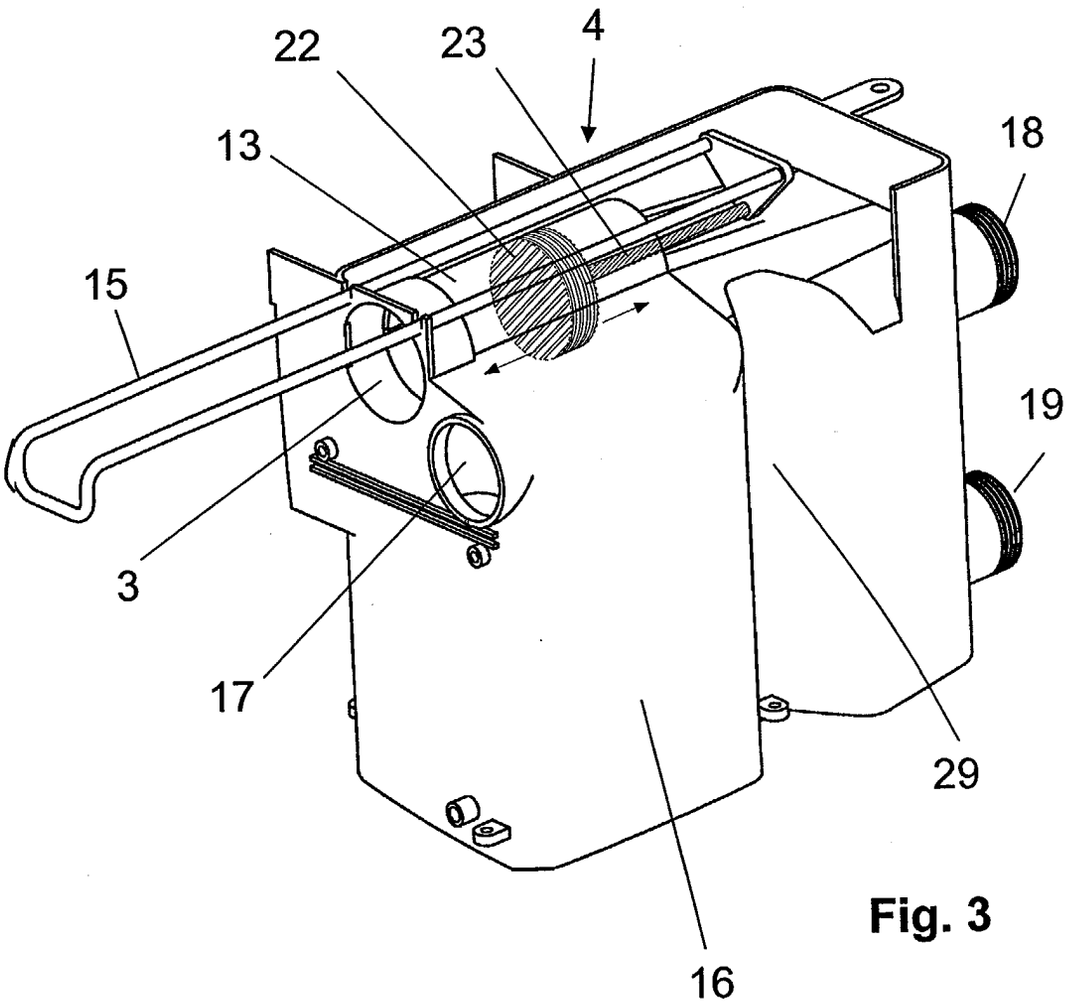

Fig. 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 38 0252

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	26 February 2004	Leher, V

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 38 0252

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