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(54) **Flat drain**

(57) The invention relates to an outlet connectable to the underside of a liquid container such as a wash-basin or a bath, comprising:
- a housing having on the top side an opening for connection to the liquid container;
- a valve for closing the outlet, which valve comprises an operating pin extending downward in the housing,
wherein
- the housing has a lateral outlet opening for lateral discharge of water.

The invention further relates to a combination of a liquid container, such as a wash-basin or a bath, and an outlet according to any of the foregoing claims, wherein the liquid container comprises:
- a bottom and a standing peripheral edge; and
- an outlet opening arranged in the bottom;
wherein the opening on the top side of the housing connects to the outlet opening of the liquid container and wherein the valve can be carried into the outlet opening by operating the operating pin for the purpose of closing the outlet opening.

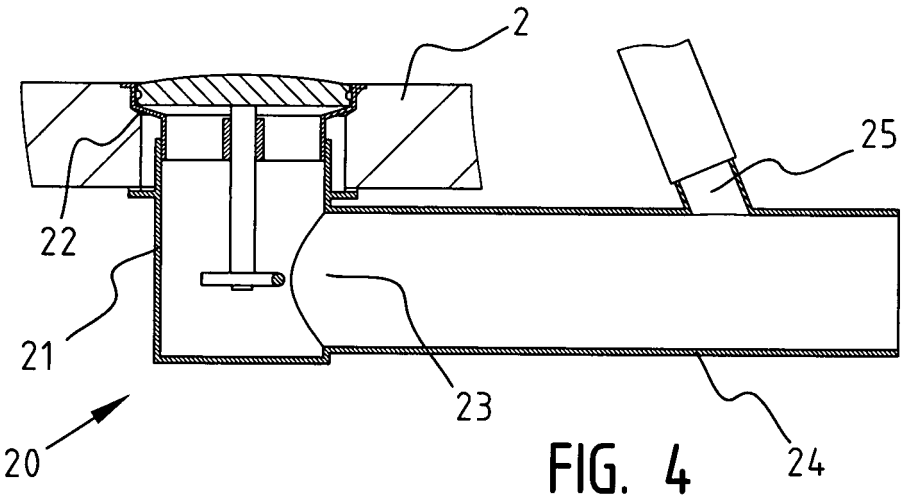


FIG. 4

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Description

[0001] The invention relates to an outlet connectable to the underside of a liquid container such as a wash-basin or a bath, comprising:

- a housing having on the top side an opening for connection to the liquid container;
- a valve for closing the outlet, which valve comprises an operating pin extending downward in the housing.

[0002] Such outlets are generally known nowadays and in fact form the standard for an outlet for a bath, wash-basin and the like. In these known outlets it is usual to connect to the underside of the housing an outlet pipe which is normally provided with a siphon or swan neck. As a result the space required on the underside of the liquid container is considerable. In the case of a bath this results in the bath having to be placed relatively high above the ground, while in the case of a wash-basin the space under the wash-basin cannot be utilized optimally and drawers under the wash-basin are even impossible.

[0003] CH-A-131 308 describes a wash-basin with a central outlet opening to which an outlet is connected, wherein the outlet pipe runs horizontally to the rear. Arranged in this outlet is a closing valve which can be operated at the front under the wash-basin by means of a lever. The outlet is however provided with a closing valve which is wholly unusable nowadays. This is because the great majority of wash-basins, baths and the like are adapted for a valve with vertical operating pin. Furthermore, in the case of a wash-basin according to the the Swiss publication a cabinet surround will make operation of the closing valve difficult. The doors of the cabinet surround will for instance first have to be opened before the closing valve can be operated.

[0004] DE-A-1 609 107 describes a wash-basin, wherein an outlet opening is arranged on the rear side of the wash-basin and wherein the outlet is integrated with the rear part of the wash-basin. The outlet is wholly accommodated in the ceramic of the wash-basin, whereby the outlet cannot be used separately for any random wash-basin. This outlet moreover has the drawback that the wash-basin must be placed far from the wall because space must be present for the outlet on the rear side of the wash-basin. In addition, this outlet has a normal opening on the underside on which a siphon is directly arranged.

[0005] It is now an object of the invention to provide an almost universally applicable outlet which at least partially avoids the above stated drawbacks.

[0006] This object is achieved with an outlet according to the invention which is characterized in that the housing has a lateral outlet opening for lateral discharge of water. Due to the lateral outlet the drained water is carried directly to the rear of the liquid container, so that the space under the liquid container can be maximally utilized. A possible siphon can then for instance be placed against the rear wall and it is no longer essential that it be placed directly under the housing with the valve therein. It hereby becomes possible to arrange for instance a drawer under a wash-basin.

[0007] A preferred embodiment of the outlet according to the invention comprises a control lever which protrudes through the housing and is coupled to the downward extending operating pin. Such a lever can then be easily coupled to a usual operating handle, which is for instance integrated into the tap.

[0008] According to another embodiment, there is arranged in the housing an overflow discharge opening which can be connected to the overflow opening of the liquid container. Arranged particularly in the case of baths and wash-basins is an overflow opening which prevents water flowing over the edge of the liquid container. This overflow opening is arranged just below the upper edge of the liquid container and is connected to the outlet. According to the invention this overflow opening of the liquid container can be coupled to the overflow discharge opening in the outlet.

[0009] In yet another embodiment of the outlet according to the invention the housing comprises at least two parts which can be screwed into each other such that the housing can be fixed to the liquid container. One part is herein placed from above via the liquid container into the outlet opening of the liquid container, while the other part is coupled from below to the first part. The outlet opening of the liquid container is thus clamped between the two parts and a good seal is obtained.

[0010] The outlet preferably further comprises a third housing part with the overflow discharge opening, which third housing part can be placed between the first two housing parts. The third housing part can thus be applied as desired, and an overflow discharge opening can be provided on the outlet if desired.

[0011] In another preferred embodiment of the outlet according to the invention a horizontal outlet pipe is connected to the lateral outlet opening. This horizontal outlet pipe preferably comprises a siphon. The advantage is that, due to the horizontal outlet pipe, the height of the siphon can remain limited. In a siphon it is the height of the water trap which is critical, and this must comply with legally set requirements. Now that the outlet pipe runs horizontally directly from the outlet, the height of the outlet pipe can already form part of the height of the siphon. The part of the siphon that protrudes under the horizontal outlet pipe can now be wholly utilized for the water trap.

[0012] The invention further comprises a combination of a liquid container, such as a wash-basin or a bath, and an outlet according to the invention, wherein the liquid container comprises:

- a bottom and a standing peripheral edge; and
- an outlet opening arranged in the bottom;

wherein the opening on the top side of the housing connects to the outlet opening of the liquid container and

wherein the valve can be carried into the outlet opening by operating the operating pin for the purpose of closing the outlet opening.

[0013] The combination preferably further comprises a control which is arranged on the liquid container and which is coupled to the operating pin of the valve for the purpose of displacing the valve between a closing position and a position allowing passage. This control can for instance be a control handle integrated into the tap, but can also be an operating knob in a bathtub.

[0014] In a further embodiment of the combination according to the invention the liquid container is arranged on a wall and comprises a control lever which is coupled to the operating pin of the valve, wherein the control lever extends substantially to the wall.

[0015] In addition, the lateral outlet opening is preferably also connected to a horizontal outlet pipe which likewise extends substantially to the wall. A minimum amount of space is hereby used under the wash-basin, and both operating pin and outlet pipe run directly to the rear wall so that the space under the wash-basin can be optimally utilized. Particularly in the case of people restricted to a wheelchair this can be very advantageous since they can move easily under the wash-basin without being impeded by the outlet pipe or control lever.

[0016] In a preferred embodiment of the combination according to the invention the control lever first extends away from the wall and then bends back and extends towards the wall. A part of the control lever is hereby directed forward, whereby the valve can also be operated easily under the liquid container. This is a great advantage particularly for people in a wheelchair. It is after all usual to arrange the tap in a wash-basin at the rear against the wall, and moreover to also arrange the operating knob for the valve there. Such an operating knob is normally difficult to reach from a wheelchair. By now having a part of the control lever first protrude forward, a person in a wheelchair can hereby easily operate the valve.

[0017] These and other features of the invention are further elucidated with reference to the accompanying drawings.

[0018] Figure 1 shows a perspective view of a combination according to the invention.

[0019] Figure 2 shows a detail of the combination according to figure 1.

[0020] Figures 3A and 3B show in cross-section the outlet of figure 1 in two positions.

[0021] Figure 4 shows in cross-section a second embodiment of the outlet according to the invention.

[0022] Figure 5 shows a third embodiment of the outlet according to the invention.

[0023] Figures 6-8 show variations of the position of the control lever on the outlet.

[0024] Figure 1 shows an embodiment of a combination 1 according to the invention. This combination 1 has a wash-basin 2 and an outlet 3. Further arranged on wash-basin 2 is a tap 4 with an operating pin 5 which is integrated therein and which can operate the control lever 7 of outlet 3 via a rod assembly 6.

[0025] Figure 2 shows outlet 3 with partly cut-away parts. Arranged in wash-basin 2 is an outlet opening 8 in which the valve 9 of outlet 3 is placed. Valve 9 has an operating pin 10 which is coupled to control lever 7.

[0026] Figure 3A shows a cross-sectional view of outlet 3. Outlet 3 has a housing consisting of a first housing part 11, a second housing part 12 which is placed in opening 8 of wash-basin 2, and a third housing part 13 in which an overflow discharge opening 14 is arranged.

[0027] The first housing part 11 is further provided with a lateral outlet opening 15 on which is arranged an outlet pipe 16 which runs off horizontally. This outlet pipe then extends up to the wall to which wash-basin 2 is fixed. The second housing part 12 is arranged from the top in the opening 8 of wash-basin 2 and subsequently screwed together with the third housing part 13 so that wash-basin 2 is clamped between the two housing parts 12, 13 and a good seal is thus obtained. The overflow discharge opening 14 is connected to a hose 17 connected to overflow opening 18 in wash-basin 2 (see figure 1).

[0028] Valve 9 is shown in closed position in this figure 3A. In figure 3B control lever 7 is tilted so that operating pin 10 of valve 9 is pressed upward and valve 9 is thereby also moved upward so that opening 8 in wash-basin 2 is left clear and water can be drained from wash-basin 2 via the horizontal outlet pipe 16.

[0029] Figure 4 shows a variant of an outlet 20 according to the invention. This outlet 20 has the first housing part 21 and a second housing part 22 which are mutually connected. The first housing part 21 has a lateral outlet opening 23 on which a horizontally running outlet pipe 24 is arranged. An overflow discharge opening 25 is arranged on this horizontal outlet pipe 24. Owing to the lateral outlet opening 23 it is possible to arrange the horizontal outlet pipe 24 directly below the wash-basin and it is only the diameter necessary for outlet pipe 24 which defines the space required.

[0030] Figure 5 shows a third variant of an outlet 30 according to the invention. Figure 5 shows only the first housing part 31 which is provided with a lateral outlet opening 32. A siphon 33 is arranged connecting directly thereto. The height h of the water trap is determined wholly by the part of siphon 33 protruding on the underside. The space required for siphon 33 is thus minimized.

[0031] Figures 6-8 show different variants of the arrangement of a control lever 40, 41, 42 and the horizontally running outlet pipe 43, 44 and 45. Figures 6-8 are shown in top view.

Claims

1. Outlet connectable to the underside of a liquid container such as a wash-basin or a bath, comprising:

- a housing having on the top side an opening

for connection to the liquid container;
- a valve for closing the outlet, which valve comprises an operating pin extending downward in the housing,

characterized in that

- the housing has a lateral outlet opening for lateral discharge of water.

2. Outlet as claimed in claim 1, comprising a control lever which protrudes through the housing and is coupled to the downward extending operating pin.

3. Outlet as claimed in claim 1 or 2, wherein there is arranged in the housing an overflow discharge opening which can be connected to the overflow opening of the liquid container.

4. Outlet as claimed in any of the foregoing claims, wherein the housing comprises at least two parts which can be screwed into each other such that the housing can be fixed to the liquid container.

5. Outlet as claimed in claims 3 and 4, comprising a third housing part with the overflow discharge opening, which third housing part can be placed between the first two housing parts.

6. Outlet as claimed in any of the foregoing claims, wherein a horizontal outlet pipe is connected to the lateral outlet opening.

7. Outlet as claimed in claim 6, wherein the horizontal outlet pipe comprises a siphon.

8. Combination of a liquid container, such as a washbasin or a bath, and an outlet as claimed in any of the foregoing claims, wherein the liquid container comprises:

- a bottom and a standing peripheral edge; and
- an outlet opening arranged in the bottom;

wherein the opening on the top side of the housing connects to the outlet opening of the liquid container and wherein the valve can be carried into the outlet opening by operating the operating pin for the purpose of closing the outlet opening.

9. Combination as claimed in claim 8, further comprising a control which is arranged on the liquid container and which is coupled to the operating pin of the valve for the purpose of displacing the valve between a closing position and a position allowing passage.

10. Combination as claimed in claim 8 or 9, wherein the liquid container is arranged on a wall and comprises a control lever which is coupled to the operating pin of the valve, wherein the control lever extends substantially to the wall.

11. Combination as claimed in claim 10, wherein a horizontal outlet pipe which extends substantially to the wall is connected to the lateral outlet opening.

12. Combination as claimed in claim 10 or 11, wherein the control lever first extends away from the wall and then bends back and extends towards the wall.

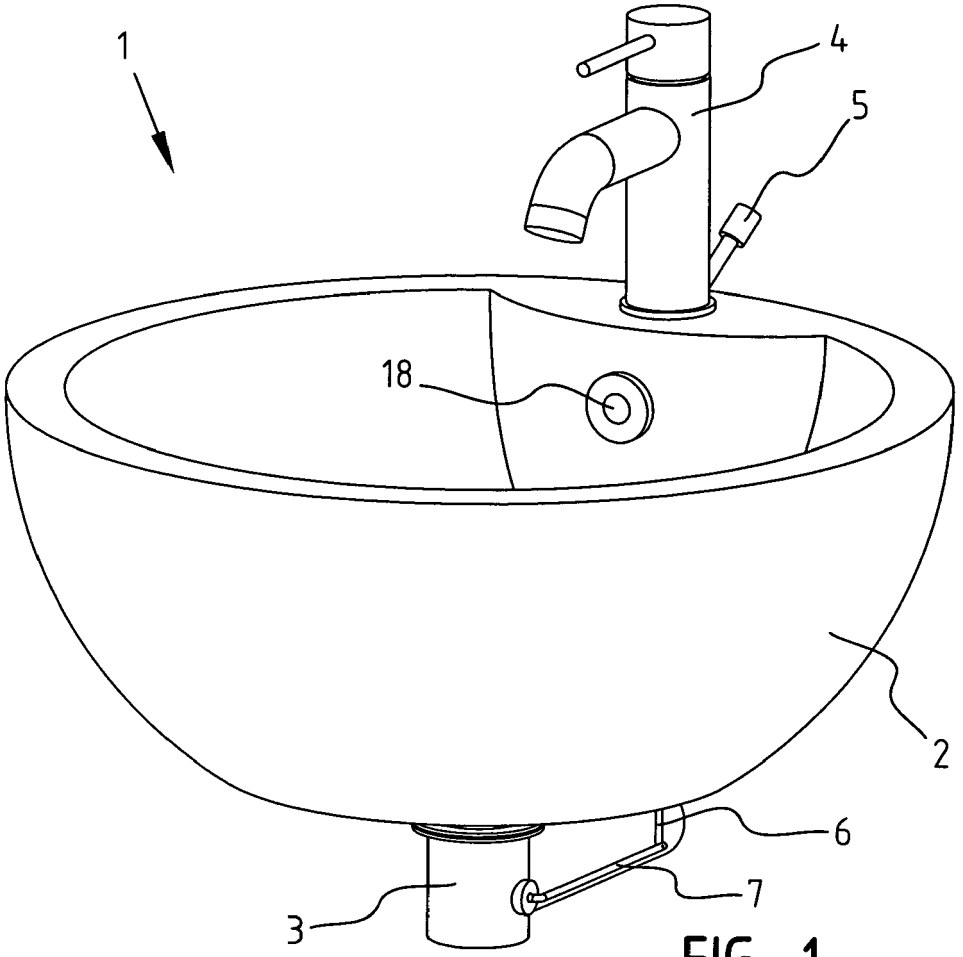


FIG. 1

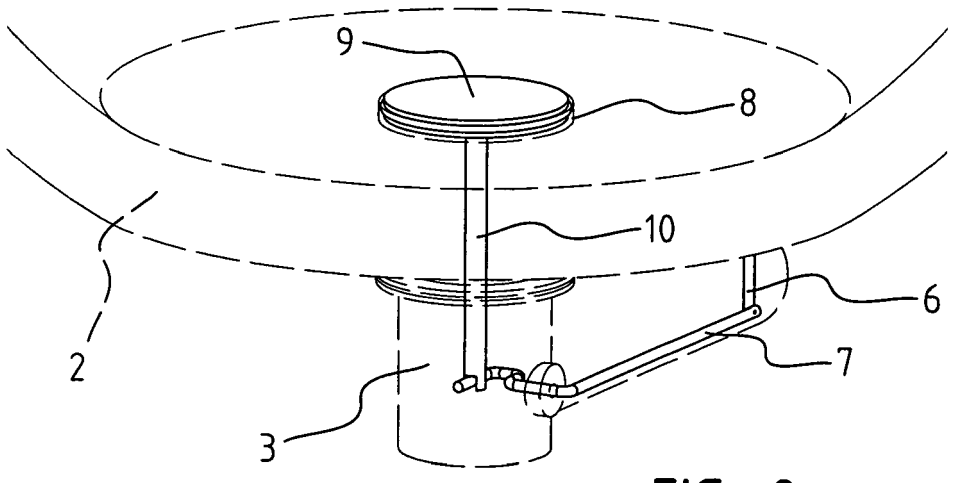


FIG. 2

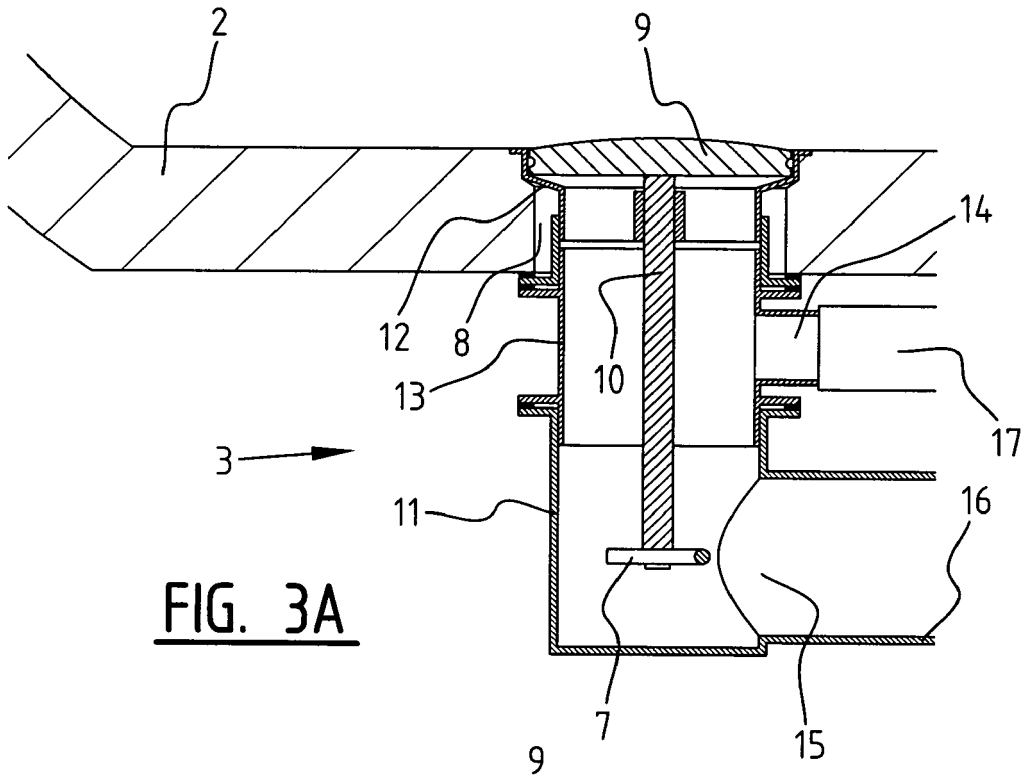


FIG. 3A

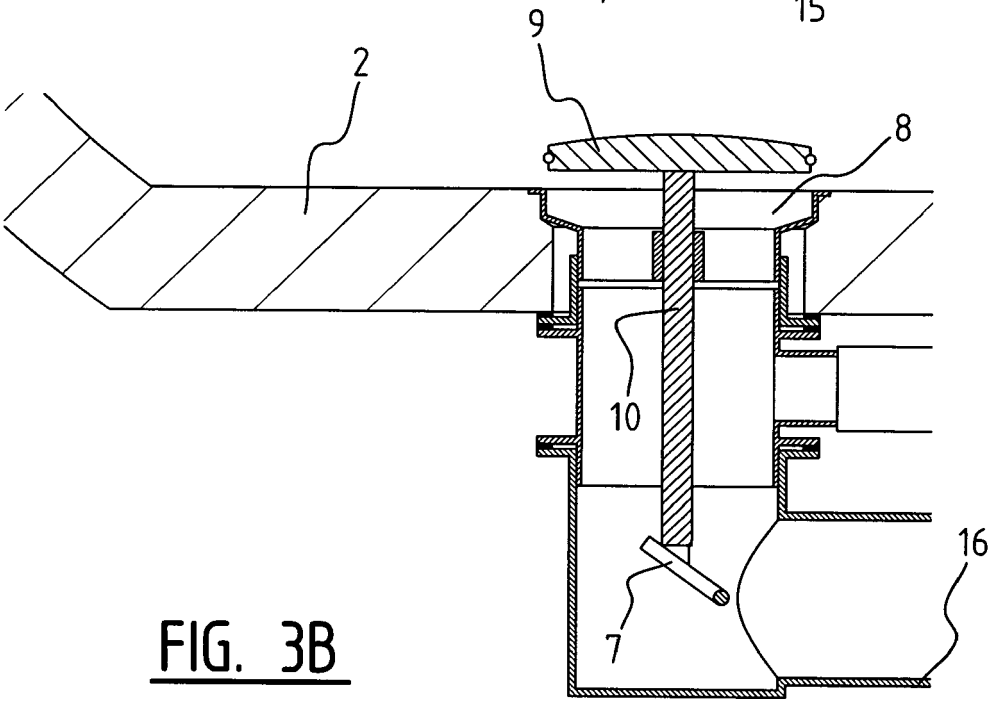


FIG. 3B

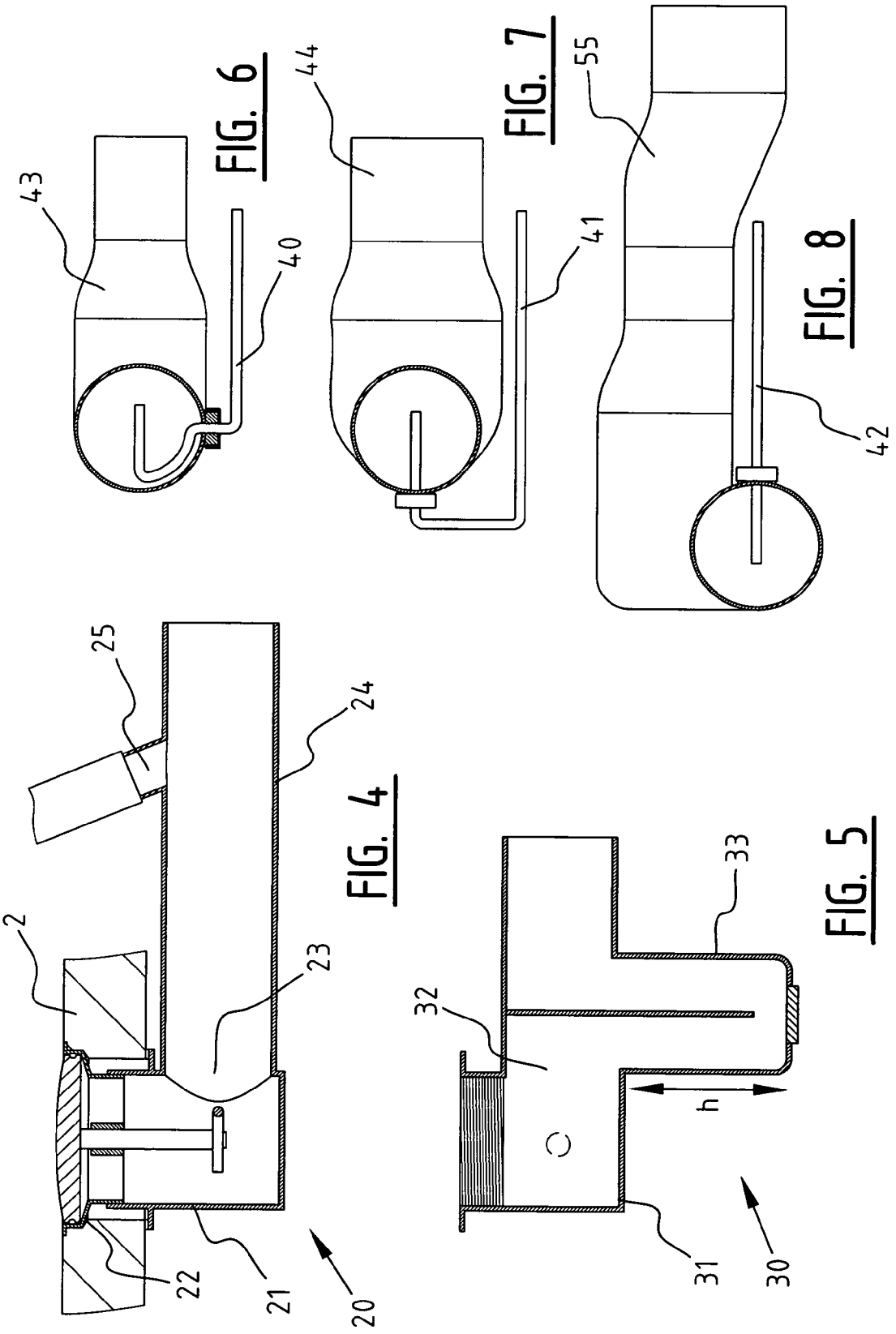


FIG. 6

FIG. 7

FIG. 8

FIG. 4

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 07 07 5500

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 202 12 292 U1 (FRANZ VIEGENER II GMBH & CO KG [DE]) 18 December 2003 (2003-12-18) * paragraph [0013] - paragraph [0017]; figures *	1-9	INV. E03C1/23
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			TECHNICAL FIELDS SEARCHED (IPC) E03C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 October 2007	De Coene, Petrus

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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