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(54) **Swimming pool improvement**

(57) An overflow swimming pool comprises a first overflow wall (200), a second wall (201) opposite thereto and side walls (202); the overflow wall (200) has an edge (20) arranged at a lower level with respect to the edges (21, 22) of the other walls (201, 202), so that water may flow out of the overflow edge (20) and pour itself into accumulation means (3, 5), the edge (20) being arranged tilted with respect to the free surface of the water in said pool, and having an end (23), facing the pool (2), located at a lower level with respect to an opposite end (24), facing an inlet section (300) of the accumulation means.

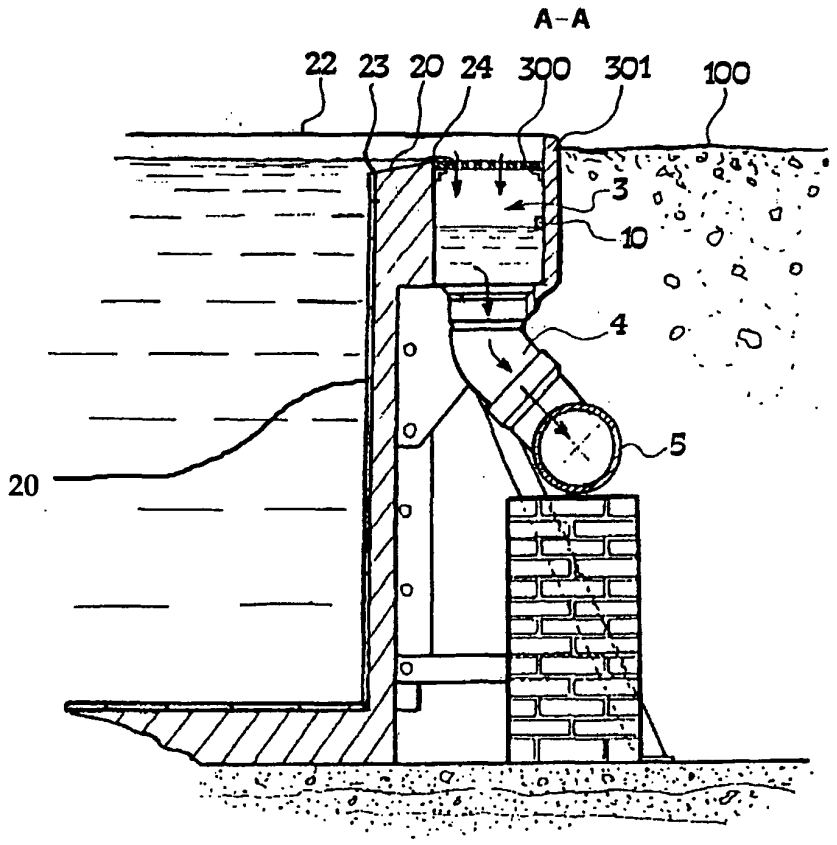

FIG.2

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Description

[0001] The present invention refers to a swimming facility of overflow type.

[0002] As it is known, there are a number of structures for in-water activities and in particular for swimming practise.

[0003] In particular, the facilities in which usually these activities take place comprise a water recirculation system allowing a continuous water interchange and purification.

[0004] In such recirculation systems suitable drains are used, sending water into an accumulation tank and to a water treatment unit received in the latter. Upon carrying out a purification treatment, it is inletted again into the pool by means of a pumping system.

[0005] Among the various configurations used, there is a typology of so-called "overflow" facilities, in which pool draining occurs by water overflowing the edges of the pool itself.

[0006] In other words, in such facilities the pool is continually filled until the water overflows the edges, thereby being drained.

[0007] In this typology of swimming pools it is required, unlike in the traditional ones, the presence of two different accumulation tanks for the water, a first one necessarily located at the pool edge, into which the water overflowing the edges pours itself according to what has been described above.

[0008] The second accumulation tank can instead be located at any position; however, to contain spaces and dimensions, solutions have been studied in which such a second tank has a tubular shape and is arranged along the perimeter of the swimming pool, or optionally along only a portion thereof.

[0009] However, this search for compact solutions has led to limit the efficiency of the overflow system, which is not always efficient in the recirculation of the water; this is so since, above all in the different situations in which the pool is used, there may ensue ponding situations, or situations in which the flow rate does not ensure a sufficient interchange.

[0010] Moreover, known-art overflow swimming facilities entail the further drawback that the related draining and filtering system do not produce an optimal recirculation - and therefore an interchange - of the water at the primary pool. In fact, in the latter there remain water pockets uninvolved in the recirculation, i.e. pool zones in which water basically is not interchanged.

[0011] Hence, the technical problem underlying the present invention is to provide an overflow swimming facility overcoming the drawbacks mentioned above with reference to the known art.

[0012] Such a problem is solved by a facility according to claim 1.

[0013] The present invention provides several relevant advantages. The main advantage lies in that the configuration of the overflow system, and in general of the recirculation system, allows an optimal water interchange, still with a solution having particularly reasonable dimensions.

[0014] This and other advantages, as well as the features and the operation modes of the present invention will be made apparent from the following detailed description of some embodiments thereof, given by way of example and without limitative purposes. Reference will be made to the figures of the annexed drawings, wherein:

figures 1A and 1B show, according to two different perspective views, a first embodiment of the swimming facility according to the present invention;
figure 2 shows a sectional view of the facility of figure 1B taken along line A-A thereof; and
figure 3 shows a plan view of the facility of figure 1B.

[0015] Initially referring to Figures 1A and 1B, a swimming facility 1 of overflow type, that hereinafter may simply be referred to as overflow swimming pool, comprises a primary pool 2 for swimming practise. In the present embodiment such a pool 2 has a substantially rectangular plan.

[0016] The pool 2 is defined by a bottom 204, a first wall 200 to which it is associated an overflow channel 3, and that therefore will hereinafter be referred to as overflow wall 200, by a second wall 201 opposite thereto and additional side walls 202.

[0017] The walls 200, 201 and 202 have respective edges 20, 21, 22 defining the perimeter of the pool 2.

[0018] Therefore, referring to figure 2, the edge 20 of the wall to which it is associated the overflow channel is positioned at a lower level with respect to the other edges 21 and 22.

[0019] Moreover, the overflow channel 3, adjacent to the overflow wall 200, comprises an inlet section 300, which in the present embodiment is constituted by a grating. The grating prevents the inletting of large-sized items, in particular leaves, into the overflow channel without hindering the normal flow of water.

[0020] Moreover, the inlet section 300 is arranged flush with the edge 20, or optionally therebelow.

[0021] Such a configuration conveniently allows to implement the pool drain, for recirculation purposes, at the sole edge 20 of the pool.

[0022] In fact, water, upon reaching the level of the edge 20, will begin to flow out of the pool, by overflowing the edge 20 itself until getting to the grating 300 and pouring itself into the channel 3. Vice versa, the other edges 21 and 22, being located at a higher level with respect to the overflow edge 20, allow no water overflowing from the pool.

[0023] More precisely, such edges may be flush with the ground 100 surrounding the pool, or slightly thereabove.

[0024] However, in order to improve the flow of water inside the overflow channel, the edge 20 is not arranged parallel to the free surface of the pool water, but rather

tilted with respect thereto.

[0025] More precisely, and referring to figure 2, the edge 20 is arranged rising to the overflow channel. In other words, an end 23 of the edge 20 facing the pool 2 is at a lower level with respect to an opposite end 24, facing the drain channel.

[0026] Such a feature proves particularly advantageous, as it allows the optimal adjustment of the flow of water inside the overflow channel 3 in the different situations of pool use and to prevent backwaters possibly occurring in swimming pools implemented according to the known art.

[0027] In fact, thus when the swimming pool is not in use a regular flow of water to the overflow channel occurs anyhow, as the pool will usually be filled up to the end 24 facing the channel 3; thus, a minimal flow will suffice to allow the interchange.

[0028] Therefore, when the pool is being used and, for obvious reasons, its waters are accordingly choppier, it is possible to attain a higher interchange flow; this is so since, thanks to the wave motion occurring thereby, a higher flow rate of water will overflow the end 24.

[0029] Hence, the inlet section 300 of the overflow channel is flush with the end 24; the water, upon having risen above the edge 20, can therefore lap the grating 300 and enter the channel.

[0030] Such a configuration also allows to always keep the inlet section lapped, preventing ponding in that zone as well.

[0031] Referring to figures 1B and 3, the overflow channel 3 develops parallelly to the edge of the first wall 200 of the pool 2, and implements an accumulation tank that will be referred to as secondary.

[0032] Hence, as more clearly shown in figure 2, the bottom overflow channel 3 is located at a lower level with respect to the edge 20 of the pool 2.

[0033] Moreover, the overflow channel in turn comprises an edge 301 preventing the water pouring itself out of the edge 20 from exiting the swimming pool, reaching the surrounding ground 100.

[0034] Moreover, at the overflow channel 3 there may be provided means (not shown) for the controlled contribution of replenishment water from the water supply mains.

[0035] During the use of the facility, the overflow channel keeps partially filled, thereby implementing said accumulation tank.

[0036] The overflow channel 3 has a plurality of outlets, each associated to a respective fall pipe 4.

[0037] By means of the drain pipes 4, the water is inletted from the overflow channel 3 to a primary accumulation tank 5.

[0038] The primary accumulation tank 5 is implemented by a duct located on the same side 20 of the overflow channel 3 and arranged at a lower level with respect to the latter. The duct 5 develops it also parallelly to the related edge 20 of the pool 2, and therefore parallelly to the overflow channel 3.

[0039] The primary accumulation tank 5 may be arranged outside of the masonry constituting the pool 2 or embedded (i.e., integral) therein.

[0040] Hence, it will be understood that the primary accumulation tank 5 and the overflow channel 3 implement means for accumulating the water overflowing the pool 2 at the edge 20 of the latter.

[0041] Both the overflow channel 3 and the primary accumulation tank 5 are preferably made of plastics material, and their specific flow rate is selected depending on the dimensions of the pool 2.

[0042] As it is shown in figure 3, the primary accumulation tank 5 is connected, by suitable pipes 6, to a water treatment unit 7. The latter comprises means for filtering the water itself and may be located near the pool 2. The treatment unit 7 may be implemented according to conventional modes and it is typically in the form of a sump.

[0043] Moreover, the facility 1 comprises means for inletting again the water, treated in the treatment unit 7, into the pool 2. Such means comprises first of all one or more water recirculation pumps, arranged, e.g., at the treatment unit 7 and connected directly upstream of the primary accumulation tank 5. In addition, said inletting means comprises return pipes 8 connecting the unit 7 to the pool 2 and a plurality of outlets 9 for inletting the treated water into the pool 2, said outlets being arranged below the free surface of the water at the second wall 201 of the pool 2 itself.

[0044] The arrows A of Figure 3 indicate the direction and the sense of the flow of water from the pool 2 to the treatment unit 7, whereas the arrows B always in Figure 2 indicate the direction and the sense of the flow of water delivered by the unit 7, i.e. by the outlets 9, into the pool 2.

[0045] It will presently be better appreciated that the fact that water delivery from the treatment unit 7 to the pool 2 is implemented by outlets 9, all arranged at the same wall 201 of the pool 2, and that the accumulation means 3 and 5 are arranged on the side 20 opposite to that of said outlets 9, causes, in operation, the onset into the pool 2 of a regular flow of water from the outlets 9 to the overflow channel 3. Such a flow involves basically the entire extension of the pool 2 itself, i.e., all of the zones thereof, preventing the permanence of water pockets uninvolved by the interchange. To attain such a result, the outlets 9 involve the entire transverse extension of the second wall 201 of the pool 2, i.e. involve said wall 201 for an extension basically equal to the extension of the edge facing onto the wall 201 itself. Moreover, for a higher flow efficiency, preferably the delivery outlets 9 are arranged basically horizontally aligned onto the wall 201 and equidistant the one from the other.

[0046] Preferably, the overflow channel 3 and/or the primary accumulation tank 5 house sensors 10 (schematically shown in figure 2) for controlling the facility 1, optionally referring to a common (shared) local or central control unit. For instance, the channel 3 and/or the tank 5 may house level sensors apt to command the replenishment of water from the mains and/or the lock of such

a water inletting. In addition, the same or additional level sensors may command the start or the lock of the water recirculation pumps.

[0047] Moreover, the facility 1 provides means 11 for sucking up mud, shown in figure 3, comprising a pipe 12 having a suction inlet 13 arranged at a long side 22 of the pool 2, i.e. at one of the side walls 202. The direction and sense of suction are those of arrow C in figure 3.

[0048] The facility 1 further comprises means 14 for sucking up water from the bottom of the pool 2.

[0049] Also the mud sucking means 11 and the water sucking means 14 refer to the treatment unit 7, being connected thereto by suitable ducts, denoted by 111 and 141, respectively, in figure 3.

[0050] As the means 11 and 14 are implemented according to conventional modes, well-known to a person skilled in the art, a further description thereof will be omitted.

[0051] By now, it will be understood that the overflow channel 3 also serves as expansion tank of the facility 1.

[0052] Moreover, the overflow channel 3 may allow the connection to an overflow pipe for draining excess water into a sewage network when the water level into the channel itself exceeds a predetermined threshold.

[0053] In addition, it will be understood that the primary accumulation tank 5 is also for assuring a sufficient volume of water to the recirculation pump or pumps.

[0054] Moreover, the structure of the facility described hereto is extremely compact and of easier and more rapid implementation with respect to the known systems. In particular, the fact of providing primary and secondary accumulation tanks arranged at only one side of the pool reduces the extent of the excavation and masonry required to install the facility. This also entails a lesser environmental impact of the facility itself.

[0055] Such a structure also allows a facilitated running and maintenance of the swimming facility. In particular, the treatment unit and the associated water recirculation means are of easier implementation and access with respect to known-art systems, as they can be located near the pool.

[0056] Moreover, the disclosed improvements allow also to turn other swimming pools into overflow ones.

[0057] The present invention has hereto been described with reference to preferred embodiments thereof. It is understood that there could be other embodiments referable to the same inventive kernel, all falling within the protective scope of the claims set forth hereinafter.

Claims

1. A swimming facility, comprising:

- A pool (2) apt to house water for the practise of swimming activities, and defined by a first overflow wall (200), a second wall (201) opposite to said first wall, and by additional side walls (202), wherein said overflow wall (200) has an overflow edge (20) arranged at a lower level with respect to edges (21, 22) of said second wall (201) and of said further side walls (202);
- Water accumulation means (3, 5), associated to said overflow edge (20) and comprising an inlet section (300) apt to receive water overflowing said pool (2) at said overflow edge (20);
- means (9) for inletting again the water into said pool (2) located only at said second wall (201), so as to generate a flow of water from said second wall (201) to said overflow edge (20) involving basically the entire extension of the pool (2) itself,

wherein said overflow edge (20) is arranged tilted with respect to the free surface of the water in said pool (2), having an end (23), facing said pool (2), located at a lower level with respect to an opposite end (24), facing said inlet section (300).

2. The facility (1) according to the preceding claim, wherein said opposite end (24) is arranged basically flush with said inlet section (300).

3. The facility (1) according to the preceding claim, wherein said accumulation means comprises an overflow channel (3) extending parallelly to said edge (20).

4. The facility (1) according to the preceding claim, wherein said accumulation means comprises a primary accumulation tank (5) connected to said overflow channel (3) and arranged at a lower level with respect to the latter.

5. The facility (1) according to the preceding claim, wherein said primary accumulation tank (5) extends parallelly to said edge (20).

6. The facility (1) according to claim 4 or 5, wherein said primary accumulation tank (5) is implemented by a tubular duct.

7. The facility (1) according to one of the preceding claims, wherein said inletting means comprises a grating (300).

8. The facility (1) according to any one of the preceding claims, wherein said accumulation means (3, 5) is apt to connect to an overflow pipe so as to allow the draining of the excess water into a sewage network.

9. The facility (1) according to any one of the preceding claims, comprising means for the controlled contribution of replenishment water from water supply mains, arranged at said accumulation means (3).

10. The facility (1) according to any one of the preceding claims, comprising level sensors (10), arranged at accumulation means (3, 5).

11. The facility (1) according to any one of the preceding claims, wherein said pool (2) has a substantially rectangular plan.

12. The facility (1) according to the preceding claim, wherein said overflow wall (200) and said opposite wall (201) correspond to a respective side of said pool (2).

13. The facility (1) according to any one of the preceding claims, comprising a water treatment unit (7) for treating the water collected in said accumulation means (3, 5).

14. The facility (1) according to any one of the preceding claims, comprising means (11) for sucking up mud from said pool (2).

15. The facility (1) according to the preceding claim, wherein said mud sucking means (11) is apt to suck up the mud at said side walls (202) of said pool (2).

16. The facility (1) according to any one of the preceding claims, comprising means (14) for sucking up water from the bottom of said pool (2).

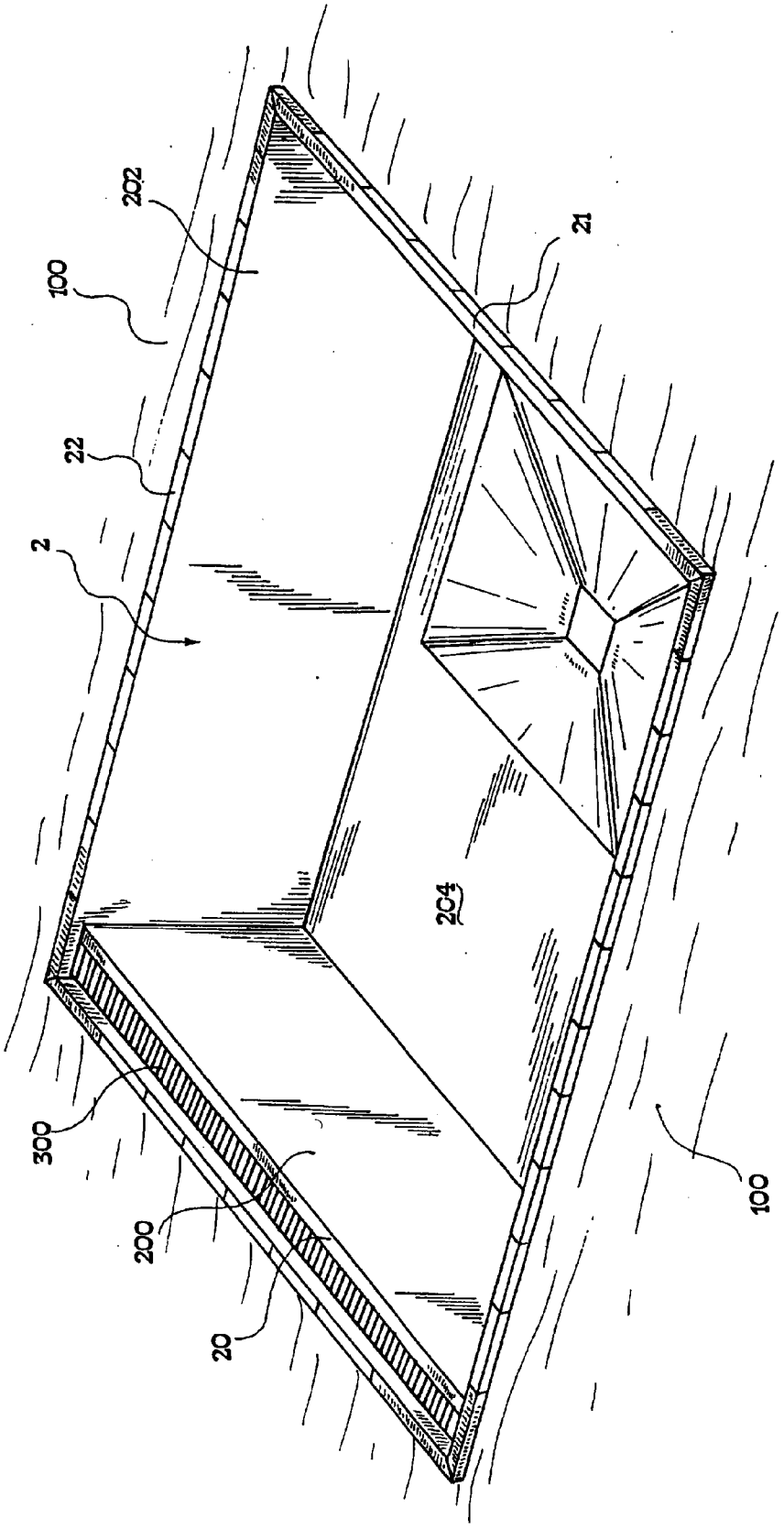

FIG.1A

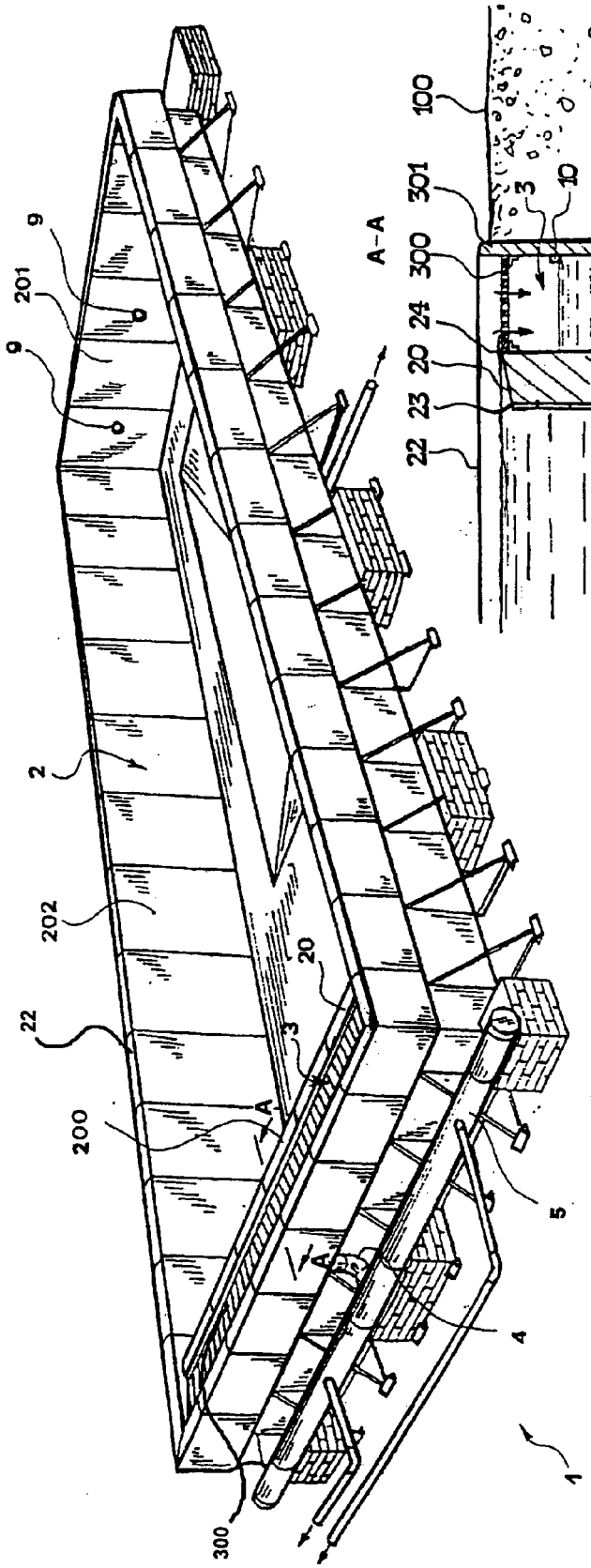
9
201
9
2
202
22
200
A
A
20
3
5
4
1
300

FIG.1B

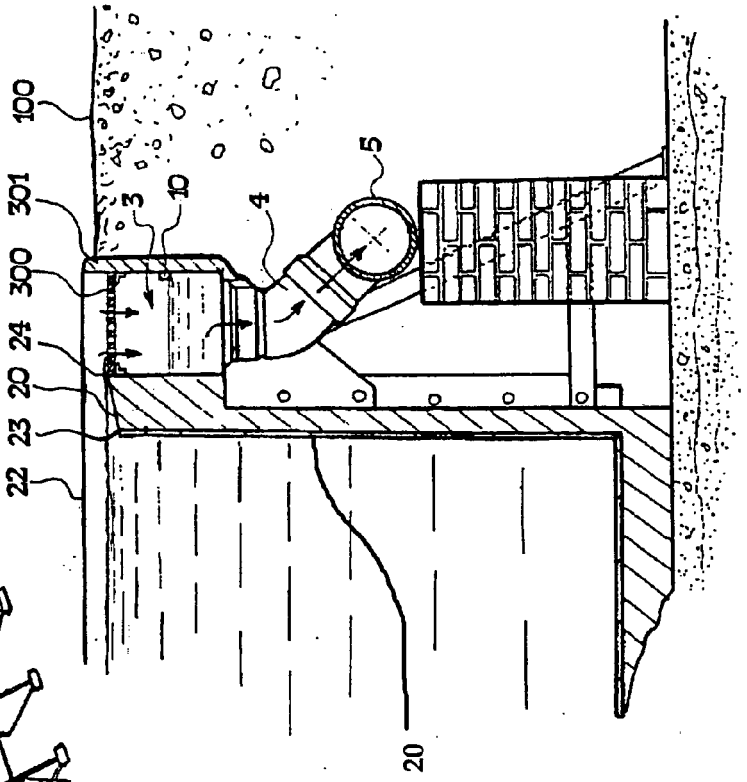
A-A
100
301
3
10
4
5
300
24
20
23
22
20

FIG.2

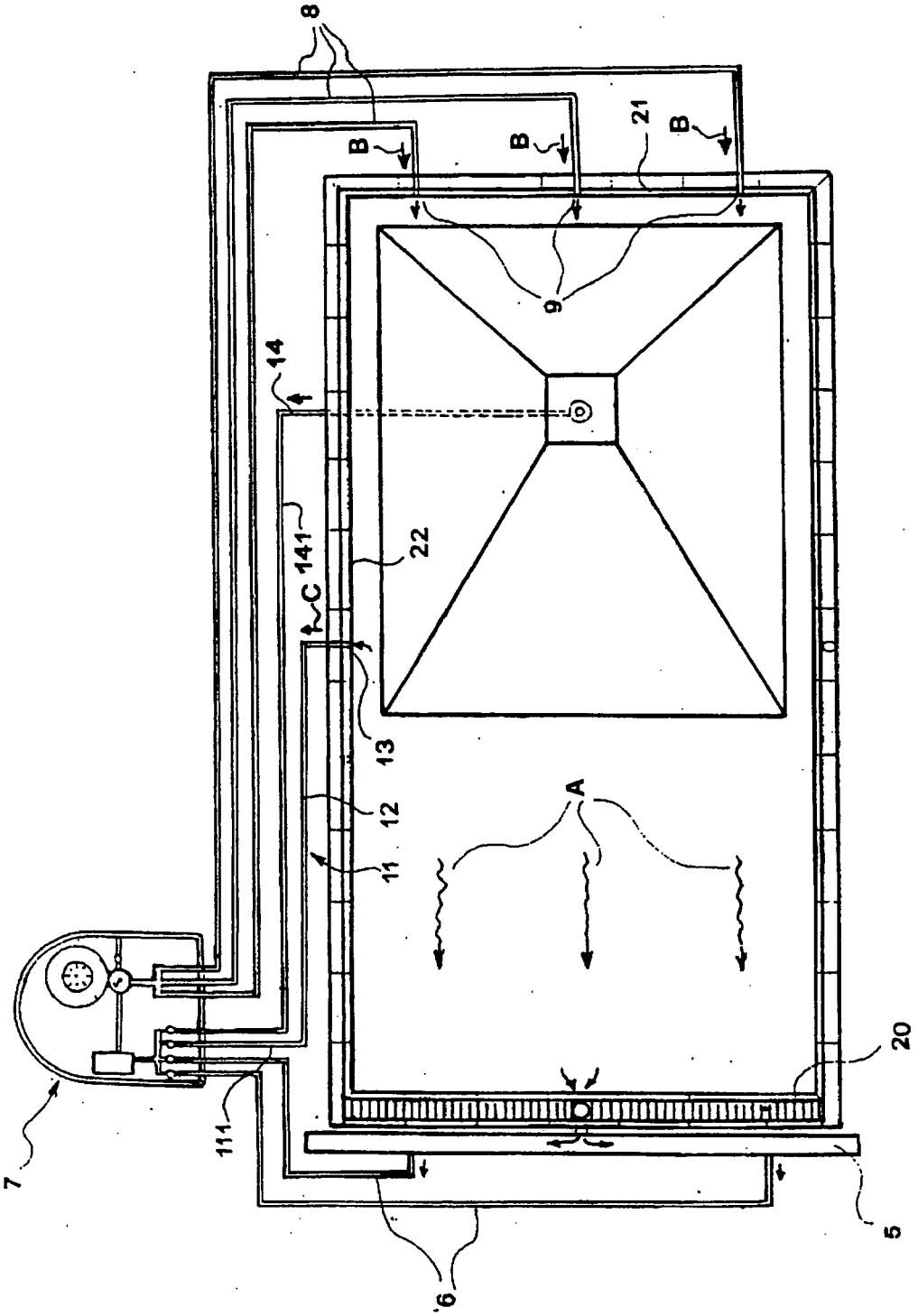

FIG.3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 42 5063

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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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
The Hague	23 June 2006	Delzor, F

CATEGORY OF CITED DOCUMENTS

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23-06-2006

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