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(54) Swimming pool

(57) A swimming pool has means for directing a jet of water (J) across the water surface towards a side of the pool to form a counter current (C) against a swimmer, and means for relieving back-pressure at the downstream end of the counter current. The means for relieving back-pressure may comprises a weir (3) over which the jet of water flows. A conduit defines a return flow path (4), and extends towards the upstream end of the jet (J) to facilitate flow of water back towards a pump (1) at the upstream end of the jet. A discrete water level below the water lever in the main body of the pool may be defined by water on the far side of the weir (3). In a variant, a downward transition in water level from the water in the main body of the pool may be provided by water flowing smoothly over the weir (3).

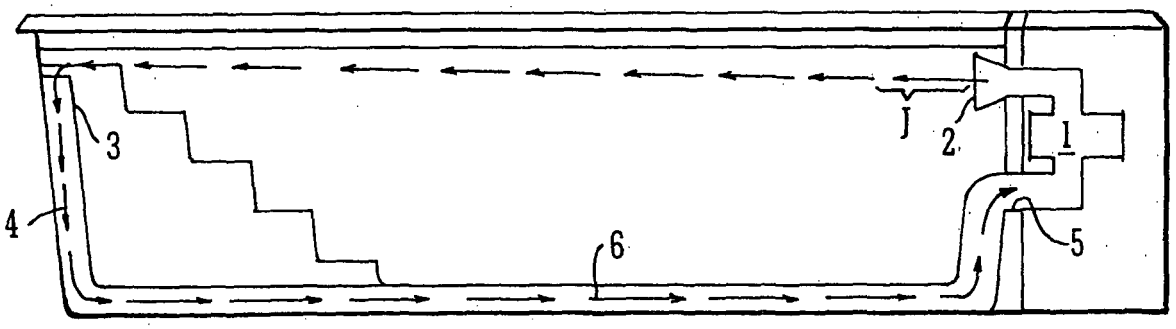

FIG. 2

EP 1 808 554 A2

Description

[0001] The present invention relates to a swimming pool comprising means for providing a counter current against which a user can swim.

[0002] A conventional swimming pool with the above function includes means for forming a jet of water in the pool. However in such a swimming pool, the downstream end of the jet normally bounces back towards the upstream end of the jet (as described below in connection with Figure 1) so that significant turbulence occurs at the downstream end of the jet. This reduces the strength of the counter current.

[0003] An object of the present invention is to provide a swimming pool which alleviates or overcomes the above disadvantage.

[0004] The present invention provides a swimming pool having means for directing a flow of water across the water surface towards a side of the pool to form a counter current against a swimmer, and means for relieving back-pressure at the downstream end of the counter current.

[0005] Preferably the flow directing means is arranged in use to form at least one jet.

[0006] In one embodiment, the means for relieving back-pressure comprises a weir over which the counter current flows, said weir being spaced apart from the upstream end of the counter current. Preferably in use water on the far side of the weir defines a discrete water level below the water lever in the main body of the pool.

[0007] Preferably in use at least some water flows smoothly over the weir which provides a downward transition in water level from the water in the main body of the pool.

[0008] Further preferred features are defined in the dependent claims.

[0009] Preferred embodiments of the invention are described below by way of example only with reference to Figures 1 to 2B of the accompanying drawings, wherein:

Figure 1 is a plan view of a swimming pool in accordance with the present invention;

Figure 2 is a longitudinal cross-section taken on II-II of Figure 1;

Figure 2A is an enlarged partial longitudinal cross-sectional view of one side of the swimming pool of Figure 2 showing one mode of operation thereof;

Figure 2B is an enlarged partial longitudinal cross-sectional view of one side of the swimming pool of Figure 2 showing another mode of operation thereof.

[0010] Referring to Figure 1, which is a plan view of a preferred embodiment of the invention, the swimming pool comprises a pump 1 on one end, and at least one horizontally directed nozzle 2 at the outlet port thereof slightly below the water surface for directing a jet of water J across the water surface towards the left-hand end of the pool to form a counter current C against a swimmer swimming from left to right.

[0011] Preferably the speed of the pump 1 is controllable to provide variable resistance against the swimmer. The flow rate is suitably from 7.5 litres/second (100 gallons/minute) to 260 litres/second (3 500 gallons/minute), typically resulting in the counter current C having a speed of 13 kilometres/hour (8 miles per hour). In a variant, more than one nozzle can be provided.

[0012] As described thus far, the swimming pool of Figure 1 is conventional and normally the counter current C would bounce off the end wall of the pool to generate back-pressure, causing reverse current C' and turbulence which would weaken counter current C.

[0013] However as best seen in Figure 2, the swimming pool comprises a return flow path 4 and a weir 3 spaced apart from the upstream end of the jet for relieving back-pressure at the downstream end of the jet J. The return flow path 4 is defined by a conduit which extends from the downstream end of the jet back towards an inlet port 5 of the pump 1. This facilitates flow of water back to the pump by separating return flow 6 from the jet J. The entrance of the return flow path 4 is formed at the downstream end of the jet, the intermediate part of the return flow path is formed underneath the pool and the exit of the return flow path extends to the pump end. A wall of the conduit is constituted by the floor of the swimming pool (see also Figures 2A and 2B). The inlet port 5 of the pump 1 is coupled to the exit of the return flow path to apply suction to the return flow path.

[0014] As best seen in Figure 2A, the conduit can be so arranged that water in the return flow path 4 has a discrete level below the water in the main body of the pool so that water from the downstream end of the jet can flow over the weir 3 and cascades down to the return flow path. Therefore the turbulence at the downstream side of the jet caused by bouncing on the wall of the pool is confined to the downstream side of the weir and turbulence upstream of the weir is substantially reduced.

[0015] Referring to Figure 2B, which shows another mode of operation, water in the return flow path 4 flows more slowly than in the arrangement of Figure 2A so that no discrete water level difference is created. Instead, some water flows smoothly over the weir, forming a downward transition in water level from the water in the main body of the pool. Therefore the turbulence at the downstream of the jet caused by bouncing on the wall of the pool is reduced.

[0016] The different modes of operation of Figure 2A and 2B can be determined by the design of the weir and the conduit and the capacity of the pump and are well within the design capability of persons skilled in the art of swimming pool design.

[0017] In one variant (not shown) one suction port of a further pump could be provided in place of the weir 3 to relieve back-pressure.

Claims

1. A swimming pool having means (2) for directing a flow of water across the water surface towards a side of the pool to form a counter current (C) against a swimmer, and means (3, 4) for relieving back-pressure at the downstream end of the counter current.

2. A swimming pool according to claim 1, wherein the flow directing means (2) is arranged in use to form at least one jet (J).

3. A swimming pool according to claim 1 or claim 2, wherein the means for relieving back-pressure comprises a weir (3) over which the counter current (C) flows, said weir being spaced apart from the upstream end of the counter current.

4. A swimming pool according to claim 3, wherein in use water on the far side of the weir (3) defines a discrete water level below the water lever in the main body of the pool.

5. A swimming pool according to claim 3, wherein in use at least some water flows smoothly over the weir (3) which provides a downward transition in water level from the water in the main body of the pool.

6. A swimming pool according to any preceding claim, wherein a conduit defining a return flow path (4) is provided, and said conduit extends towards the upstream end of the counter current (C) to facilitate flow of water back towards the upstream end of the counter current.

7. A swimming pool according to claim 6, wherein a floor or an internal wall of the swimming pool constitutes a wall of the conduit.

8. A swimming pool according to claim 6 or claim 7, wherein the flow directing means comprises a pump (1) and the pump is arranged to apply suction to the return flow path (4).

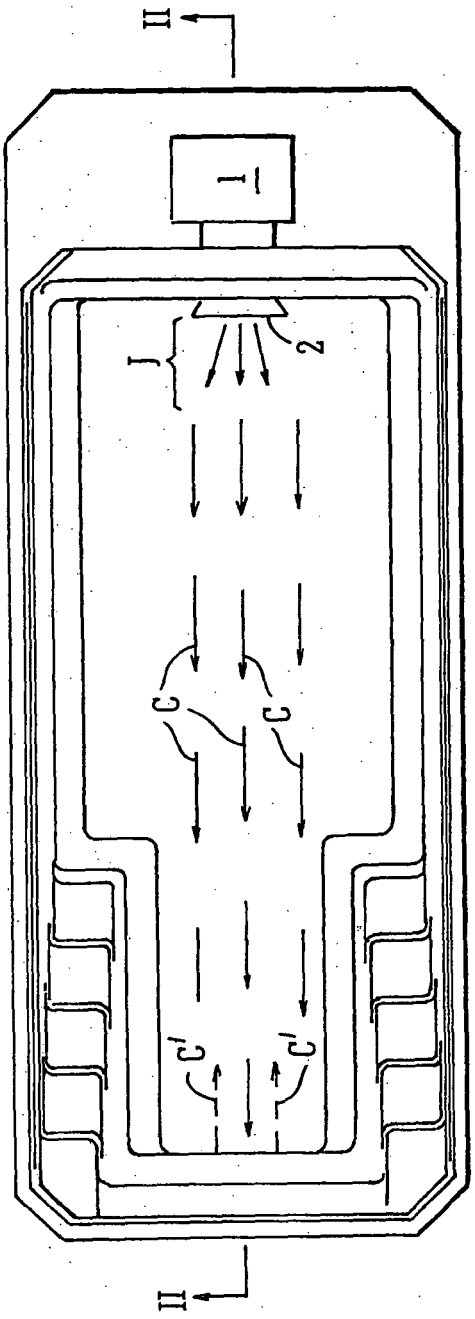

FIG. 1

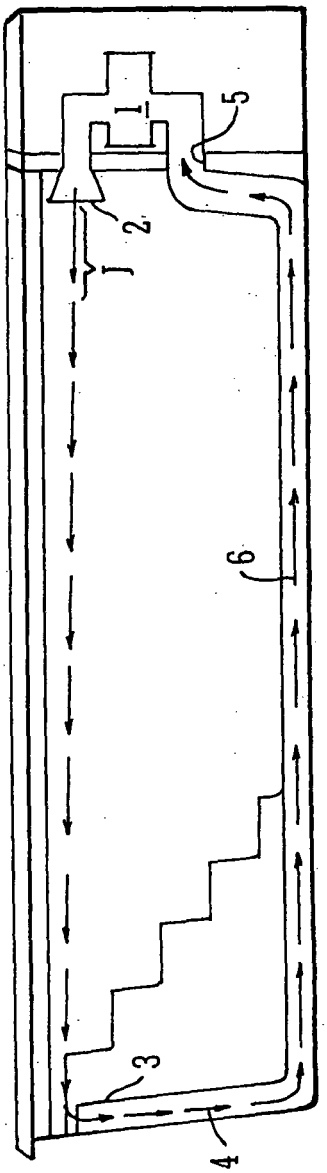

FIG. 2

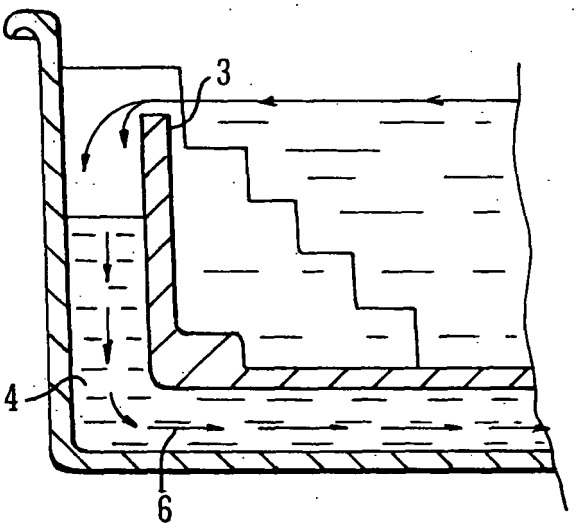

FIG.2A

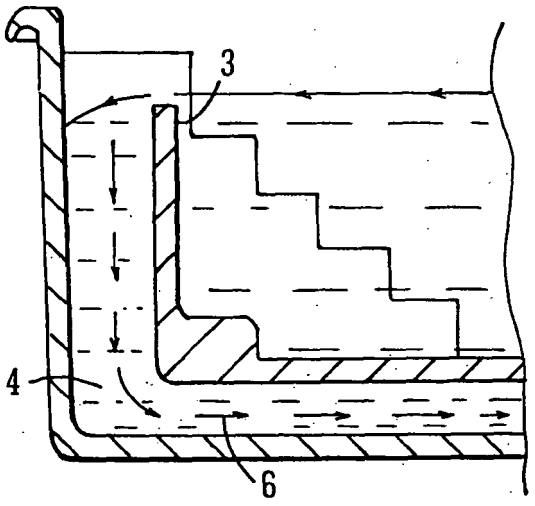

FIG. 2B