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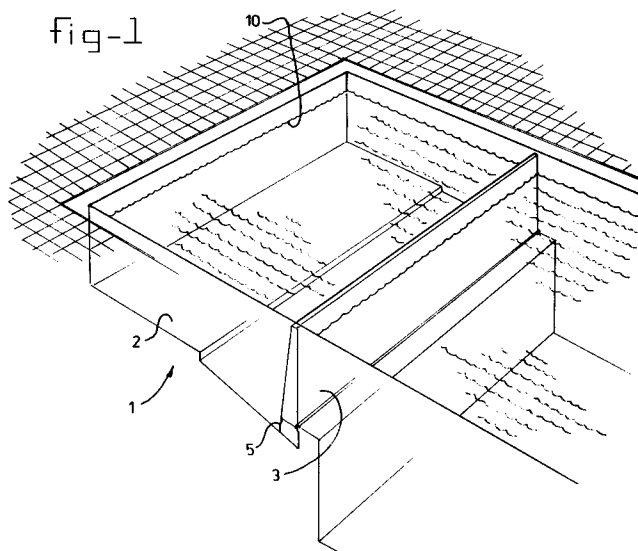
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**BE CH DE DK ES FR GB IE LI LU NL SE**(71) Applicant: **POLYMARIN B.V.**  
**P.O. Box 151**  
**NL-1670 AD Medemblik (NL)**(72) Inventor: **Berkhout, Johannes Hendrikus**  
**Dorpsweg 182**  
**NL-1676 GL Twisk (NL)**(74) Representative: **de Bruijn, Leendert C.**  
**Nederlandsch Octrooibureau**  
**Scheveningseweg 82**  
**P.O. Box 29720**  
**NL-2502 LS Den Haag (NL)**(54) **Swimming bath pool having a retaining wall.**

(57) Swimming bath pool having a retaining wall (3) which, in the active position, relative to the longitudinal direction thereof, extends between opposite side walls, in the direction at right angles thereto, at a distance from further opposite side walls and essentially from the bottom (2) upwards to above the water level in order to divide the pool into various sections lying next to each other, which retaining wall can

optionally be brought into an active, separating position, and into an inactive position. According to the invention, the retaining wall is fastened to the bottom and can be swung between an essentially horizontal, inactive position, running parallel with the swimming bath bottom, and an active position in which the retaining wall runs upwards from the bottom.

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The invention relates to a swimming bath pool according to the preamble of claim 1.

Such a swimming bath pool having a retaining wall is known from DE-A-2517337. Said known retaining wall is at its lower edge pivotally connected to the opposing side walls of the swimming bath pool. This known retaining wall is shiftable between a vertical, upright position to extend above the water level, and a substantially horizontal, retracted position to lie substantially flat with one of its side walls with the surface of the swimming bath bottom, to be received in a recess in said swimming bath bottom. The known retaining wall is locked in its upright position by retention between cam-shaped stopper elements on each respective side wall of the swimming bath pool which, viewed in the longitudinal direction of the retaining wall, can engage with both sides of said retaining wall at its upper edge. The known retaining wall is hollow, and can be filled with water or air respectively. By replacing the water by air, or visa versa, the retaining wall can be swung between its upright, active position and its retracted, inactive position.

A disadvantage of this known retaining wall is its rather poor connection with the structure of the swimming bath pool. On the one hand this yields a relative weak and flexible retaining wall, which is a disadvantage for swimmers which use the retaining wall as an abutment for their feet if they turn around while fast swimming in a straight direction between the retaining wall and the opposing side wall of the swimming bath pool. Apart from that, for swimming competition, lines will be connected to the retaining wall and the opposing side wall of the swimming bath pool to divide the pool in several delimited tracks. Due to the high tension forces in such lines, the known retaining wall, due to its poor connection to the structure of the swimming bath pool, will give too much flexural displacement in the centre part, such that the length of the tracks is not the same, and the pool can not be used for tournaments. The rather low stiffness of the connection of the retaining wall could be eliminated by increasing the flexural stiffness of the retaining wall itself, however this calls for a larger volume of the retaining wall, demanding further structural elements, such that increasing its flexural stiffness yields a substantial rise of capital investments and such a stiffening can not avoid a further disadvantage of this known retaining wall; in its upright, active position, its pivoting elements and its retainer elements will be relatively high loaded by for instance movements of the water, pressure differences due to differing water levels at both sides of the retaining wall, swimmers climbing on the retaining wall and diving there from, as well as the tension forces from the lines dividing the pool in several tracks. The tension forces from such lines

are typically 600 kilogram for each line or even higher, while a typical pool with a width of 25 m., there will be ten tracks, such that there are nine lines connected to the retaining wall amounting to about 6.000 kilogram tension forces to be carried by two pivots and two retaining elements.

The structural disadvantages of this known retaining wall can for instance be eliminated on the basis of the understanding which is provided by NL-A-7207667, describing a retaining wall which is pivotally connected at its lower edge to the swimming bath pool, while at its upper edge being pivotally connected to a floating body. This floating body can be levelled between a position projecting above the water level and a position in which the floating body is received within a recess in the underwater bottom, by means of pulling cables which can be lengthened or shortened. The retaining wall follows the movements of the floating body. Such a combination of retaining wall and a floating body connected thereto at each upper edge is used to, for instance to close the swimming pool, seal an outdoor part of the pool from an indoor part of the pool. This known combination demands for a floating body with a relatively large volume, and a complicated and expensive mechanical drive system. The retaining wall from this known combination is not loaded by swimmers or lines or whatsoever, since it is only in use when the pool is out of use.

The present invention is concerned with eliminating or decreasing the drawbacks of the retaining wall as indicated in the preamble, without the need for using additional floating bodies to maintain the small volume necessary for having a retaining wall such as is present with the retaining wall as indicated in the preamble or even to decrease the space consumption in the combination with a less complicated drive system to move the retaining wall between its retracted and projecting, upright position, respectively.

For this purpose, the present invention suggests, a retaining wall as indicated in the accompanying claim 1.

By the pivotable connection as indicated in the combination with the application of the retaining function with the swimming bath bottom and with the indicated retention, the retaining wall will have a substantial increased stiffness, such that flexural displacement of the retaining wall will be kept to a minimum under the load of swimmers, tension forces from lines, etc are decreased. Furthermore, there is a more even load distribution over the connecting- and retaining elements between the retaining wall and the swimming bath pool, such that those elements can be cheaper and demand less maintenance, while serving greater durability. The connecting- and retaining elements can be

continuous elements, extending over the complete swimming bath bottom, but can also be individual elements with a spacing of for instance one to four metres. Since there are no provisions necessary at the top of the side walls of the swimming bath pool, it can have a more attractive and safer design.

According to a preferred embodiment of the invention, which is further illustrated in the description of the drawings, the retaining wall is integrated in a bridging part extending between parts of the swimming bath bottom at a higher and a lower level.

Furthermore, the retaining wall according to the invention can be used in combination with a swimming bath bottom of which the level is adjustable (a so-called adjustable floor), for which purpose the retaining wall can be connected to the adjustable part of the swimming bath bottom, and can be received in a recess in that movable part of the swimming bath bottom if in its retracted position. An example of a swimming pool with an adjustable floor is illustrated in EP-A-0532079, of applicant.

Further advantages and details will become apparent from the following description of a non-limiting illustrative embodiment with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view of a section of a swimming bath, with a retaining wall according to the present invention,

Figure 2 shows a sectional partial side view of the swimming bath of Figure 1, with the retaining wall in its active and inactive position.

Figure 3 shows a partly sectional view, with partly cut away components, of a second embodiment of the retaining wall according to the invention, forming integral part with a bridging flap in the combination with a adjustable part of the swimming bath floor in a first position; and

Figure 4 a view in accordance with figure 3, with the movable parts in a second position.

Referring to Figure 1, a swimming bath 1 having a rectangular building plan is shown. From the bottom 2 thereof, a retaining wall 3 extends upwards to above the water level 10.

Figure 2 shows a more detailed view of the structure of the retaining wall 3 and the fastening thereof to the bottom 2. The active position of the retaining wall 3 is shown by means of solid lines; the inactive position thereof by means of dash-dotted lines. The retaining wall 3 is of hollow construction. Obviously, the wall 3 can also be of solid construction. Viewed in cross section, the retaining wall 3 tapers slightly from its base which is hingedly connected to the bottom 2 to its opposite free end. A recess 4 is provided in the bottom 2, the profile section of which recess 4 corresponds to the profile section of the retaining wall 3. At its

base, the retaining wall 3 is provided with a hinge 9 along a longitudinal edge, which hinge 9 is connected to the bottom 2 at the upper longitudinal boundary of the recess 4, as shown. As is shown most clearly in Figure 1, a rubber sealing strip 5 is attached to the longitudinal edge opposite the hinge 9, at the base of the retaining wall 3. Said sealing strip runs in line with the respective side wall of the retaining wall 3. As is shown, said rubber sealing strip 5 seals off the gap between the underside of the retaining wall 3 and the bottom of the recess 4, in order to prevent, for example, swimmers from reaching the underside of the retaining wall 3. As a result of its flexible properties, the rubber strip or flap 5 will automatically fold against the base of the retaining wall 3 when the latter is hinged to its inactive position indicated by dash-dotted lines in Figure 2.

A drive arm 6 projects from the base of the retaining wall 3, which drive arm is bent at right angles at its end, as shown. Said drive arm is located, for example, halfway along the length of the hinge 9. Another fastening point can also be selected for the drive arm 6. It is likewise possible to use more than one drive arm 6, for example depending on the load and the deformation of the parts. Near the free end of the arm 6, a drive cable 7 is attached, which is guided, via a guide wheel 11, to a drive element, not shown in any more detail here, for example a hydraulic or pneumatic cylinder. The degree of hinging of the retaining wall 3 about the hinge 9 from the inactive to the active position shown in Figure 2, is limited by a blocking element 8 which, in the position shown in Figure 2, interacts with the drive arm 6 in a blocking manner. As shown in Figure 2, said blocking element 8 is integrated in the bottom 2. If desired, the blocking element can also be adjustable in order to adjust the degree of swing of the retaining wall 3 about the hinge 9.

Furthermore, a protective rubber strip 12 is provided on the side of the recess 4 opposite the hinge 9, in order to prevent swimmers from hurting themselves. As is also shown in Figures 1 and 2, the section of the bottom 2, which section is on the right-hand side in the drawing, is constructed at a lower level. Said section can also be constructed, for example, to be adjustable in height. This height adjustment can be effected in any conventional way, for example as described in the German Offenlegungsschrift 25 56 026, reference being made in particular to Figure 1 thereof. Said Figure 1 shows that the height-adjustable section of the bottom adjoins the fixed section of the bottom by means of a hinged flap. Said flap seals any gap between the upper side of the lower section of the bottom and the underside of the higher section of the bottom. Instead of being connected to the fixed

section of the swimming bath bottom 2, the retaining wall 3 can also be hingedly connected to a height-adjustable section of the swimming bath bottom 2.

Obviously, it is likewise possible hingedly to connect the retaining wall 3 to the swimming bath bottom 2 in such a manner that the former, in its inactive, folded-down position, comes to lie on top of the bottom 2. A recess 4 is then not present in the swimming bath bottom 2. However, in that case, the folded-down retaining wall 3 can be an inconvenient projection on the swimming bath bottom 2.

Figure 3 and 4 show an alternative embodiment of the present invention. Indicated is a swimming bath pool 1 with a bottom part 14 at a lower level and a bottom part 15 at a higher level. The height of the bottom part 15 is adjustable. Therefore, this part 15 has floating capacity and is retained by pulling cables 17. Compared to figure 3, in figure 4 the bottom part 15 is at a lower level. A bridging part or flap 13 extends between the bottom parts 14, 15. With the flap 13, it is impossible for swimmers to swim below the bottom part 15. Such a flap 13, which can slide or ride with each lower edge over the bottom part 14, and is pivotally connected to the bottom part 15, is known as such from NL-A-7411696. In the known embodiment, said bridging part 13 is pivotally connected to an adjustable floating body with its upper edge.

According to the present invention, the bridging part 13 is an integral part with the retaining wall 3. As is illustrated in figure 3 and 4, this combination of bridging part 13 and retaining wall part 3 can swing with respect to the bottom part 15 and can slide with respect to said bottom part 15 as well, viewed in the direction from the upper edge to the lower edge and vice versa. Therefore it is possible, to move the retaining wall part 3 from the extended position as illustrated in figure 3, in which the upper edge projects above the water level 10, into a retracted position as indicated in figure 4, such that the upper edge of the retaining wall part 3 lies substantially flat with the upper face of the bottom part 15. For that reason, the retaining wall part 3 is provided with slide guides 19, which are evenly distributed over the length of the retaining wall part 3. For instance, those guides 19 have a pitch of one to four metres. In the side wall of the retaining wall part 3 facing the bottom part 15 slots 18 are provided, which are registered with the guides 19. A link 20 projects through each slot 18. A spring element 21 biases the link 20 to its retracted position within the bottom part 15. With its end projecting from the bottom part 15, each link 20 is rotatable/swingable at 22 connected to a respective guiding element. Therefore, there is a pivotable slight connection 16 between the bottom part 15

and the retaining wall part 3. With pulling cables 24, 25, the retaining wall part 3 can be locked in its extended position (figure 3).

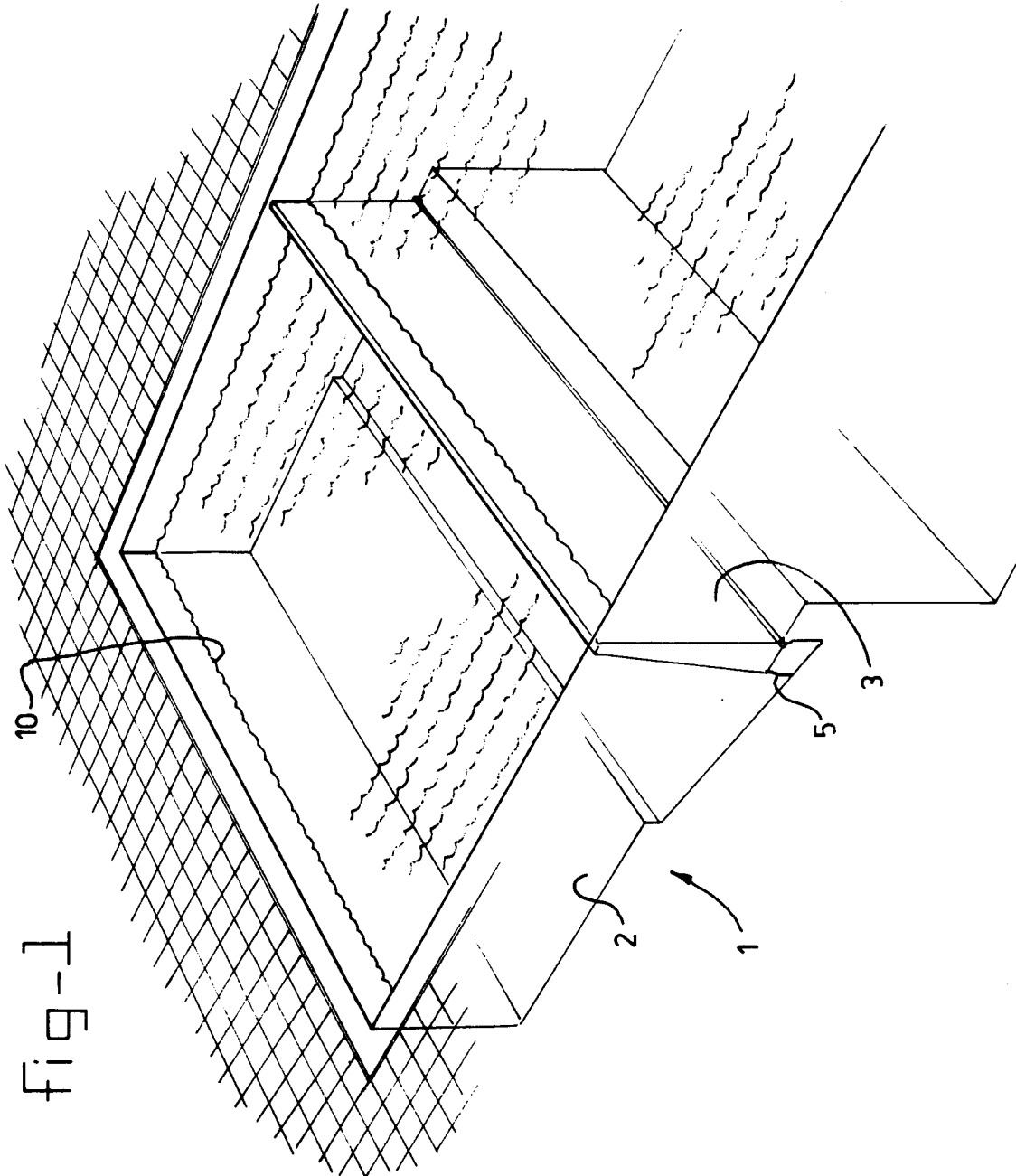
To move the combination of the bridging part 13 and the retaining wall part 3 from the position as illustrated in figure 3 to the position as illustrated in figure 4, an actuating arm 23 is connected to the combination below the bottom part 15, projecting from the bridging part 13. Said arm 23 is at its free end coupled to a pulling cable 24. By pulling the pulling cable 24, the combination can be swifflted in the direction of arrow A. For return, a pulling cable 25 is connected to the bridging part 13 in the vicinity of its lower edge. Instead of an arm 23 for the pivotal movement of the combination of bridging part 13 and retaining wall 3, a structure as illustrated in figure 2 and 3 of NL-A-7411696 could be adopted to.

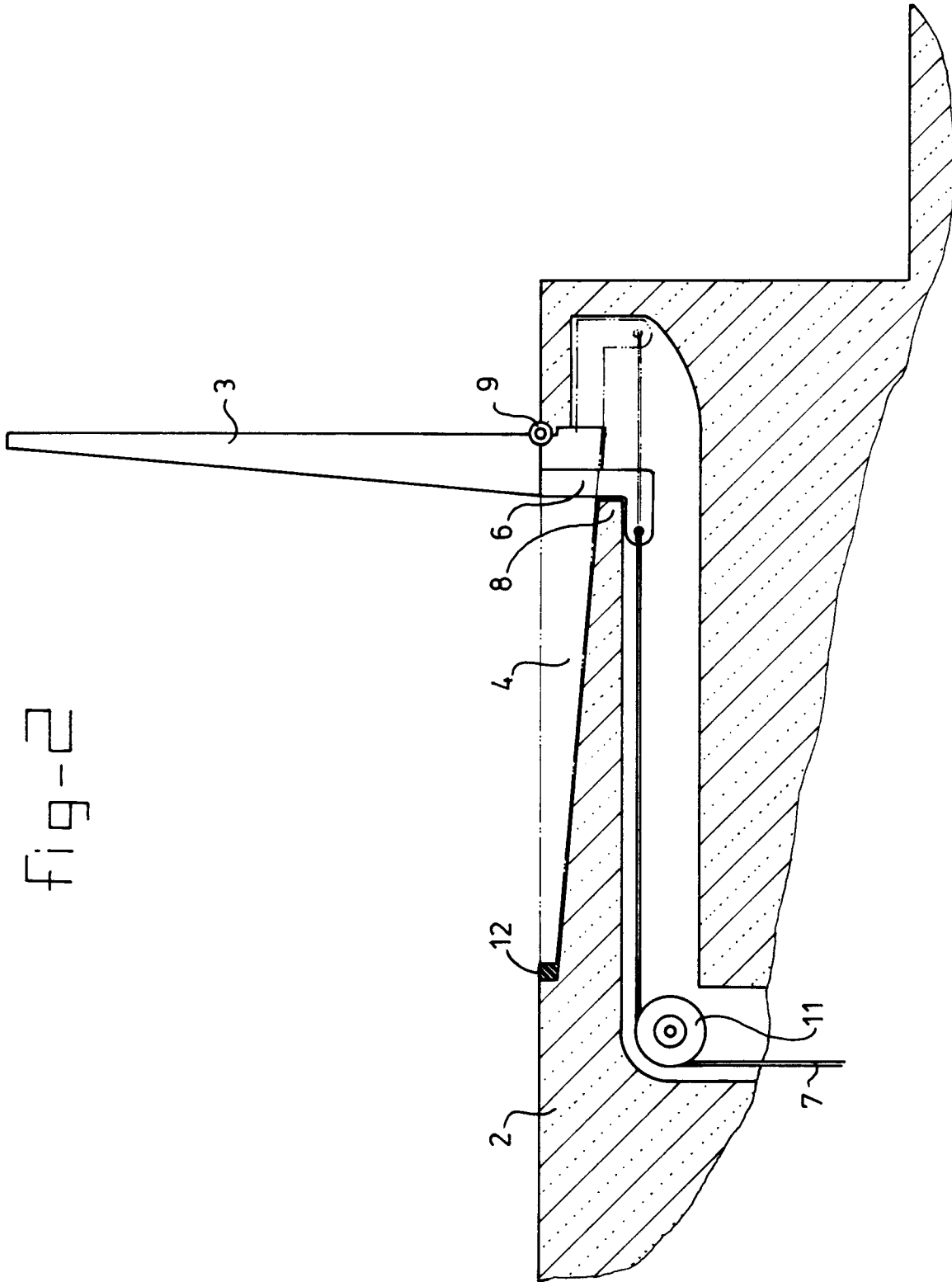
Obviously, it is likewise possible to have further embodiments, which belong to the scope of the invention. It is important, that at several spaced apart positions in lengthwise direction of the retaining wall there is a pivotal or swingable connection with the swimming bath bottom, and that also at different spaced apart positions in the lengthwise direction of the retaining wall retaining elements are active between said retaining wall and the swimming bath pool for retaining the retaining wall in its extended position.

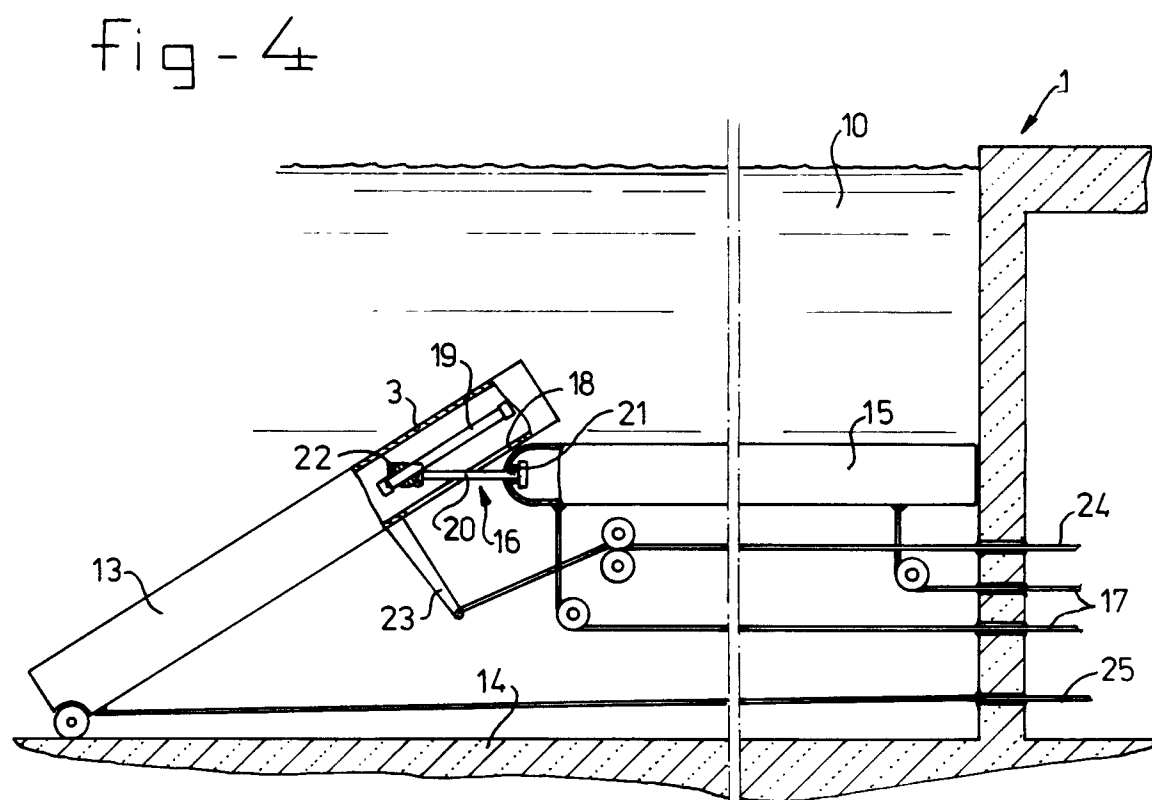
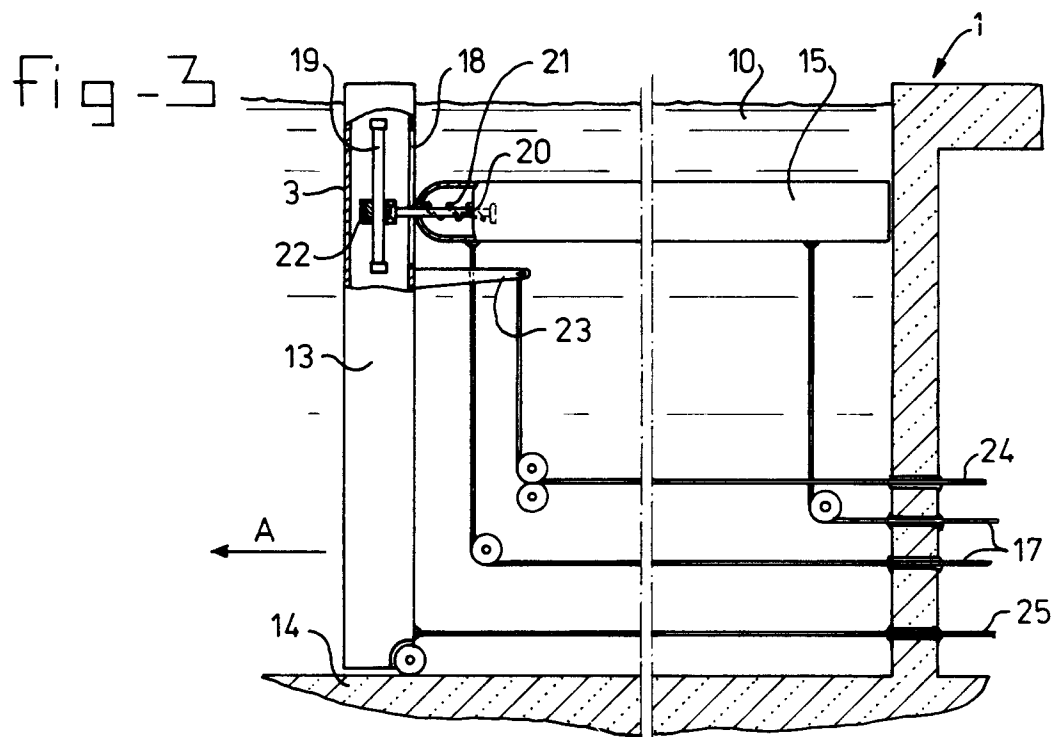
## Claims

1. Swimming bath pool (1) having a plate shaped retaining wall (3), which can be moved into an active, projecting position to extend from the vicinity of the swimming bath bottom (2) to the water level (10) and projecting there above, to split the swimming bath pool in two parts on both sides of the said retaining wall, and can be moved in a retracted position, such that swimmers can pass the said retaining wall substantially unhindered, in which the said retaining wall can be pivoted with respect to the swimming bath bottom, and the said retaining wall at its upper edge to project above the water level is free from bodies extending along said edge and which are meant to retain said retaining wall in its active, extended position, and with elements (6) to lock the retaining wall in its active position, characterised in that the said retaining wall is coupled with the said swimming bath bottom (2) by swing- or pivot connections (9) distributed over the length of the said retaining wall, and that the said locking elements are distributed over the length of the said retaining wall as well, and are active between the said retaining wall and the said swimming bath bottom.

2. Swimming bath pool according to Claim 1, characterized in that the swimming bath bottom (2), on the side facing the retaining wall (3), is provided with a recess (4) for receiving the retaining wall (3) when it is in its inactive position, in such a manner that the latter is level with the upper surface of the bottom (2). 5
3. Swimming bath pool according to Claim 2, characterized in that the retaining wall (3), at its base and with one longitudinal edge, is connected to the bottom (2) by means of a hinge (9) at the boundary of the recess (4), at the upper surface (2), and in that a sealing flap (5), running in line with the retaining wall and made of a relatively readily flexible material, is attached to the opposite longitudinal edge, at the base of the retaining wall (3), which sealing flap (5), when the retaining wall (3) is in its active position, fills the gap which is defined by the underside of the base of the retaining wall (3) and the bottom of the recess (4). 10 15 20
4. Swimming bath pool according to one of the preceding claims, characterized in that the retaining wall (3) is provided at its base with one or more drive arms (6), which, in relation to the height direction of the retaining wall (3), project from said base and into the bottom (2), and to the end of which a drive means (7) is connected. 25 30
5. Pool according to Claim 4, characterized in that a blocking element (8) is provided, which interacts with one or more of the drive arms (6) when the retaining wall (3) is in its active position in order to prevent swinging over in the direction from the inactive position. 35
6. Swimming bath pool according to claim 1, characterised in that the said retaining wall forms integral part with a substantially plate shaped bridging body (13), running between a bottom part (14) at a lower level and a bottom part (15) at a higher level of the swimming bath bottom. 40 45
7. Swimming bath pool according to claim 6, characterised in that the said retaining wall (3) is coupled to the bottom part (15) of the swimming bath bottom at a higher level via the swing- or pivot connections (16). 50
8. Swimming bath pool according to claim 6 or 7, characterised in that the said retaining wall (3) can slight or shift with respect to the said upper part (15) of the said swimming bath bottom viewed in the direction of the upper edge towards the lower edge of the said retaining wall (3) or vice versa. 55
9. Swimming bath pool according to one of the preceding claims, characterised in that the space between two adjacent swing- or pivot connections is about the same as the distance between the lower and upper longitudinal edge of the said retaining wall (3) at a maximum.
10. Pool according to one of the preceding claims, characterized in that at least one section of the bottom (2) is constructed to be adjustable in height.











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## EUROPEAN SEARCH REPORT

Application Number  
EP 94 20 3342

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A,D	NL-A-7 411 696 (BOS) * page 3, line 27 - page 5, line 9; figures 1-3 * ---	1-4	E04H4/14
A,D	NL-A-7 207 667 (N. V. INDUSTRIEELE HANDELSCOMBINATIE HOLLAND) * page 3, line 17 - line 30; figure 1 * ---	3,4	
A,D	DE-A-25 17 337 (BÖHM) * page 2; figures 1-3 * ---	1,2,4,5	
A	EP-A-0 532 079 (POLYMARIN B.V.) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E04H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 February 1995	Examiner Clasing, M
<b>CATEGORY OF CITED DOCUMENTS</b> 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 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			