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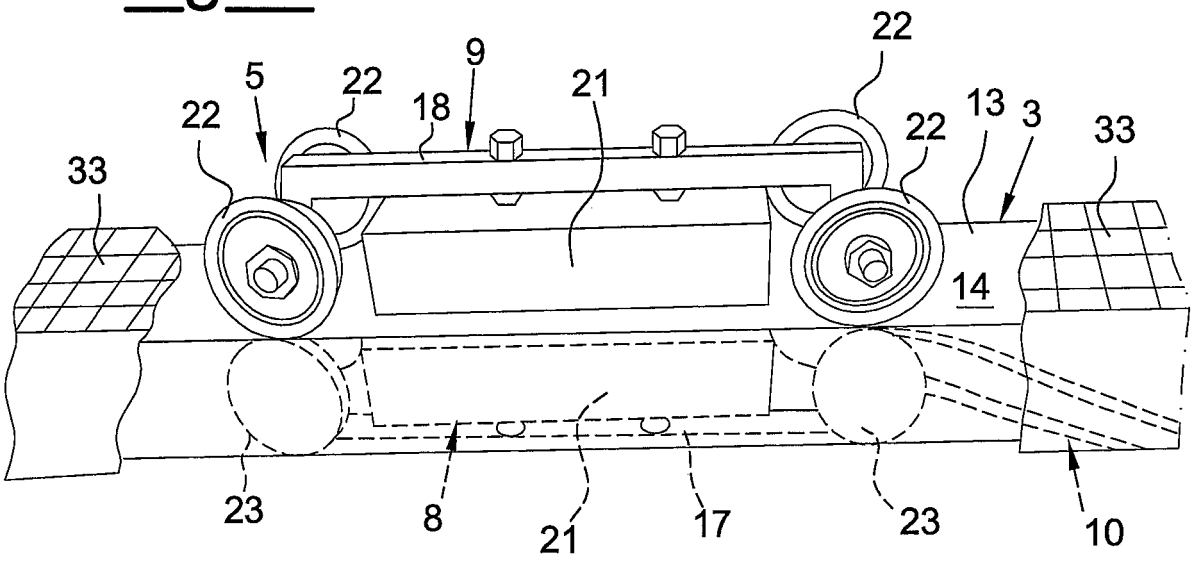
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(54) **Traction system of mobile walls for swimming pools**

(57) Mobile wall traction system (1) for swimming pools (4) equipped with at least one mobile wall (2) and two parallel rail elements (3), located on at least two opposite sides of the swimming pool (4), the wall (2) being able to travel along said rail elements (3), characterised in that it comprises magnetic coupling travel means (5) of said wall.

Fig. 2



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Description

[0001] The present invention relates to a mobile wall traction device for swimming pools.

[0002] In order to organise different activities in a same swimming pool at the same time, the swimming pool sector uses mobile walls, also referred to as moveable bridges.

[0003] In this manner it is easy to obtain two separate areas from a single large pool for competitive sport, recreation activities and swimming lessons.

[0004] Normally, said mobile wall is composed of a structure in stainless steel or composite materials then coated with a grid made from a plastic such as ABS for example.

[0005] However, other solutions are possible, such as using exclusively fibreglass, for example, or other materials.

[0006] Furthermore the mobile wall can be equipped with other accessories such as hand rails for swimmers, attachment fixtures for lane-marker floating ropes, and fixed or removable starting blocks.

[0007] The wall must be able to move in a traverse manner, such as along the longest sides of a rectangular swimming pool for example, for positioning in the desired points. Traverse translation is normally performed by means of wheels, whose axes are fixedly mounted to the sides of the walls. Such wheels move along two parallel rails located in proximity to the longer sides of the pool, or other two opposite sides, in the case of square pools. Generally two people are required to move the wall, one at each end of the wall. Moving speed is approximately a few metres per minute.

[0008] In fact, mobile walls are objects with a very large surface in contact with water that creates considerable resistance to any moving action.

[0009] Moreover, according to the laws of hydrodynamics, this resistance increases with the square of translation speed, and therefore a small increase in speed requires considerable applied strength. Automatic traction devices have been proposed to resolve the aforesaid problems. However, project design of a mobile wall for swimming pool for non-manual movement has always caused numerous problems due to technical standards, for example in relation to the need for safety low voltage electrical or pneumatic installations in the areas in the vicinity of the pool, as well as generally due to the need for connecting possible actuators to an energy source without interfering with the pool itself, the pool perimeter, and any activities being performed by pool users and service personnel.

[0010] In the light of the aforesaid problems, it is obvious that a traction system for swimming pool mobile walls is necessary, with a less tiring and more user-friendly system for translation, but that at the same time, that does not have bulky components which occupy space destined for pool users and service personnel.

[0011] The aim of the present invention therefore, is to resolve the problems described above and in particular to provide a traction system for swimming pool mobile walls that makes transfer of the wall itself, easier and less tiring compared to manual systems.

[0012] Another aim of the present invention is to provide a swimming pool mobile wall traction system that does not include bulky components that occupy space intended for pool users and service personnel, as occured with non-manual systems.

[0013] Yet another aim of the present invention is to provide a traction system for swimming pool mobile walls that is easy and intuitive to use, and at the same time extremely safe for service personnel.

[0014] Lastly, a further aim of the present invention is to provide a traction system for swimming pool mobile walls that is particularly simple, functional and relatively economical.

[0015] These and other aims according to the present invention are achieved by providing a traction system for swimming pool mobile walls as set forth in claim 1.

[0016] Further characteristics of the device are the subject of the dependent claims.

[0017] The characteristics and advantages of a traction device for swimming pool mobile walls according to the present invention will be made more clear in the following description provided as an example but by no means limiting, with reference to the appended schematic drawings wherein:

- figure 1 is a schematic plan view of a swimming pool equipped with the traction system for mobile walls according to the present invention;
- figure 2 is a schematic view of a detail of the traction system for mobile walls according to the present invention; and
- figure 3 is a schematic view of the transmission element according to the present invention, installed in a side compartment of a mobile wall.

[0018] In reference to the figures, a traction system for swimming pool mobile walls is shown, identified throughout by the numeral 1.

[0019] The traction system 1 for mobile walls for a swimming pool 4, according to the present invention can be applied to pools equipped with at least one mobile wall 2 and at least two parallel rail elements 3, located on at least two opposite sides of the pool 4.

[0020] The wall 2 travels along the rail elements 3 by means of magnetic coupling travel means 5.

[0021] Advantageously, according to the present invention, the magnetic coupling travel means 5 comprises at least one transmission element 8 for each rail element 3, which is moved by specific driving means 10, and at least one drawn element 9, attached to the mobile wall 2.

[0022] The drawn element 9 is functionally and magnetically coupled with the transmission element 8 in order to travel in unison with the latter 8.

[0023] In other words, the travelling action of the trans-

mission element 8 along the rail element 3 generates the traction of the drawn element 9, and consequently of the mobile wall 2 attached thereto.

[0024] The transmission element 8 and the drawn element 9 are coupled together magnetically, as described previously, in a manner to permit release at the rail element 3.

[0025] Both the transmission element 8 and the drawn element 9, for their mutual magnetic coupling, comprise at least one magnet 21, in particular, either a permanent magnet or an electromagnet.

[0026] Since the rail element 3 does not interfere with the coupling between the transmission element 8 and the drawn element 9, each rail element 3 comprises at least one amagnetic tube 13, made from stainless steel for example.

[0027] The amagnetic tube 13 is equipped with an upper face 14 and is installed with the upper face 14 substantially flush with the floor paving around the perimeter 33 of the pool 4.

[0028] In addition, the transmission element 8 also comprises at least one support frame 17 for the magnet and at least two wheels 23, in particular, four in the preferred embodiment shown in figures 2 and 3.

[0029] The transmission element 8 is positioned so it will slide inside the amagnetic tube 13 in a manner so that the magnet 21 faces the upper face 14 of the tube 13.

[0030] The four wheels 23 permit the transmission element 8 to slide inside the amagnetic tube 13, activated by the driving means 10.

[0031] The positioning of the transmission element 8 and the rail element 3 is conceived so that no components occupy the space destined for pool users and service personnel.

[0032] Correspondingly, also the drawn element 9 that moves the mobile wall 2, comprises a support frame 18 for the magnet 21, and four wheels 22.

[0033] The support frame 18 supports the magnet 21 in a manner so that it faces the upper face 14 of tube 13, and consequently of the magnet 21 of the transmission element 8.

[0034] The four wheels 22 permit element 9 to slide along the external paving 33 of the pool in unison with the transmission element 8.

[0035] As shown in figure 3, the drawn element 9 is installed inside the structure of the mobile wall 2 so that it is fixed and protected by the latter. In this case as well, since there are no protruding parts, there are no elements that can disturb users or service personnel of the pool 4.

[0036] Furthermore, it should be noted that the wall 2 can be released from the transmission element 8, for maintenance purposes for example, through the application of electromagnets with invertible polarisation, or by adopting mechanical spacing systems for the electromagnets.

[0037] Known driving means are used to move the transmission element 8, and consequently the drawn element 9 and wall 2. However, in any case all moving equipment (driving means 10) are contained inside the amagnetic tube 13 at one or both ends of the pipe and/or in specific compartments set under the paving floor around the perimeter 33 of the pool. In this manner, no components occupy the spaces destined for pool users and service personnel.

[0038] In particular according to a first embodiment, the driving means 10 comprise a belt and pulley system, or cable and winch system driven by specific and known motorised means. The belt and pulley system, like the motorised means, are positioned inside the tube 13 and/or in at least one compartment located under the floor paving of the pool 4 perimeter.

[0039] Alternatively, the driving means 10 could be formed by a rack system positioned inside the tube 13, as well as a motorised means, also positioned in the tube 13 and/or in a compartment located under the floor paving of the pool 4 perimeter 33.

[0040] According to another alternative aspect of the present invention, the driving means 10 could comprise at least one oleodynamic cylinder, once again positioned in the tube 13 and/or in at least one compartment located under the floor paving of said pool 4 perimeter.

[0041] The characteristics of the traction system for mobile walls according to the present invention have been made clear from the description above, just as the relative advantages have also been made clear, and these include the following:

- reduced fatigue in moving the mobile wall in comparison to manual systems;
- elimination of components that occupy space destined for pool users and service personnel;
- safety protection for users and service personnel;
- intuitive, easy manoeuvrability;
- functional and constructive simplicity;
- relatively cheap realisation costs.

[0042] Lastly, it is clear that numerous modifications and variants can be applied to the system conceived in this manner while remaining within the scope of the invention; furthermore, all details can be replaced by technically equivalent elements. In practice, the materials employed, and the dimensions involved can be of any type according to technical necessity.

Claims

1. Mobile wall traction system (1) for swimming pools (4) equipped with at least one mobile wall (2) and at least two parallel rail elements (3), located on at least two opposite sides of the swimming pool (4), the wall (2) being able to travel along said rail elements (3), **characterised in that** it comprises magnetic coupling travel means (5) of said mobile wall (2).

2. Traction system (1) according to claim 1 **character-**

ised in that the magnetic coupling travel means (5) comprise at least one transmission element (8) for each rail element (3), that travels thanks to driving means (10), and at least one drawn element (9), fixed to said mobile wall (2), and coupled functionally and magnetically to said transmission element (8) in order to travel in unison with said transmission element (8).

3. Traction system (1) according to claim 2 **characterised in that** said at least one transmission element (8), moved by said driving means (10) and said at least one drawn element (9) are coupled magnetically in a manner for release.

4. Traction system (1) according to claim 2 **characterised in that** said at least one transmission element (8), and said at least one drawn element (9) comprise at least one magnet (21).

5. Traction system (1) according to claim 4 **characterised in that** said magnet (21) is a permanent magnet and/or an electromagnet.

6. Traction system (1) according to claim 5 **characterised in that** each of said rail elements (3) comprises at least one amagnetic tube (13) comprising an upper flat face (14), said amagnetic tube (13) being installed with said upper face (14) substantially flush with the floor paving around the perimeter of said pool (4).

7. System (1) according to claim 6, **characterised in that** said transmission element (8) also comprises at least one support frame (17) for said magnet (21) and at least two wheels (23) to permit the sliding action of said transmission element (8) inside said amagnetic tube (13).

8. Traction system (1) according to claim 3, **characterised in that** said drawn element (9) also comprises at least one support frame for said magnet (21) and at least two wheels (22) in order to slide along the external paving (33) of said pool (4) in unison with said transmission element (8) .

9. Traction system (1) according to claim 2, **characterised in that** said drawn element (9) is installed inside the structure of said mobile wall (2) in order to be fixed to said wall (2).

10. Traction system (1) according to claim 6, **characterised in that** said driving means (10) comprise a belt and pulley system, or cable and winch system positioned inside said tube (13) and/or in at least one compartment located under the floor paving of said pool (4) perimeter.

11. Traction system (1) according to claim 6, **characterised in that** said driving means comprise a rack positioned inside said tube and/or in at least one compartment located under the floor paving of said pool perimeter.

12. System (1) according to claim 6, **characterised in that** said driving means (10) comprise an oleodynamic cylinder positioned inside said tube (13) and/or in at least one compartment located under the floor paving of said pool (4) perimeter.

Fig. 1

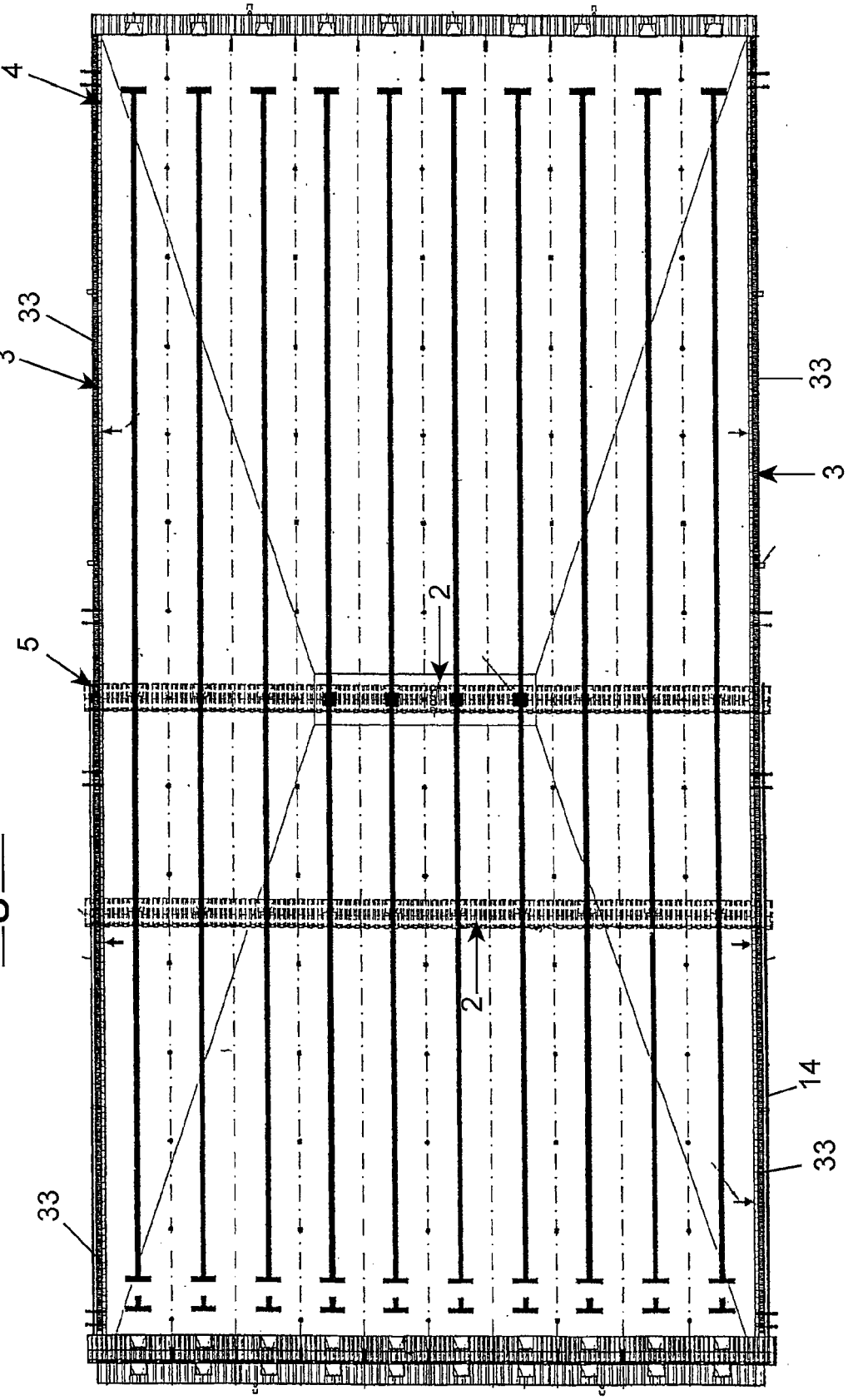


Fig. 2

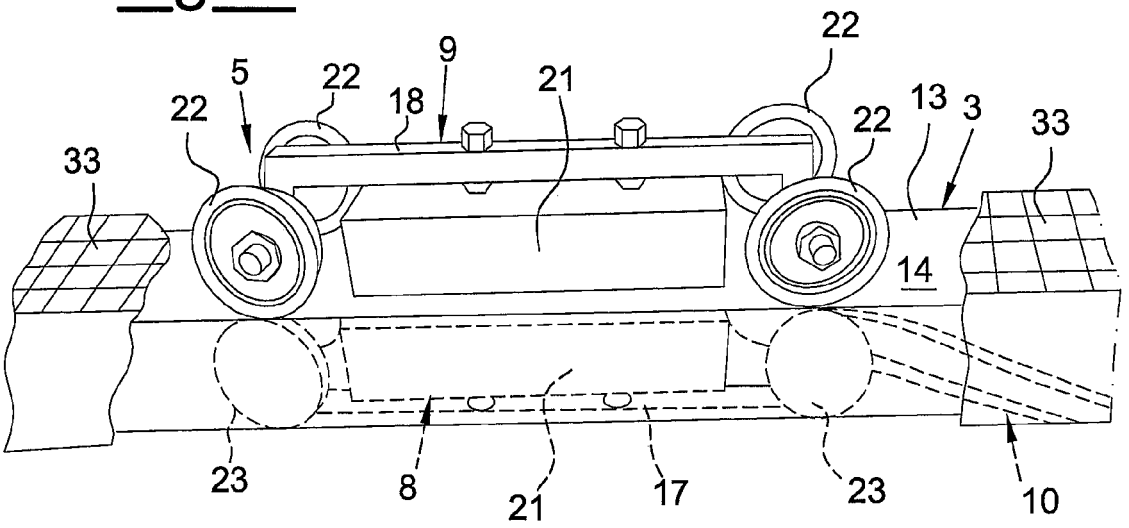


Fig. 3

