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(72) (73) Feltaláló(k) és szabadalmas(ok):

**Hof, Georg, 3011 Purkersdorf (AT)**

(74) Képviselő:

**Danubia Szabadalmi és Jogi Iroda Kft.,  
Budapest**

(54) **Edző- és/vagy rehabilitációs készülék, amelynél egy gyalogló- vagy futószalag van áramló vizet tartalmazó víztartályban elrendezve**

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

**Training and/or Rehabilitation Device, in which a Walking or Running Treadmill is Arranged in a Water Container Comprising Flowing Water**

The invention pertains to a training and/or rehabilitation device, in which a walking or running treadmill is arranged in a water container with flowing water.

In known devices of this type, a walking or running treadmill is placed into a pool that is equipped with a flow system, wherein these pools are primarily used for the treatment of animals (in this context, see particularly DE 3911370 C2, DE 102004010188 A1 or DE 10001878 A1).

In DE 19963583 A1, which discloses an "aqua-trainer for people," a running treadmill is also permanently placed into a water container that is equipped with a flow system or a countercurrent swimming system, respectively.

US 4 576 376 A discloses a running treadmill that is placed into a pool, wherein a pump can be driven by means of said treadmill. When the treadmill is actuated, the pump driven by the treadmill draws in water from the pool and returns this water into the pool through openings in an ascending pipe. In this case, the water is discharged into the pool in an uncontrolled fashion. The pump is provided for controlling the running resistance, wherein only little water is recirculated at a high running resistance. The running resistance is controlled with the aid of a valve arranged downstream of the pump. However, this pump is not suitable for generating an appreciable water flow that acts upon the body. It merely functions as a braking device for the walking or running treadmill. A flow generator is not provided in this case. The pumping capacity depends on the actuation of the walking or running treadmill and on the adjustment of a flow valve.

As mentioned above, all known devices have the disadvantage that the walking or running treadmill can only be used for subaquatic therapy in combination with a water flow if the water containers are provided with corresponding flow systems.

The invention is based on the objective of developing a device of the initially cited type, which can be used independently of the design of the water container or even in open water.

The present invention is furthermore based on the objective of arranging a walking or running treadmill and a flow generator on a common frame, wherein the flow generator and the walking or running treadmill can be controlled independently of one another.

According to the invention, this objective is attained in that the walking or running treadmill is provided with a driving and/or braking device known per se, wherein the driving and/or braking device is connected to a central computer, by means of which the driving and/or braking device, as well as the flow generator, can be controlled independently of one another. In this way, the running treadmill or walking treadmill can be used for therapy and training purposes in all existing pools, wherein it is even possible to use the inventive training device in open water. It merely requires a solid supporting surface on the bottom.

The walking or running treadmill and the flow generator are advantageously arranged on a common frame. This allows the simple placement and removal of the inventive training and/or rehabilitation device into/from a water container. In addition, the walking or running treadmill is provided with a driving and/or braking device known per se such that the treadmill speed and the resistance for the user generated by the treadmill can be respectively



adapted in accordance with the respective therapy or training stage. To this end, the driving and/or braking device may be connected to a central computer, by means of which the driving and/or braking device, as well as the flow generator, can be controlled. This makes it possible to regulate the treadmill speed or the treadmill resistance on the one hand and the flow speed of the water being discharged from the flow generator on the other hand such that they are adapted to one another in accordance with the respective requirements. To this end, the control parameter for the central computer may be the position of the user on the walking or running treadmill and/or the treadmill speed. Sensors may be provided on the walking or running treadmill in order to determine the position of the user. In a particularly simple embodiment, the sensors may be realized in the form of distance or proximity sensors arranged on the flow generator. It is therefore unnecessary to arrange sensors directly underneath the treadmill belt, wherein such an arrangement is disadvantageous because the treadmill belt slides over the sensors when it is subjected to a load. The inclination of the walking or running treadmill may ultimately also be adjustable in order to select different resistance patterns for the training person.

An exemplary embodiment of the object of the invention is schematically illustrated in the drawings. Figure 1 shows a schematic side view, in which the housing of the flow generator is laterally open. Figure 2 shows a schematic top view of the device according to Figure 1.

A walking or running treadmill 2 and a flow generator 3 are arranged on a supporting frame 1. In this case, the flow generator 3 is driven by a turbine 4 and located in a housing 5, into which water is drawn through lateral intake screens 6. The water being drawn in is then conveyed into the pool through an outlet nozzle or an outlet channel 7, wherein baffle plates 8 for deflecting the water flow are arranged in the housing 5. The flow generated in the pool is indicated with arrows 9.

The treadmill 2 and the flow generator 3 are connected to a central computer 10 that controls the treadmill 2 and the flow generator 3 as a function of one another or independently of one another. The frame 1 carrying the treadmill 2 is supported on the bottom 21 of the container by means of legs 11. The treadmill 2 features an idle roller 12 and a driving and/or braking device 13. However, it is not absolutely necessary to provide such a driving and/or braking device, wherein the device or the resistance for the user is respectively adjusted with the output of the flow generator in such instances. The reference symbols 14 and 15 identify grab handles for a runner 17 in order to ensure a safe movement. In this case, the handle 14 is located below the water line 16 whereas the handle 15 is located above this water line.

As an alternative to the runner 17, the reference symbol 18 identifies a swimmer, who utilizes the inventive training and/or rehabilitation device in order to generate a countercurrent for swimming practice. In this case, the treadmill 2 remains unused.

A spacer 19 is furthermore provided on the supporting frame 1 in order to maintain a corresponding clearance between the device and the pool edge 20.

The position of the runner 17 is typically used for controlling the inventive device by means of the central computer 10, wherein the position measurement may be conventionally realized, e.g., with a not-shown distance or proximity sensor that is arranged on the housing 5 of the flow generator 3. Alternatively, pressure sensors may also be provided underneath the treadmill belt in order to determine the position of the runner based on the pressure exerted upon the treadmill belt by the runner.

The drawings likewise do not show that the treadmill could also be pivotable about the axis of the roller 12, namely in such a way that the driving and/or braking device 13, which causes the front deflection of the treadmill belt, is pivoted toward the pool edge. This makes it possible to simulate an incline along a sloped surface.

**Edző- és/vagy rehabilitációs készülék, amelynél egy gyalogló- vagy futószalag van áramló vizet tartalmazó víztartályban elrendezve**

#### **Szabadalmi igénypontok**

1. Edző- és/vagy rehabilitációs készülék, amelynél egy gyalogló- vagy futószalag van áramló vizet tartalmazó víztartályban elrendezve,

ahol a gyalogló- vagy futószalag (2) egy áramlásgenerátorral (3) van egy egységként egy közös kereten (1) elrendezve, mely egység egy víztartályba, illetve nyílt vízbe helyezhető, **azzal jellemezve**, hogy a gyalogló- vagy futószalag (2) önmagában ismert hajtó- és/vagy fékezőberendezéssel (13) van ellátva, ahol a hajtó- és/vagy fékezőberendezés (13) egy központi számítógéppel (10) van összekötve, amelyen keresztül úgy a hajtó- és/vagy fékezőberendezés (13) mint az áramlásgenerátor (3) egymástól függetlenül vezérelhető.

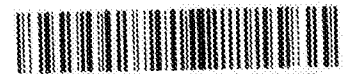
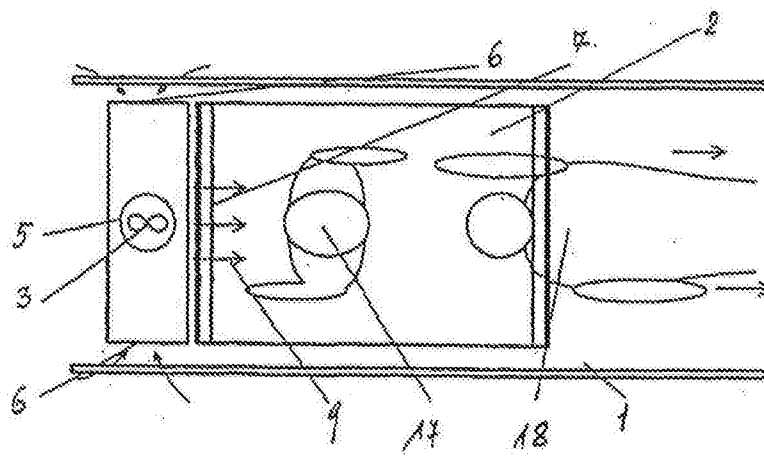
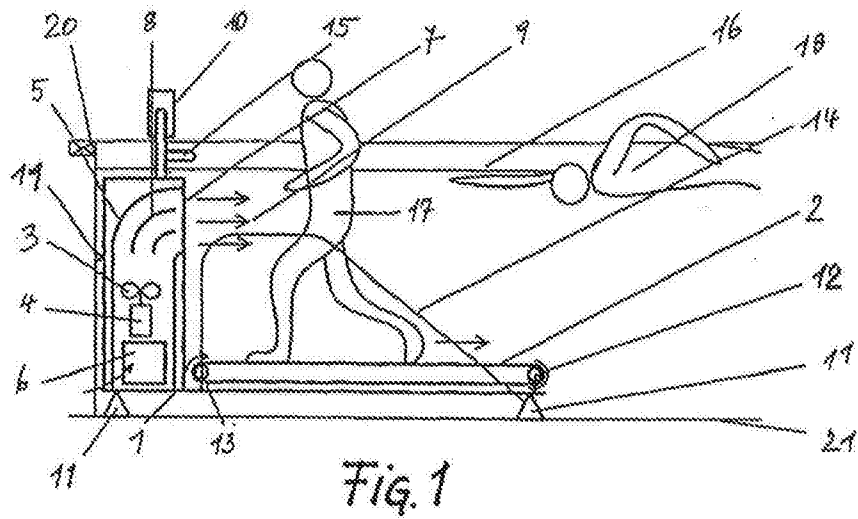
2. Az 1. igénypont szerinti edző- és/vagy rehabilitációs készülék, **azzal jellemezve**, hogy a központi számítógép szabályozási paraméterét a felhasználó (17) gyalogló- vagy futószalagon (2) elfoglalt helyzete és/vagy a szalagsebesség képezi.

3. A 2. igénypont szerinti edző- és/vagy rehabilitációs készülék, **azzal jellemezve**, hogy a felhasználó (17) helyzetének meghatározásához érzékelők vannak a gyalogló- vagy futószalagon (2) elrendezve.

4. A 3. igénypont szerinti edző- és/vagy rehabilitációs készülék, **azzal jellemezve**, hogy az érzékelők az áramlásgenerátoron (3) felszerelt távolságérzékelőkként, illetve közelségérzékelőkként vannak kiképezve.

5. Az 1-4. igénypontok bármelyike szerinti edző- és/vagy rehabilitációs készülék, **azzal jellemezve**, hogy a gyalogló- vagy futószalag (2) dőlése beállítható.





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