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(54) **An apparatus for execution of hydromassages and like treatments**

(57) The apparatus for execution of hydromassages comprises an operating unit (1a) to be plunged into water, delimiting a space (10) for at least one person and having at least one float (5) and one dispensing structure (2) supported by the float (5), the dispensing struc-

ture (2) being provided with diffuser holes (3) for emission of a fluid under pressure for hydromassage, the apparatus further comprising feeding means (1b) for supplying fluid under pressure, which means is disposed externally of the operating unit (1a) and conveys the fluid to the operating unit (1a).

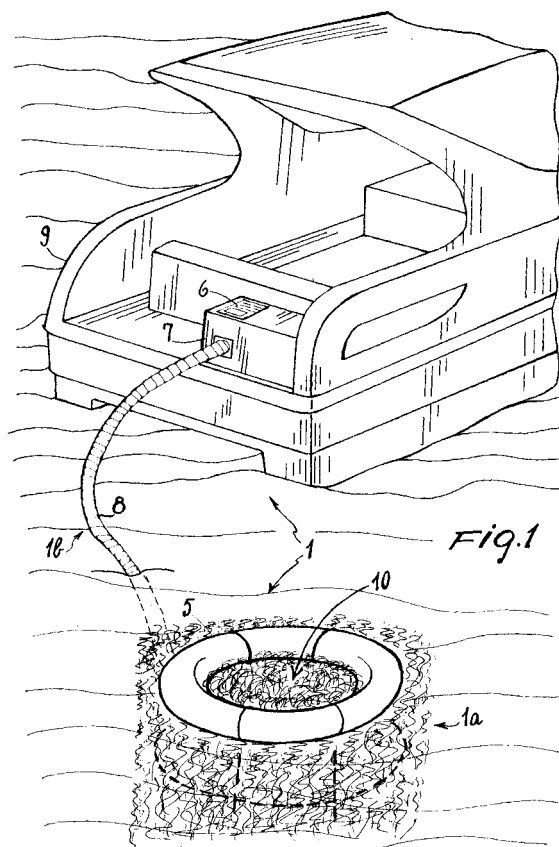


Fig.1

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Description

[0001] The invention relates to an apparatus for execution of hydromassages to be used in big masses of water adapted for bathing and also suitable for treatments of thalassotherapy, iodotherapy and the like.

[0002] It is known that execution of hydromassages has been hitherto possible in common tubs of bathrooms or in bathtubs of thermal systems, in which the water, quantitatively limited, is submitted to typical turbulent motions necessary for hydromassage by use of apparatus that are placed at the bottom and/or in the side walls of the tubs themselves or integrated therewith.

[0003] Due to the necessary presence of tubs that must be expressly equipped, hydromassages have been excluded until now from places where big masses of water are present and in general from environments where a person can freely immerse himself/herself in water. In this way the advantages resulting from hydromassages get lost exactly in the places where contact with water is most sought-after.

[0004] Likewise, hydromassages are not available to persons using small- and medium-sized boats, taking into consideration the bulkiness of the necessary equipment that is not compatible with said small and medium-sized boats and this in spite of the fact that boats are naturally put in places having substantially unlimited water amounts.

[0005] Under this situation the technical task underlying the invention is to devise an apparatus capable of substantially remedy the mentioned drawbacks.

[0006] Within the scope of this technical task it is an important aim of the invention to devise an apparatus enabling execution of hydromassages and like treatments in open places that have been hitherto excluded from this practice, in particular in places suitable for swimming where great amounts of water in which a person can immerse himself/herself are available.

[0007] Another important aim is to devise an apparatus for execution of hydromassages and like treatments that can be easily and quickly installed and possibly removed after use.

[0008] A further important aim is to devise an apparatus that is of easy transportability and limited bulkiness above all when it is not in an operating position and is housed in a boat for example.

[0009] A still further aim is to devise a greatly versatile apparatus capable of adapting itself to the most different environmental conditions and users' requirements, and also usable for treatments of different types such as thalassotherapy and iodotherapy and the like.

[0010] The technical task mentioned and the aims specified are achieved by an apparatus for execution of hydromassages and like treatments as claimed in claim 1.

[0011] Further features and advantages of the invention will be best clarified in the following detailed description of preferred embodiments of the invention, with reference to the accompanying drawings, in which:

- **Fig. 1** is a diagrammatic view showing an apparatus in accordance with the invention used in the vicinity of a boat;
- **Fig. 2** is a perspective view of a first embodiment of the apparatus;
- **Fig. 3** highlights an enlarged portion partly in section of the apparatus shown in the preceding figure;
- **Fig. 4** shows a connection between tubular portions of the apparatus;
- **Fig. 5** shows a second further connection between tubular portions of the apparatus;
- **Fig. 6** is a perspective view of a second embodiment of the apparatus; and
- **Fig. 7** is a perspective view of a further embodiment of the apparatus.

[0012] With reference to the drawings, the apparatus for execution of hydromassages and like treatments is generally identified by reference numeral **1**. It comprises an operating unit **1a** delimiting at least one space and adapted to hold at least one person, and means **1b** for feeding fluid under pressure, disposed externally of the operating unit **1a**.

[0013] The operating unit **1a** comprises a dispensing structure **2** to be plunged into water and provided with diffuser holes **3** for emission of the fluid necessary to carry out the hydromassage or treatment: the fluid generally is air under pressure that sets in motion the water with which it comes into contact and makes it turbulent so as to form a multiplicity of flows suitable for hydromassage at the inside of the mass of water.

[0014] The dispensing structure **2** pierced with holes **3** is connected by support means **4** to at least one float **5** conveniently sized so as to generate a hydrostatic thrust sufficient to keep the perforated dispensing structure **2** itself suspended in the water even when a person takes place therein.

[0015] Float **5**, which may be of the single or multiple type, may consist of a mere inflatable life belt or a rigid buoy. It forms the upper portion of the operating unit **1a**.

[0016] Engagement between the float **5** and the dispensing structure **2** pierced with holes **3** can be obtained by any type of support means **4**, a mere sling for example, formed of bands in the form of loops, by virtue of which the dispensing structure **2** is hanging from float **5**.

[0017] The support means **4** can be conceived for a spaced apart and partly free mounting between float **5** and the perforated dispensing structure **2**, or a close contact can be created between these parts so as to form a single body on installation.

[0018] The feeding means **1b** is on the contrary associated with support structures or elements different from said float **5** and is substantially independent of the support action of float **5**.

[0019] In particular, the fluid under pressure is con-

veyed to the operating unit 1a by feeding means 1b comprising control members 6, compression members consisting of a compressor 7 for example, and flexible channelling members 8 consisting for example of a flexible tube or hose.

[0020] Compressor 7 can be positioned on a boat 9 or on the border of a swimming-pool or on a wharf.

[0021] The control members 6 may also comprise a remote control switch for remote actuation of compressor 7.

[0022] Advantageously float 5 has an annular conformation, in the form of a life belt, and in co-operation with the dispensing structure 2 it delimits a space or cavity or water volume 10 useful for hydromassage, substantially having the conformation of a bathtub to hold at least one person, possibly two or more persons.

[0023] Float 5 practically is the upper edge of space 10.

[0024] The dispensing structure 2 comprises a bottom or platform 11 enabling a person to rest thereon and defining the lower base of space 10.

[0025] Platform 11 can be advantageously defined by a mere net, or it may itself be a dispensing element for the fluid under pressure. The distance of the platform 11 from the float 5 is such to allow to execute hydromassages in standing position, but said distance can be modified by adjusting means 12 described in the following, so that it can be adapted to the height of the person wishing to take advantage of the apparatus for hydromassage.

[0026] Since said apparatus can also be used in open waters and therefore with the possible presence of currents and wave motions, it is provided that a stabilisation mass 11a of appropriate weight can be suspended below the dispensing structure 2, under bottom 11.

[0027] The stabilisation mass 11a is not required if the dispensing structure 2 has a weight of its own of sufficient amount.

[0028] Then a bag or holding band 13 of the laminar type is preferably provided around the dispensing structure 2; it is preferably of coloured or transparent plastic material and is capable of preventing the turbulence useful in carrying out a hydromassage from dispersing laterally of the structure, due to the presence of currents or wave motions for example.

[0029] However the band 13 itself is preferably provided with openings 13a to reduce the resistance of the operating unit to currents or wave motions.

[0030] The holding band 13 can be made rigid with the dispensing structure 2 so as to substantially define a bathtub therewith.

[0031] In the particular embodiment shown in Figs. 2 to 5, the dispensing structure 2 is formed of tubular elements or tubes that are partly rectilinear and partly annular, are flexible and extensible and are made of plastic material.

[0032] As shown in Fig. 2, the dispensing structure 2 comprises three and possibly only two annular tubular

components or rings 14 adapted to convey the fluid under pressure and provided with diffuser holes 3.

[0033] Rings 14 are disposed in operating position parallel to each other and to float 5 so as to delimit the side surface of the useful water volume or space 10 and are connected and in communication with at least two or preferably four rectilinear components or uprights 15 that preferably enable passage of the fluid under pressure through rings 14 by connecting them along the vertical extension direction of space 10.

[0034] Both rings 14 and uprights 15 are divided into several portions so that they can be disassembled and are joined to each other by connection and communication sleeves or couplings 16, that are preferably rigid.

[0035] When four uprights 15 are provided, rings 14 comprise each four arc-shaped portions 14a, whereas, if three rings 14 are provided, each upright 15 is divided into two lengths 15a each of which is interposed between two successive rings 14.

[0036] Preferably all couplings 16 are identical and each of them has a spider-like shape formed of a first horizontal arm 16a, connected on opposite parts thereof to two arc-shaped portions 14a of a ring 14, and of a second vertical arm 16b transverse to the first one and connected to an upright 15 at least at one side thereof, as shown in Fig. 3.

[0037] If only couplings 16 are rigid, the same are engaged with rings 14 and uprights 15 by appropriate fastening clamps 17.

[0038] Couplings 16 put at the upper and lower ends of the dispensing structure 2 are closed by means of plugs 18.

[0039] In one alone of the spider-shaped couplings 16 placed on top, an attachment 19 for the feeding hose 8 is provided instead of plug 18 (Fig. 3).

[0040] The arms 16a, 16b forming the couplings 16 can be not only straight and perpendicular to each other but they may also be constructed in a different way.

[0041] In Figs. 4 and 5 in fact couplings 16 have the first arms 16a, i.e. those intended to be part of rings 14, extended in an arc-shaped configuration.

[0042] In addition, in Fig. 4 arms 16a and 16b completely intersect so that also the central axial lines of rings 14 and uprights 15 intersect with each other, whereas in Fig. 5 arms 16a and 16b are disposed externally close to each other and are provided with a side hole 20 for passage of the fluid under pressure there-through.

[0043] In the last-mentioned case also the central axial lines of the rings 14 and uprights 15 do not intersect with each other and the fluid flowing in the uprights 15 is mainly conveyed thereinto keeping said uprights 15 well outstretched if they are at least partly flexible.

[0044] When uprights 15 are flexible and extensible as in Figs. 2 and 3, they preferably include bellows-shaped portions.

[0045] With this construction the adjusting means 12 is used to delimit the length of the uprights 15 and com-

prises inextensible cables **12a** disposed internally of the uprights themselves and locking elements **12b** to be fastened to the cables **12a** at different positions thereof, for instance clamps adapted to abut against end portions of said uprights **15** where the plugs **18** for the spider-like couplings **16** are present.

[0046] Obviously rings **14** and uprights **15** can be completely stiff and directly connected with each other at connection and communication points forming a single cage-shaped body.

[0047] This technical solution is preferred when the environmental conditions are unfavourable and there are dangerous conditions so that it is suitable for the person using the operating unit **1a** to be well protected.

[0048] Alternatively, a combination of stiff elements and flexible elements may be provided. For instance, rings **14** may be stiff and uprights **15** may be flexible. Uprights **15** can also be the only tubular elements of the apparatus; rings **14** may be mere stiff metal straps in the form of a loop defining the position of the uprights **15** through which fluid under pressure flows.

[0049] Fig. 6 shows an embodiment of the invention which is distinguishable for its simplicity.

[0050] Therein the dispensing structure **2** is mainly defined by platform **11** taking the conformation of an internally hollow blowing platform provided with holes **3** for emitting fluid under pressure at least at the upper portion thereof and directly connected with hose **8**.

[0051] In this embodiment the uprights **15**, support means **4** and adjusting means **12** are substantially coincident.

[0052] In fact, they are made up of tie-rods **21** that can have different length, thereby establishing the suspension depth of platform **11** relative to float **5**.

[0053] In addition float **5** consists of a stiff unsinkable element.

[0054] In the embodiment shown in Fig. 7 the dispensing structure **2** is formed of a series of substantially-annular inflatable tubular elements **22** pierced with holes, made of plastic material, and the bottom or platform **11** is pierced with holes as well and at least partly inflatable, so as to be made substantially rigid by inflation. Float **5** is inflatable too and directly supplied from the feeding means **1b**.

[0055] In particular the channelling members **8** are directly in fluid communication with the inflatable float **5**.

[0056] This direct feeding can take place in parallel to or in series with feeding of fluid under pressure to the perforated dispensing structure **2**.

[0057] At all events, the whole operating unit **1a** can be directly inflated in water and also maintained completely deflated when it is on a boat.

[0058] Preferably, as in the technical solution shown in Fig. 7, the channelling members **8** are exclusively connected to an attachment **5a** of the inflatable float **5** and the perforated dispensing structure **2** is supplied from float **5** with which it is in fluid communication.

[0059] In this case priority in operation is given to the

inflatable float **5** ensuring the major floating thrust of the operating unit **1a**.

[0060] In this situation the condition of stable inflation - in water - of the inflatable float **5** is advantageously further ensured by an overpressure valve **23** interposed between float **5** and the underlying dispensing structure **2** and adapted to enable flowing of the fluid under pressure in the direction of the dispensing structure **2** only in the presence of a pressure in float **5** higher than a predetermined maximum inflation pressure.

[0061] In this way one can be sure that said float keeps perfectly inflated even in the presence of an interruption in the action of compressor **7**.

[0062] Obviously, the compressor must be provided with a stopping element **24** for the return flow, to be deactivated when deflation of the float **5** is desired. Advantageously, in the embodiment of Fig. 7 the dispensing structure **2** has a height that is lower than the width, so allowing to take advantage of hydromassages also in water basins having low depth and further allowing hydromassages in sitting condition.

[0063] Use of the apparatus is as follows.

[0064] Under non-use conditions, all elements can be held close to each other and/or disassembled and/or non rigid with a minimum bulkiness.

[0065] When desired, the apparatus can be assembled and/or inflated in an immediate manner and also conveniently arranged to size for the person or persons wishing to use it. In this way it can be employed with the greatest safety by children too in the open sea.

[0066] The flow of fluid generated by compressor **7** gives rise to a great turbulence which is perfectly localized even in the presence of currents and waves.

[0067] Since the feeding means **1b** can easily supply air with a pressure of many atmospheres, operation of the apparatus is ensured even in the presence of a great number of holes **3** and also in the presence of possible losses at the junctions.

[0068] The holes **3** can be directed in all directions so as to form, also together with possible losses, a wide turbulent environment which is very useful when possible currents or water displacements tend to deviate the turbulence generated by the air jets.

[0069] In addition the apparatus is steady and safe due to the presence of float **5**.

[0070] It should be also recognised that, since a surrounding structure is provided around the persons utilising the apparatus, the same also appears as a protection against possible attacks from sharks.

[0071] The invention achieves important advantages.

[0072] In fact the apparatus in accordance with the invention enables to take advantage of the benefits obtainable from hydromassages or treatments contemplating a physical contact with jets of fluids or with fluids made turbulent, at any place, provided there is the presence of water volumes sufficient to enable immersion of the operating unit.

[0073] In particular, it should be pointed out that the

minimum volume of the operating unit when it is not used enables the same to be easily transported and facilitates its use also in case of navigation with boats of limited tonnage, where it can be disposed at the stern board for example.

[0074] The apparatus can also become an important element for swimming pools, lakes, thermal stations.

Claims

1. An apparatus for execution of hydromassages and like treatments, **characterised in that** it comprises at least one operating unit (1a) to be plunged into water and delimiting at least one space (10) suitable for housing at least one person, said operating unit (1a) having at least one dispensing structure (2) provided with diffuser holes (3) for dispensing a fluid under pressure necessary for hydromassages and like treatments, and at least one float (5) adapted to support said dispensing structure (2) immersed in the water, said apparatus further comprising feeding means (1b) suitable to cause flowing of said fluid under pressure towards said space (10).
2. The apparatus as claimed in Claim 1, wherein said feeding means (1b) is external to said operating unit (1a) and substantially independent of the support of said float (5), said feeding means (1b) including compression members (7) for compressing said fluid and channelling members (8) extending between said compression members (7) and said operating unit (1a).
3. The apparatus as claimed in Claim 1 or 2, wherein said float (5) is a ringshaped element defining an upper portion of said operating unit (1a).
4. The apparatus as claimed in Claim 1, wherein said dispensing structure (2) is hanging from said float (5).
5. The apparatus as claimed in Claim 1, wherein said dispensing structure (2) comprises a platform (11) adapted to support at least one person.
6. The apparatus as claimed in Claim 5, wherein said platform (11) is defined by a net.
7. The apparatus as claimed in Claim 5, wherein said platform (11) is provided with diffuser holes (3) and is in fluid communication with said feeding means (1b).
8. The apparatus as claimed in Claim 5, wherein adjusting means (12) is provided which is adapted to selectively define and modify the distance of said platform (11) from said float (5).
9. The apparatus as claimed in Claim 8, wherein said adjusting means (12) is defined by cables (12a) extending between said float (5) and said platform (11) and by locking elements (12b) to be fastened to said cables (12a) at different positions thereof and adapted to define the position of said platform (11) relative to said float (5).
10. The apparatus as claimed in Claim 1, wherein said dispensing structure (2) is surrounded by a substantially laminar holding band (13).
11. The apparatus as claimed in Claim 10, wherein said band (13) is provided with openings (13a).
12. The apparatus as claimed in Claim 1, wherein a stabilisation mass (11a) is provided at a position hanging from the bottom of said dispensing structure (2).
13. The apparatus as claimed in Claim 1, wherein said dispensing structure (2) comprises rings (14) that, in an operating position, are disposed substantially parallel to each other and to said float (5), and uprights (15) connected to said rings (14) which, in an operating position, are disposed transversely of said rings (14).
14. The apparatus as claimed in Claim 13, wherein said uprights (15) are of tubular type and wherein said fluid under pressure is caused to pass through said uprights (15).
15. The apparatus as claimed in Claim 14, wherein said uprights (15) are made up of tubes extensible in length.
16. The apparatus as claimed in Claim 15, wherein means (12) for adjusting the length of said uprights (15) is provided, which means (12) comprises inextensible cables (12a) passing internally of said uprights (15), and locking elements (12b) in the form of clamps to be fastened to said cables (12a) at different positions thereof and designed to abut against end portions of said uprights (15) for engagement therewith.
17. The apparatus as claimed in Claim 13, wherein said rings (14) are of tubular type and wherein said fluid under pressure is caused to pass through said rings (14).
18. The apparatus as claimed in Claim 13, wherein said uprights (15) and rings (14) are of tubular type and comprise diffuser holes (3), and wherein couplings (16) are provided between said uprights (15) and said rings (14) which are adapted to enable passage of fluid under pressure between said uprights (15) and said rings (14).

19. The apparatus as claimed in Claim 2, wherein said float (5) is inflatable and wherein said channelling members (8) are in fluid communication with said float (5). 5
20. The apparatus as claimed in Claim 19, wherein said channelling members (8) are connected to said inflatable float (5) and wherein said dispensing structure (2) is fed with fluid under pressure from said float (5). 10
21. The apparatus as claimed in Claim 20, wherein an overpressure valve (23) is inserted between said float (5) and said dispensing structure (2), said valve (23) being adapted to enable flowing of said fluid in the direction of said dispensing structure (2) only in the presence of a pressure higher than a pre-determined pressure value in said float (5). 15
22. The apparatus as claimed in Claim 1, wherein said dispensing structure (2) comprises inflatable tubular elements (22). 20
23. The apparatus as claimed in Claim 1, wherein said dispensing structure (2) has a height that is lower than the width thereof, 25

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