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(54) **Massage or swim spa**

(57) The massage or swim spa, which comprises the vessel (2) mounted in the frame (1) and/or in the foundation terrain, while on the upper edge of the vessel (2) the border circumferential board (3, 6, 7) is mounted.

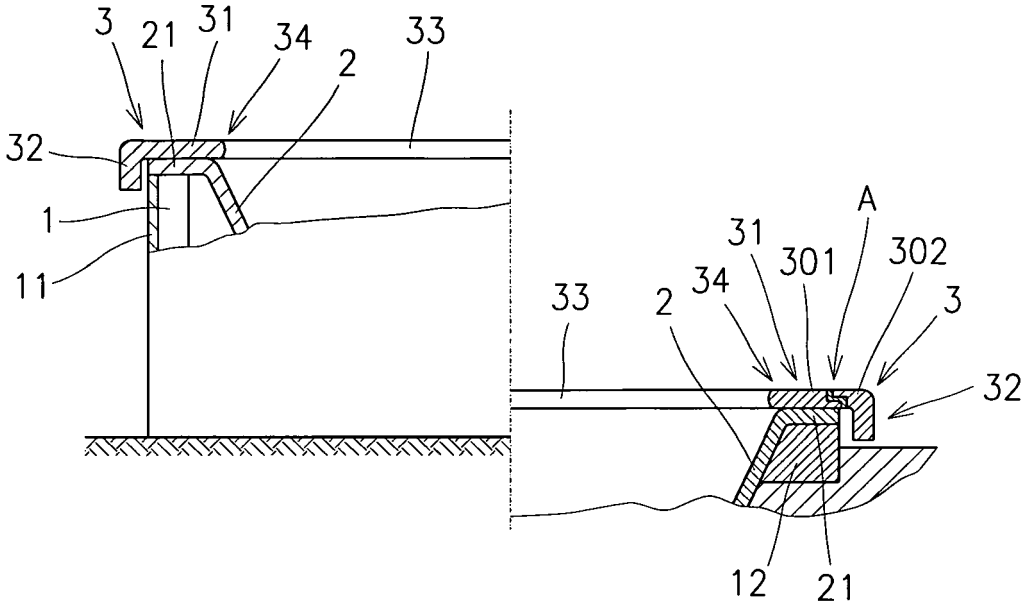

Fig. 1a

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Description

Technical field

[0001] The invention relates to the massage or swim spa, that comprises a vessel mounted in a frame and/or in foundation terrain.

Background art

[0002] Currently there exists a number of various embodiments both of massage spas designated also as whirling bath, shortly whirlpool, and larger swimming spa designated also as swim spa.

[0003] The common feature of both these groups of spa in principle is the long-term keeping the water in vessel of the spa, which is enabled by the filtration systems and chemical means that maintain the quality of water on a required level even for a long time. Due to the fact that the water in the spa is maintained on a higher temperature than the surrounding temperature, the bath is whenever prepared for usage. Taking into account the cost for tempering the water it is thus necessary, that the bath is provided with thermal insulating cover at the time when it is not used. If the spa is installed in exterior, the cover moreover prevents pollution of the water by falling leaves, etc.

[0004] Especially from the point of view of thermal insulation it is necessary that the thermo-insulating cover fits tightly to upper edge of the spa.

[0005] The vessel itself of the spa is made of thermo-plastic material reinforced by lamination or polyurethane. The upper edge of the spa vessel is shaped into a border serving for positioning the means for control of the spa functions, positioning of cushion headrests and electronic control panel. When the spa is not used, the thermo-insulating cover is placed on this border. Hence, the border must meet the requirements as to sealing the inner space of the spa.

[0006] According to DE 10315599 A1 on the edge of the vessel itself there is attached by means of screws the border, which from inside the space of the pool creates an opened space, in which there runs piping serving for example for distribution of pressure water to nozzles. Nevertheless this usage requires, that the edge of the vessel itself is adjusted as to the shape, and it restricts usage of upper surface of such border.

[0007] JP 2008154997 solves how to increase stowage space in a conventional small-area bathroom by a covering edge board on upper circumference of the bath-tub, which is in the level with the stacking surface adjacent to the bath-tub and serves for a comfortable entry into the bath-tub.

[0008] In solution according to W02007071823 A1 in one longitudinal edge of the bath-tub there is performed a through for offtake of overrunning overflow water into drainage from the bath-tub or into its water space. This edge of the bath-tub is covered by a cover which e.g. facilitates grasping the edge of the bath-tub when exiting the bath.

[0009] Such additional modifications of upper edge of the bath-tub or spa in its aesthetic level do not meet the requirements of present design of the spa, either do not solve the requirements, which the joining of the border and the vessel should meet from the point of view of thermal insulation of water in the vessel when the thermo-insulating cover is closed, nor from the point of view of hygienic requirements considering e.g. creating of fungi in the not sealed humid space between the border and the vessel.

[0010] Moreover, such borders usually are not suitable as a travelling surface of rolling elements of the parts of foldable thermo-insulating covers at their moving from the covering into the opened position and vice versa.

[0011] Meeting such requirements puts a great demand as to geometric accuracy of production especially of this section of the spa, at the same time aesthetic aspect and overall design of the spa are commercially very important viewpoints.

[0012] The goal of this invention is to provide such an edge of the vessel of the spa, which would remedy or at least reduce technical shortcomings of the background art, especially from the point of view of quality of the thermal insulation of content of the vessel and the possibility to utilise the edge of the vessel as a travelling surface of parts of the thermo-insulating cover at its closing and opening, at the same time this part would create an interesting design element, thus contributing to an excellent design of the spa.

Principle of the invention

[0013] The goal of the invention has been achieved by the massage or swim spa according to the invention, whose principle consists in that, on the upper edge of the vessel the border circumferential board is mounted. Through this the demand as to perfect execution of edge of the spa vessel itself is reduced, which favourably affects the costs for production of the vessel, moreover the border circumferential board represents a practical and from the design's point of view an interesting element of the spa.

[0014] Especially for positioning of the spa in exterior it is preferred, if the border circumferential board from environment is separated by a thermo-insulating means being arranged between its internal circumferential surface and the environ-

ment. The thermo-insulating means serves to break the heat bridge between the external circumference of the border circumferential board exposed to an outdoor temperature for example of -20°C and the internal circumference of the border circumferential board, which is to be found in inner space of the spa having temperature for example of +35°C. This is important taking into account an internal stress in material of the border circumferential board, which is created at such temperature difference and which could cause deformation and/or breakage of the board.

[0015] According to the first preferred embodiment the thermo-insulating means divides the border circumferential board into an internal circumferential section and an external circumferential section.

[0016] To break the heat bridge between the inner spa space and the environment another variant of embodiment may be used, when the thermo-insulating means is arranged on external circumference of the border circumferential board, while according to another variant of embodiment the thermo-insulating means from its external circumferential side may be covered by the external circumferential housing of the spa.

[0017] The thermo-insulating means may be created by an air gap or thermo-insulating material, and in the advantageous embodiment it may have a form of a broken annulus.

[0018] For a perfect joining between the border circumferential board and the upper edge of the vessel an insert of elastic material is arranged, which secures a full-area contact of the board with border of the vessel.

[0019] At the same time the insert of elastic material simultaneously creates sealing between the border circumferential board and the upper edge of the vessel.

[0020] Between the border circumferential board and the upper edge of the vessel a plastic adhesive and/or sealing mass is applied. This prevents diffusion of water into the joint between the border of the vessel and the border circumferential board and consequent creating of fungi in the joint.

[0021] The border circumferential board is on the upper edge of the vessel mounted in a dismountable manner. This is advantageous from the manipulation point of view with the spa between production and the customer, the border circumferential board is being joined with the vessel as late as at the customer. On the contrary, for some embodiment of the spa it is advantageous, if the border circumferential board on the upper edge of the vessel is attached in a not dismountable manner and on the site there is no need to perform the completion operations.

[0022] It is advantageous if the upper surface of the border circumferential board is planar. Next to the possibility to use the board as a stacking surface and the aesthetic reasons, surface of the border circumferential board is a suitable mating surface for positioning the thermo-insulating cover. In this connection the upper surface of the border circumferential board also serves as a suitable supporting or travelling surface for transport sliding or rolling means of the thermo-insulating cover to the spa or its section.

[0023] Preferably the border circumferential board is made of nonporous artificial stone, especially of artificial stone comprising aluminium trihydrate and binding on basis of polymeric resins. Such material exists in a very large assortment of patterns and colourful embodiments, it is easy to work and join, it is pleasant to touch, it features a sufficient strength and surface hardness and is easy to maintain.

Description of the drawing

[0024] Exemplary embodiments of the invention are schematically represented in the drawing, where the Fig. 1a shows a side view to the spa positioned in one embodiment on surface of terrain and in the second embodiment in the ground with partial cross-section of its upper section, the Fig. 1b a cross-section of the border circumferential board with thermo-insulating means inside the border circumferential board, the Fig. 1c a cross-section of the border circumferential board with thermo-insulating means between the external edge of the border circumferential board and the external circumferential housing of the spa, the Fig. 2 a detail of the joint of the vessel and the border circumferential board in section, the Fig. 3 section A-A from Fig. 2, the Fig. 4 a detail of another embodiment of the joint of the vessel and the border circumferential board in section, the Fig. 5 section B-B from Fig. 4, the Fig. 6 a detail of another embodiment of the joint of the vessel and the border circumferential board in section, and the Fig. 7 a detail of another embodiment of the joint of the vessel and the border circumferential board in section.

Examples of embodiment

[0025] Two basic arrangements of the spa according to the invention are represented in the Fig. 1. The carrying section of above-ground embodiment consists of the schematically represented spa frame **1**, which is positioned on a flat ground, and in which the spa vessel **2** is positioned. From outside the frame **1** is enclosed by the side external circumferential housing **11** Between it and the external wall of the vessel **2** there is arranged the not represented known accessory of the spa, such as for example device for heating the bath, parts of water filtration circuit and means of massage system. In the second embodiment the spa is positioned in the ground, while the upper edge of the spa vessel **2** is close above the terrain level, while the carrying means consists of a not in detail represented ground foundation **12**.

[0026] The spa vessel **2** is performed as a monocoque and on its upper edge it has an open border **21**, on which there

is mounted the border circumferential board **3** in the represented embodiment formed of the horizontal section **31**, which continues into the vertical section **32**. The border circumferential board **3** in an exemplary embodiment represented in the left half of the Fig. 1a is performed as a monolith. In the not represented embodiment the horizontal section **31** and the vertical section **32**, due to technological reasons, create two semi-products, which are joint by bonding. Circumference of the opening **33** in the horizontal section **31** of the border circumferential board **3** on the upper surface is provided with rounding **34**.

[0027] In the especially preferable embodiment represented in the Fig. 1b the border circumferential board **3** is formed of an internal circumferential section **301** and external circumferential section **302**, between which there is provided the thermo-insulating means **303** performed for example as an air gap. In another embodiment this gap is filled with thermo-insulating material. This embodiment prevents creation of internal stress of material if the spa is positioned in exterior, which could occur in winter season due to low outside temperature and substantially higher temperature of water inside the spa. Material filling the gap simultaneously creates the dilation layer necessary due to a different temperature of these parts **301**, **302**. The embodiment according to the Fig. 1 is applicable also at another border circumferential boardsaccording to this invention. The sections **301, 302** may be of various colourful surface finish, which contributes to an interesting look of the spa design. It is obvious that the gap may be of another suitable shape. In embodiment according to the Fig. 1c the border circumferential board **3** is embedded in the external circumferential housing **11.** Between the external circumference of the border circumferential board **3** and internal circumference of the housing **11** the thermo-insulating means **303** is arranged. The thermo-insulating cover **13** in a closed position fits tightly simultaneously to upper surfaces of the border circumferential board **3** as well as of the external circumferential housing **11.** External surface of the border circumferential board **3** in a closed status is not in contact with environment and the heat gradient inside the board **3** is not great.

[0028] In another not represented embodiment the thermo-insulating means is arranged on external circumference of the border circumferential board and its external circumference is in contact with environment.

[0029] In exemplary embodiment according to the Fig. 1 the border circumferential board **3** with the spa vessel **2** is bound only by a frictional force given by a weight of the border circumferential board **3** and by properties of mutual contact surfaces, possibly by contact of vertical section **32** of the border circumferential board **3** with the external circumference of the border **21** and/or of external circumferential housing **11** after adjusting the respective allowance. In alternative of the represented embodiment between the contact surfaces of the border **21** and the horizontal section **31** of the border circumferential board **3** there is applied a plastic adhesive, which may have also the function of flat packing.

[0030] In the not represented embodiment between the contact surfaces of the horizontal section **31** of the border circumferential board **3** and the border **21** of the vessel **2** there is on both sides bonded-in the rubber insertion. In another embodiment the rubber insertion is bonded only on the border **21** of the vessel **2** and the border circumferential board **3** is placed on it.

[0031] In the Fig. 2 and 3 between the contact surfaces of horizontal section **31** of the border circumferential board **3** and the border **21** of vessel 2 there is inserted the rubber insertion **4** on upper surface provided with through grooves **41** connecting the edge being adjacent to inside of the vessel **2** with external edge of the border **21** of the vessel **2.**

[0032] In the Fig. 4 and 5 the flat rubber insertion **4** is replaced with rubber stripes **5**, between which there are the gaps **51** connecting the edge being adjacent to inside of the vessel **2** with external edge of the border **21** of the vessel **2**. The internal vertical section **35**, whose upper internal circumferential edge is provided with rounding **36**, is connected with internal circumference of the horizontal section **31** of the border circumferential board **3**. Overlap of the horizontal section **31** above the internal section of the spa vessel **2** represented in the Fig. 1 and 2 creates a breakwater, which at usage of the spa prevents overflowing of water over its edge. The internal vertical section 35of the border circumferential board **3**, represented in the Fig. 4, increases this effect.

[0033] The joints of sections **31, 32, 35** are performed by bonding, while execution of bonded surfaces and finish of bonded joints is performed in such a manner that the joints are visually suppressed in effect.

[0034] Interconnection of inside of the vessel **2** with external edge of the border **21** of the vessel **2** through the grooves **41** or gaps **51** ensures a perfect ventilation of the contact area of the spa vessel **2** and the border circumferential board **3** preventing creation of unwilling micro-organisms in this space.

[0035] The Fig. 6 and 7 represents further embodiment of the border circumferential board and its connection with the spa vessel **2**. The border circumferential board **6**, possibly **7**, has only a planar portion.

[0036] In the Fig. 6 in the lower surface of the border circumferential board **6** there is performed a circumferential recess **61**, whose depth corresponds to thickness of the border **21** of the vessel **2** and width of recess **61** creates a necessary radial assembly gap **62** between the circumference border **21** and the border circumferential board **6**. All edges are provided with rounding **63**.

[0037] In this embodiment the circumferential border **21** of the vessel **2** is connected with the border circumferential board **6** by means of bonding, through which the joint between the border circumferential board **6** and the vessel **2** is perfectly tight. The spa vessel **2** with attached border circumferential board **6** as an undetachable unit is placed in the spa frame **1** to which it is attached by means of not represented dismountable joint.

[0038] This embodiment of the joint of the vessel **2** and of the border circumferential board **6** does not have a smooth transition between surface of the border circumferential board **6** and the internal surface of the vessel **2**, which contributes to suppression of negative visual impression caused by a possible uneven width of the joint in place of this transition. Moreover overlap of the border circumferential board **6** in direction inside the spa vessel **2** to a smaller extend prevents overflowing of water over the edge of the border circumferential board **6**.

[0039] The Fig. 7 shows a detail of a cross-section of the joint derived from embodiment of the Fig. 6. The difference is in connection of the vessel **2** with the border circumferential board **7**. Here the connection is performed by means of the dismountable screwed joints 8 arranged along circumference of the border circumferential board **7**. The screwed joint comprises the screw **81** with washer **82**, which passes through a hole in the border **21** of monocoque of the vessel **2** and is screwed into a blind thread **83** performed from the bottom side in the border circumferential board **7**. Between contact surfaces of the vessel **2** and of the border circumferential board **7** the sealing compound is applied.

[0040] This embodiment creates a smooth transition between surface of the border circumferential board **7** and the internal surface of the vessel **2**, nevertheless the prerequisite is a perfect execution of the bonded surfaces, which enable to visually suppress the joint between surfaces of the spa vessel **2** and the border circumferential board **7**. Further edges of the border circumferential board **7** are provided with rounding **71**.

[0041] There could be also other arrangements of the joint of the border circumferential board **3** with the vessel **2**, which fulfil both functional and aesthetic requirements.

[0042] The vessel **2** is of a usual composition, which consists of an acrylic basic layer, whose outer surface is provided with a thermo-insulating layer.

[0043] The border circumferential boards **3, 6, 7**, respectively their sections **31**, **32, 36**, are preferably made of artificial stone, which under various commercial designations is produced from material which as a filling mass usually comprises aluminium trihydrate, as a binding mass the polymeric resins, usually the acrylate or polyester, are used, featuring a high thermal and chemical resistance and after curing a high hardness and resistance towards mechanical damage. Moreover this material is nonporous, thus non-absorbing. Present bonding technologies with subsequent grinding and polishing enable to create a joint, whose seam is suppressed so that there is an impression of integral material. At the same time this enables to produce economically one border circumferential board from several sections from stripe semi-products of standard production width (for example 700 mm) through their bonding and perfect finish of the seam, possibly of its vicinity. Next to aesthetic advantages the solution according to this invention ensures an ideally even, smooth and hard upper surface of the border circumferential board **3, 6, 7**, thus perfect sealing of the joint of the vessel **2** with the not represented thermo-insulating cover. The strength and hardness of material of the border circumferential board and its smooth surface enable to utilise its upper surface as a track for travelling means of sections of the thermo-insulating cover at its removal or covering of the bath. At the same time the proposed arrangement of border circumferential board **3, 6, 7** may reduce the costs for production of the vessel **2**, as it simplifies and facilitates forming of its upper section, while surface of its border **21** need not to be a perfect one.

List of referential markings

[0044]

1	spa frame
11	external circumferential housing
12	ground foundation
13	thermo-insulating cover of spa
2	vessel
21	border (of monocoque of vessel)
3	border circumferential board
31	horizontal section (of border circumferential board)
32	vertical external section (of border circumferential board)
33	opening (in border circumferential board)
34	rounding (of border circumferential board)
35	vertical internal section (of border circumferential board)
36	rounding (of border circumferential board)
301	internal section of border circumferential board
302	external section of border circumferential board
303	thermo-insulating means
4	flat rubber insertion

(continued)

41	groove (in flat rubber insertion)
5	rubber stripe
51	gap (between rubber stripes)
6	border circumferential board
61	recess (in border circumferential board)
62	assembly gap
7	border circumferential board
71	rounding (of border circumferential board)
8	screwed joint (of border circumferential board and spa vessel)
81	screw
82	washer
83	blind thread (in border circumferential board)

Claims

1. The massage or swim spa, which comprises the vessel (2) mounted in the frame (1) and/or in the foundation terrain, **characterised in that**, on the upper edge of the vessel (2) the border circumferential board (3, 6, 7) is mounted.

2. The massage or swim spa according to the claim 1, **characterised in that**, between internal surface of the border circumferential board (3, 6, 7) and the environment there is arranged the thermo-insulating means.

3. The massage or swim spa according to the claim 2, **characterised in that**, the thermo-insulating means divides the border circumferential board (3, 6, 7) into internal circumferential section (301) and external circumferential section (302).

4. The massage or swim spa according to the claim 2, **characterised in that**, the thermo-insulating means is arranged on external circumference of the border circumferential board (3, 6, 7).

5. The massage or swim spa according to the claim 4, **characterised in that**, the thermo-insulating means from the external circumferential side is covered by external circumferential housing of the spa.

6. The massage or swim spa according to the claim 3 or 5, **characterised in that**, the thermo-insulating means is created by an air gap.

7. The massage or swim spa according to any of the claims 3 to 6, **characterised in that**, the thermo-insulating means is created by a thermo-insulating material.

8. The massage or swim spa according to the claim 6 or 7, **characterised in that**, the thermo-insulating means has a shape of a broken annulus.

9. The massage or swim spa according to any of the previous claims, **characterised in that**, between the border circumferential board (3, 6, 7) and the upper edge of the vessel (2) an insert of elastic material is arranged.

10. The massage or swim spa according to the claim 9, **characterised in that**, the insert of elastic material creates sealing between the border circumferential board (3, 6, 7) and the upper edge of the vessel (2).

11. The massage or swim spa according to any of the claims 1 to 9, **characterised in that**, between the border circumferential board (3, 6, 7) and the upper edge of the vessel (2) a plastic adhesive and/or sealing mass is applied.

12. The massage or swim spa according to any of the claims 1 to 8, **characterised in that**, the border circumferential board (3, 6, 7) on the upper edge of the vessel (2) is mounted in a dismountable manner.

13. The massage or swim spa according to any of the previous claims, **characterised in that**, the upper surface of the border circumferential board (3, 6, 7) is planar and it creates supporting or travelling surface for transport sliding or

rolling means of at least one section of thermo-insulating cover of the spa.

14. The massage or swim spa according to any of the previous claims, **characterised in that**, the border circumferential board (3, 6, 7) is made of non-porous artificial stone.

15. The massage or swim spa according to the claim 13, **characterised in that**, the artificial stone comprises aluminium trihydrate and binding on basis of polymeric resins.

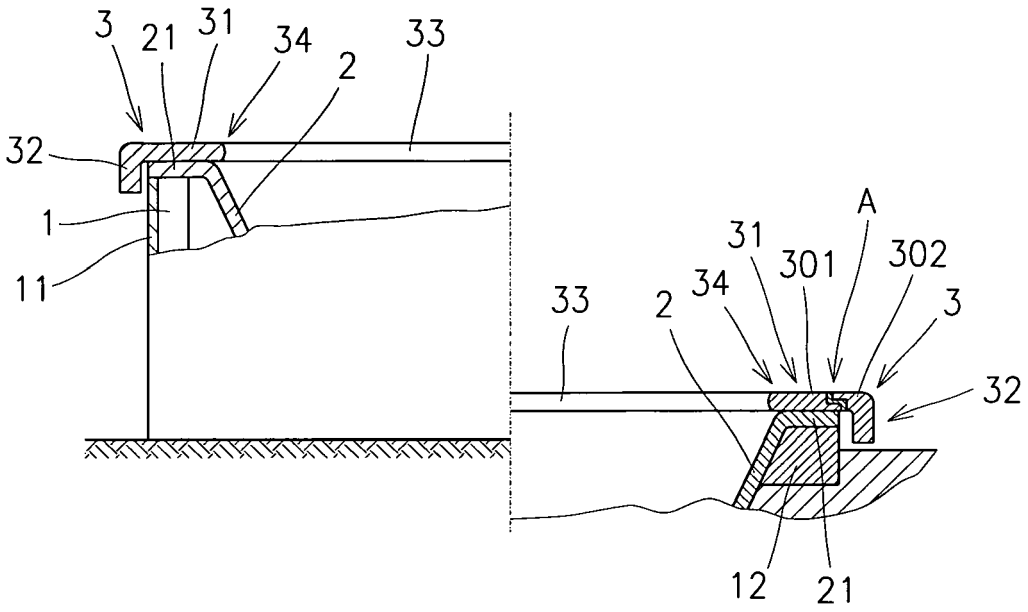

Fig. 1a

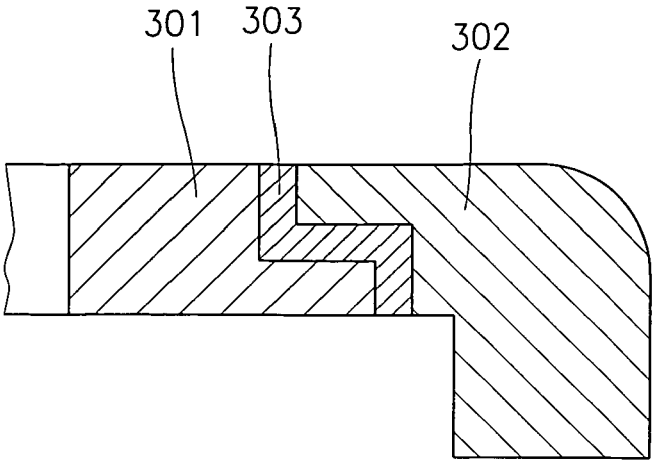

Fig. 1b

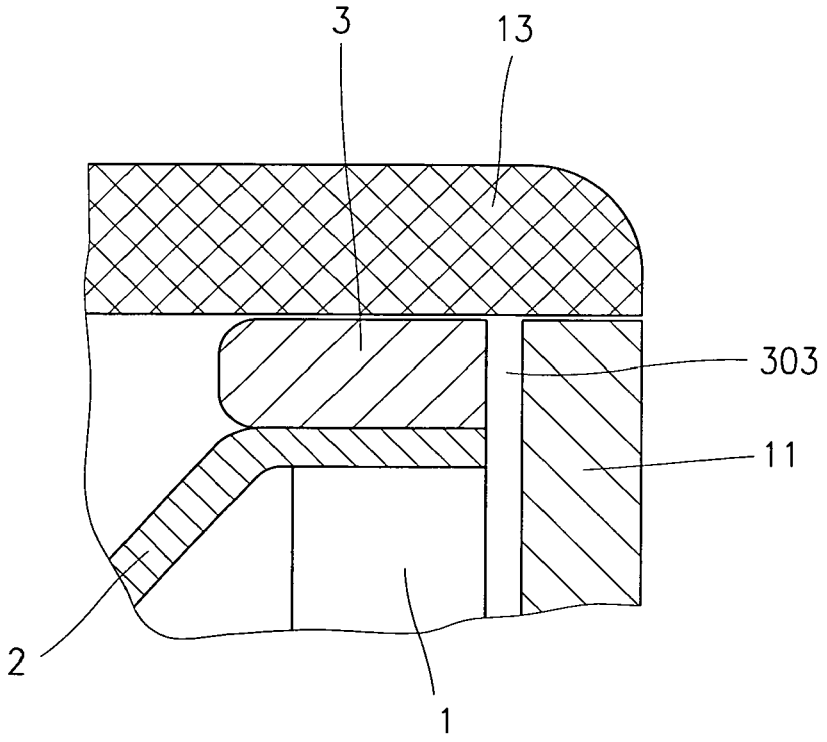

Fig. 1c

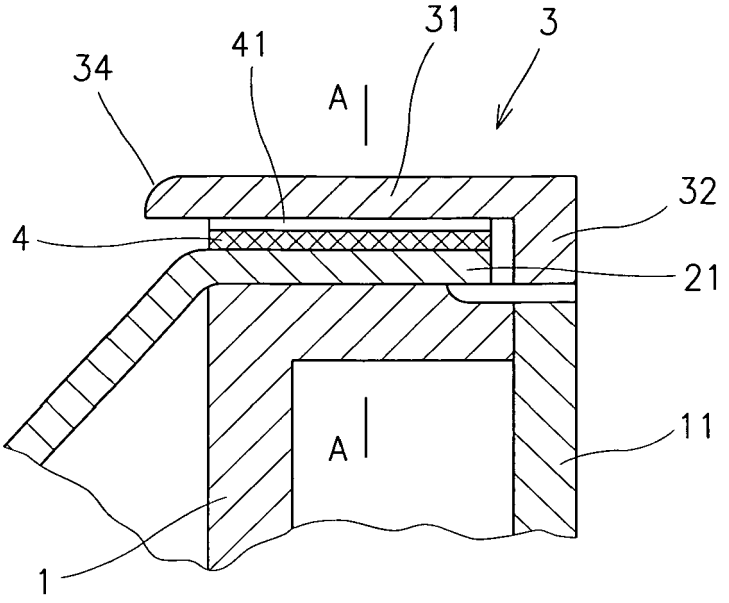

Fig. 2

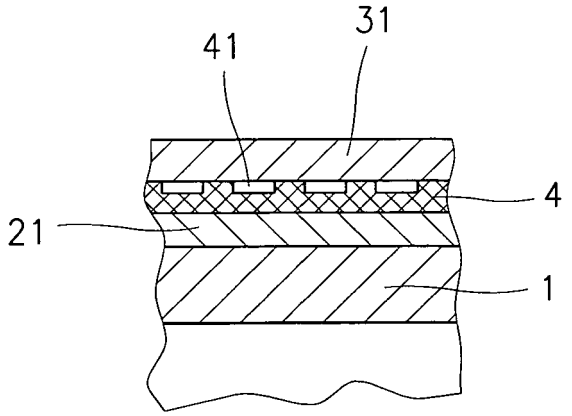

Fig. 3

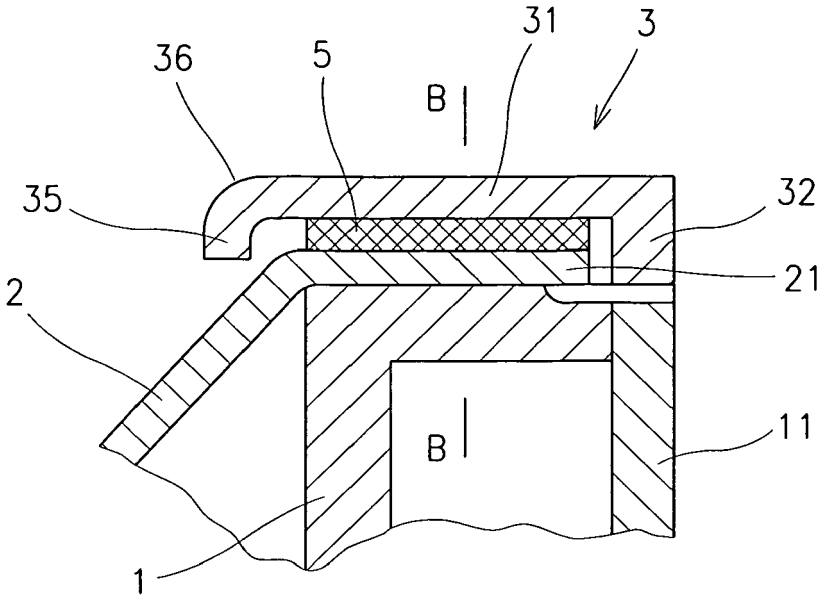

Fig. 4

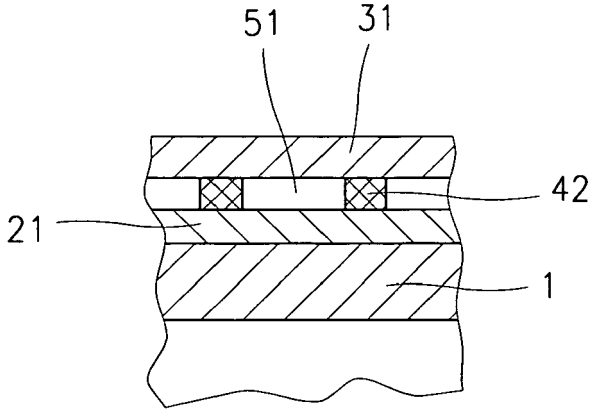

Fig. 5

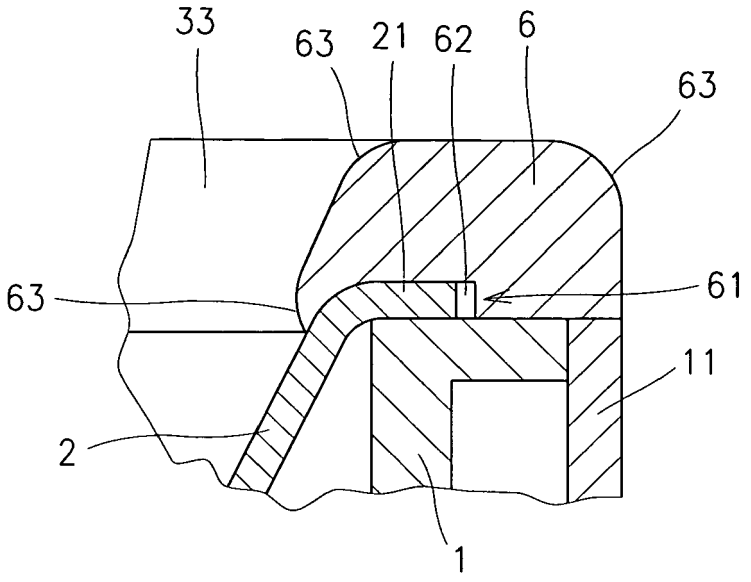

Fig. 6

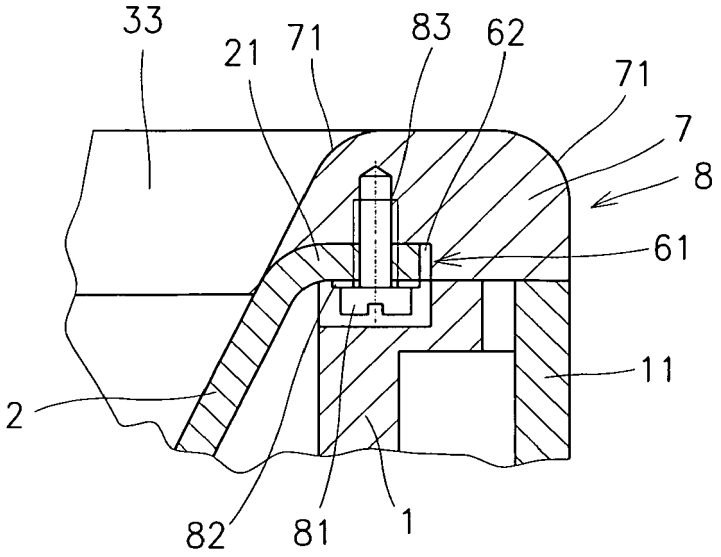

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 10 18 9559

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

A61H
A47K
E04H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12 January 2012	Knoflacher, Nikolaus

CATEGORY OF CITED DOCUMENTS

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1

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