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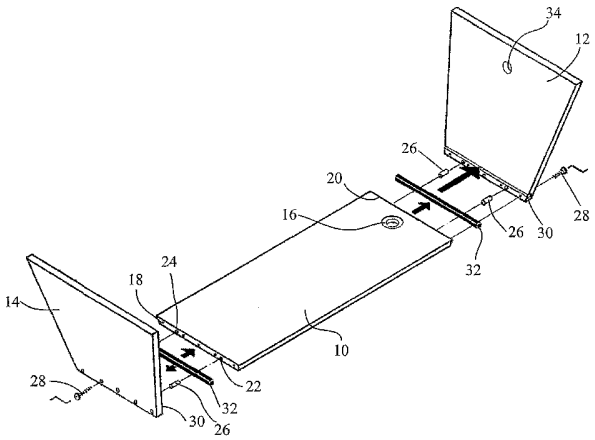
(54) **Title:** A TUB MADE FROM WOOD AND HAVING A WOODEN BOTTOM PLATE



(57) **Abstract:** A tub comprises a wooden bottom wall (10) having a top wall and a peripheral wall defining a circumference and a plurality of wooden side-wall elements (12,14,36,38) connected to the wooden bottom wall at the circumference. Each of the plurality of wooden side-wall elements defines an inner side and an outer side and the wooden side-wall elements are interconnected so as to form a continuous circumferential wall encircling the wooden botom wall. The continuous circumferential wall and the wooden bottom wall together defines an inner space, in which each of the inner sides of the wooden side-walls faces the inner space. A groove (30,40) is defined in each of the wooden side-wall elements in the inner side facing the inner space at a position below the top wall of the wooden bottom wall, and at least one resilient, waterproof member (32) is received in each of the grooves defined in each of the wooden side-wall elements. A first multitude of apertures (22,24) are defined in the peripheral wall of the wooden bottom wall and a second multitude of apertures are defined in the plurality of wooden side-wall elements at a distance below the groove. At least a set of the first and the second multitude apertures is positioned in registration. A third multitude of fastening devices (26,28) are received in the set of apertures being in registration.

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A TUB MADE FROM WOOD AND HAVING A WOODEN BOTTOM PLATE

The present invention relates to a tub made from wood and having a wooden bottom plate, in particular a wooden bath tub or similar large size tub, having a height of at least 30 cm, such as 30-100 cm, e.g. 40-80 cm, 50-70 cm, or preferably 60 cm, and defining a width of the order of 70-200 cm, such as 80-160 cm, 100-150 cm. It is contemplated that the above measures may vary as a specific tub for a specific intentional application may vary from the conventional bath tub configuration still the tub is to be considered part of the present invention as defined in the appending claims.

Provided the tub is made from wooden materials such as solid oily wood material, e.g. teak, the tub has to resist the periodic exposure to moisture and may expand and contract due to variation in humidity and temperature without changing the overall configuration of the tub as the tub is made from wood.

Wooden bath elements have been described and/or illustrated in previous patent publications such as EP 1,459,669, WO 04/043214, JP 03037122A, JP 05184476A, and US Des. 261 926.

An object of the present invention relates to the problem of providing a lasting sealing between the bottom plate and the sidewalls of the tub, which tub is used on a non-permanent basis, i.e. frequently allowed to be used during a short or longer period of time and frequently allowed to stay unused for an extended period of time during which the tub may dry, thereby causing extreme contraction of the sidewalls and/or the bottom plate.

The present invention relates to a tub, the tub comprises:

a wooden bottom wall having a top wall and a peripheral wall defining a circumference,

a plurality of wooden side-wall elements connected to the wooden bottom wall at the circumference, each of the plurality of wooden side-wall elements defining an inner side and an outer side, the plurality of wooden side-wall elements

being interconnected so as to form a continuos circumferential wall encircling the wooden bottom wall, the continuos circumferential wall and the wooden bottom wall together defining an inner space, each of the inner sides of the wooden side-walls facing the inner space,

a groove defined in each of the wooden side-wall elements in the inner side facing the inner space at a position below the top wall of the wooden bottom wall,

at least one resilient, waterproof member received in each of the grooves defined in each of the wooden side-wall elements,

a first multitude of apertures defined in the peripheral wall of the wooden bottom wall and a second multitude of apertures defined in the plurality of wooden side-wall elements at a distance below the groove, at least a set of the first and the second multitude of apertures being positioned in registration, and

a third multitude of fastening devices received in the set of apertures being in registration.

The wooden bottom-wall preferably defines a planer surface or in an alternative embodiment a non-planer surface. The planer surface is contemplated to be more comfortable to a person sitting in the tub. However, an embodiment where the wooden bottom-wall is not planer is also a part of the present invention, as a non-planer surface may offer other advantages, such as massaging properties, e.g. via a series of grooves and/or ridges, or other properties.

The wooden bottom wall may be a solid pate or may alternatively be composed of two or more wooden elements.

The wooden bottom wall may define an overall geometry being circular, elliptical, round, square, oblong, rectangular, triangular, trapeze, any curved configuration or any combinations thereof. In a presently preferred embodiment, the wooden bottom wall defines a substantially rectangular geometry. The tub may be built into a structure in a bathroom, e.g. using tiles and concrete or the like. Furthermore, the tub according to the present invention may be used as a Jacuzzi and include a number of apertures or openings for receiving air, water or other fluid, e.g. for

providing a massaging stream of air-bubbles or water-jet. When used as a Jacuzzi, the bottom wall preferably defines 4, 6 or 8 sides.

The plurality of wooden side-wall elements may be constituted by as few as two elements, e.g. two elements each comprising two parts or sides forming an angle. The plurality of wooden side-wall elements form a continuos side-wall, but not necessarily a differentially side-wall as the side-wall preferably includes edges.

The wood bottom-wall is positioned at a location where a majority of the length of the side-wall extends to the side or part where the inner space is defined. The groove is defined in the side-wall in the side facing the inner space. The groove may define any geometrical configuration, such as square, oblong, triangular, circular, semi-round, semicircular, trapeze, pyramid or any combination thereof.

Advantageously, the grooves may be defined at a position where they are, individually, parallel to the top surface of the wooden bottom wall when the side-wall elements are mounted to the wooden bottom wall at the circumferential wall. The groove does not need to be formed at the same distance from the bottom of the side of the side-wall element at the entire length of the groove.

The resilient, waterproof member or members is contemplated to provide protection for the fastening devices used to fasten the wooden side-wall elements to the bottom wall. In a presently preferred embodiment, the third multitude of fastening devices is constituted by metallic devices, such as nails or screws. As the fastening devices are of a metallic material, they are subject to possible corrosion or degradation when exposed to water, with or without soap or soap flakes. The tub may be used for persons wishing to take a bath or alternatively as a wash tub for washing clothes or the like.

In the tub according to the present invention each of the wooden side-wall elements may further define a first and an opposite second side edge, and

each of the wooden elements being connected to a neighbouring wooden element by the first edge being mounted at the second edge of the neighbouring wooden side-wall element.

The two edged may be joined or the first edge may be in contact with the inner side of the neighbouring wooden side-wall element or in the alternative the second edge may be in contact with the inner side of the neighbouring wooden side-wall element.

A number of apertures may be defined in the first and/or second side edge, while a further number of apertures may be defined in the inner side of either of the wooden side-wall elements. Fastening devices, such as nails or screws may then be used to fasten or mount a wooden side-wall element to a neighbouring wooden side-wall element. Additionally, apertures or holes may be included in a set of neighbouring wooden side-wall elements for receiving wooden pegs or dowels. The wooden pegs may assume any geometrical configuration, such as a cylinder, a slab, a wedge, a block or the like.

Preferably, at least one of the wooden side-wall elements may further include two additional grooves each being parallel with the first and the second sides respectively. Advantageously, at least one resilient, waterproof member may be positioned in each of the additional grooves.

A specific advantage relates to the tub according to the present invention, wherein a sixth multitude of apertures may be defined in the peripheral wall of the wooden bottom wall and a seventh multitude of apertures may be defined in the plurality of wooden side-wall elements at a distance below the groove, at least a two of the sixth and the seventh multitude of apertures being positioned in registration, and

an eighth multitude of fastening devices received in the at least two apertures being in registration.

Specifically, the eighth multitude of fastening devices may be constituted by wooden pegs or dowels. The use of wooden pegs or dowels is contemplated to give the

advantage of the wooden pegs or dowels expanding and/or contracting in a manner similar to that of the wood constituting the side-walls and/or bottom wall.

Additionally, the third and/or fifth multitude of fastening devices is constituted by screws or nails or a combination thereof.

Particularly advantageously, the resilient, waterproof member may be made from rubber, silicone, asphalt, a synthetic material, a natural material or any combinations thereof. The resilient, waterproof member ensures that water does not reach the fastening devices, such as the nails, screws, wooden pegs and/or the dowels, and hence the corrosion, degradation or disintegration of fastening devices is not affected by the use of the tub.

Presently, it is preferred that the wooden bottom wall and/or the plurality of wooden elements are made from a hard oily sort of wood, such as teak tree, oak tree, beech tree, alternatively by pine, further alternatively any combinations thereof.

Each of the plurality of wooden elements may define an overall geometry being circular, semi-circular, elliptical, semi-elliptical, round, semi-round, square, oblong, rectangular, triangular, trapeze, any curved configuration or any combinations thereof. In the presently preferred embodiment, each of the plurality of wooden elements define a trapeze geometry. Specifically, at least a pair of the plurality of wooden elements may define identical geometrical configurations. Two identical elements may the e.g. be used for end pieces and another two identical pieces may be used as side-walls.

For draining water from the tub after use, the bottom wall may further include an aperture for draining fluid and/or at least one of the plurality of wooden elements further includes an aperture for draining excess fluid. The apertures for draining excess fluid may preferably not be closed off by e.g. a plug and may be connected to drainage for leading the excess water away from the tub. The aperture for draining fluid that may be formed in the bottom wall may preferably receive a plug

for ensuring that the water filled in the tub does not disappear before the person wishing to take a bath have finished.

The sealing compound may be constituted by any high elastic sealing compound such as an asphalt or preferably a silicone-based material.
A presently preferred embodiment of a tub comprises a wooden bottom wall defining a rectangular geometry and four side-walls each defining a trapeze outer geometry and are mounted at the four sides of the bottom wall. Two of the side-walls are connected to the other two sidewalls so that the sides of the two side-walls are in facial contact with the surface of the other two side-walls facing an interior space defined by the four side-walls and the bottom wall.

The invention is to be explained in the following with reference to the drawings in which:

Fig. 1 is an elevated, schematic view of part of a bathtub assembly, and
Fig. 2 is an elevated, schematic view of the bathtub assembly of Fig 1.

Fig. 1 is an elevated, schematic view of part of a bathtub assembly comprising a base plate 10 and two end pieces 12 and 14. In a presently preferred embodiment of the present invention, the bottom wall 10 is constituted by a single piece of material, preferably being wood. Also, each of the end walls or end pieces 12 and 14 are constituted by single plates or pieces of wood.

The bottom wall 10 includes an aperture 16 for draining water from the bath tub. The aperture or drain 16 defines a circular geometry and is adapted for receiving a plug that may provide a ceiling so that the water does not leak from the bath tub when a person wishes to take a bath. The aperture 16 includes a plastic or metallic member for providing a sealable closure with the use of a plug, not illustrated, so that the tub may be filled with water.

At the short ends 18 and 20 of the bottom wall 10, a number of apertures or openings are formed in the bottom wall 10. The apertures 22 and 24 are adapted for

receiving a dowel 26 and a screw 28 respectively. The dowel 26 is made of wood, preferably of the same type of wood as the bathtub, however, other types of wood may be used for forming the dowels. In alternative embodiments, the dowels may be constituted by wooden pegs or plugs for providing the same functionality as to fixate the end walls 12 and 14 and also the side walls illustrated in Fig. 2.

In the end walls 12 and 14, a number of through-going apertures are formed for receiving the screws 28. The screws are used for joining the end walls 12 and 14 to the bottom wall 10, while ensuring that the end walls 12 and 14 are not displaced and also to provide a water tight joining of the end walls 12 and 14 to the bottom wall 10. In the end walls 12 and 14, a groove 30 is formed. The groove 30 receives a resilient water proof member 32, preferably being a silicone seal for providing a water tight or water proof joining of the end walls 12 and 14 to the bottom wall 10. In a presently preferred embodiment, the resilient, waterproof member 32 is received in a groove 30 being parallel with the surface of the bottom wall 10. As the bottom wall 10 in Fig. 1 is illustrated as a flat plate, the groove 30 is illustrated as a straight groove, but as the bottom wall 10 may have any geometrical configuration, the groove 30 may assume any geometry.

When placing the resilient, water proof member 32 in the groove 30, an adhesive may be applied to one or more sides, either of the member 32 or the inside of the groove 30, or alternatively to the end of the bottom wall 10. This is contemplated to ensure that the member 32 is kept in place in situations where the tree or wood used to form the end walls 12, 14 and/or the bottom wall 10, dries out, e.g. in periods where the tub is not used and therefore dries out and contracts.

As illustrated in Fig. 1, the end wall 12 further includes a through-going aperture 34 acting as an overflow guard or drain for draining water at or above the level at which the aperture 34 is placed. The aperture 34 may be further connected to a pipe system for guiding or leading the water away from the tub and into e.g. a sewer drain. Furthermore, the aperture 34 may be connected to a pipe system also being connected to the aperture 16, which pipe system is then further connected to the drain or waste pipe.

Fig. 2 schematically illustrates the assembled bottom wall 10 and end walls 12 and 14 from Fig. 1 and also sidewalls 36 and 38. Like the end walls 12 and 14, the side walls 36 and 38 include a groove 40 parallel with the bottom wall 10, wherein a resilient, water proof member 42 is received. Like the resilient, water proof member 32 illustrated in Fig. 1, the member 42 is made from silicone or rubber. In addition to the groove 40, each of the side walls 36 and 38 includes two additional grooves 44 and 46 parallel with the end wall 12 and 14, respectively. In the grooves 44 and 46, resilient water proof members are received similar to the member 42.

The grooves 30, 40, 44 and 46 are formed in the sides of the end walls 12, 14 and side walls 36, 38 facing the interior of the bath tub and the fastening means constituted by the screws and the dowels are placed in the end walls 12, 14 and side walls 36, 38 in a position where the water is not able to cause corrosion or damage to the screws and dowels, while maintaining a water tight seal of the tub.

The elements illustrated in Figs. 1 and 2 are illustrated as being solid plates, however embodiments wherein the end walls 12, 14, bottom wall 10 and/or the side walls 36, 38 are made from a number of elements, which may be glued or in other ways assembled so as to provide a water proof surface.

CLAIMS

1. A tub comprising:

a wooden bottom wall having a top wall and a peripheral wall defining a circumference,

a plurality of wooden side-wall elements connected to said wooden bottom wall at said circumference, each of said plurality of wooden side-wall elements defining an inner side and an outer side, said plurality of wooden side-wall elements being interconnected so as to form a continuos circumferential wall encircling said wooden bottom wall, said continuos circumferential wall and said wooden bottom wall together defining an inner space, each of said inner sides of said wooden side-walls facing said inner space,

a groove defined in each of said wooden side-wall elements in said inner side facing said inner space at a position below said top wall of said wooden bottom wall,

at least one resilient, waterproof member received in each of said grooves defined in each of said wooden side-wall elements,

a first multitude of apertures defined in said peripheral wall of said wooden bottom wall and a second multitude of apertures defined in said plurality of wooden side-wall elements at a distance below said groove, at least a set of said first and said second multitude of apertures being positioned in registration, and

a third multitude of fastening devices received in said set of apertures being in registration.

2. The tub according to claim 1, wherein said grooves are parallel to said top surface of said wooden bottom wall.

3. The tub according to any of the claims 1 or 2, wherein each of said wooden side-wall elements further define a first and an opposite second side edge, and

each of said wooden elements being connected to a neighbouring wooden element by said first edge being mounted at said second edge of said neighbouring wooden side-wall element.

4. The tub according to claim 3, wherein said first edge is in contact with said inner side of said neighbouring wooden side-wall element or in the alternative said second edge is in contact with said inner side of said neighbouring wooden side-wall element.

5. The tub according to claim 3 or 4, wherein at least one of said wooden side-wall elements further include two additional grooves each being parallel with said first and said second sides respectively.

6. The tub according to claim 5, further including a fourth multitude of apertures defined in each of said plurality of wooden elements between said additional groove and said first and said second sides respectively, and

a fifth multitude of fastening devices received in a pair of said first type of apertures in a pair of neighbouring wooden elements.

7. The tub according to claim 4 or 5, wherein at least one resilient, waterproof member is positioned in each of said additional grooves.

8. The tub according to any of the claims 1-7, wherein a sixth multitude of apertures is defined in said peripheral wall of said wooden bottom wall and a seventh multitude of apertures defined in said plurality of wooden side-wall elements at a distance below said groove, at least a two of said sixth and said seventh multitude of apertures being positioned in registration, and

an eighth multitude of fastening devices received in said at least two apertures being in registration.

9. The tub according to claim 8, wherein said eighth multitude of fastening devices is constituted by wooden pegs or dowels.

10. The tub according to any of the claims 1-9, wherein said third multitude of fastening devices is constituted by screws or nails.

11. The tub according to any of the claims 1-10 wherein said resilient, waterproof member is made from rubber, silicone, asphalt, a synthetic material, a natural material or any combinations thereof.

12. The tub according to any of the claims 1-11, wherein said wooden bottom wall and/or said plurality of wooden elements are of a hard oily sort, such as teak tree, oak tree, beech tree, alternatively by pine,

13. The tub according to any of the claims 1-12, wherein said wooden bottom wall define an overall geometry being circular, elliptical, round, square, oblong, rectangular, triangular, trapeze, any curved configuration or any combinations thereof.

14. The tub according to any of the claims 1-13, wherein said wooden bottom wall defines a planer surface or alternatively a non-planer surface.

15. The tub according to any of the claims 1-14, wherein each said plurality of wooden elements define an overall geometry being circular, semi-circular, elliptical, semi-elliptical, round, semi-round, square, oblong, rectangular, triangular, trapeze, any curved configuration or any combinations thereof.

16. The tub according to claim 15, wherein at least a pair of said plurality of wooden elements define identical geometrical configurations.

17. The tub according to any of the claims 1-16, wherein said bottom wall further includes an aperture for draining fluid and/or at least one of said plurality of wooden elements further includes an aperture for draining excess fluid.

18. The tub according to any of the claims 1-17, wherein said wooden bottom wall is a solid pate or is composed of two or more wooden elements.

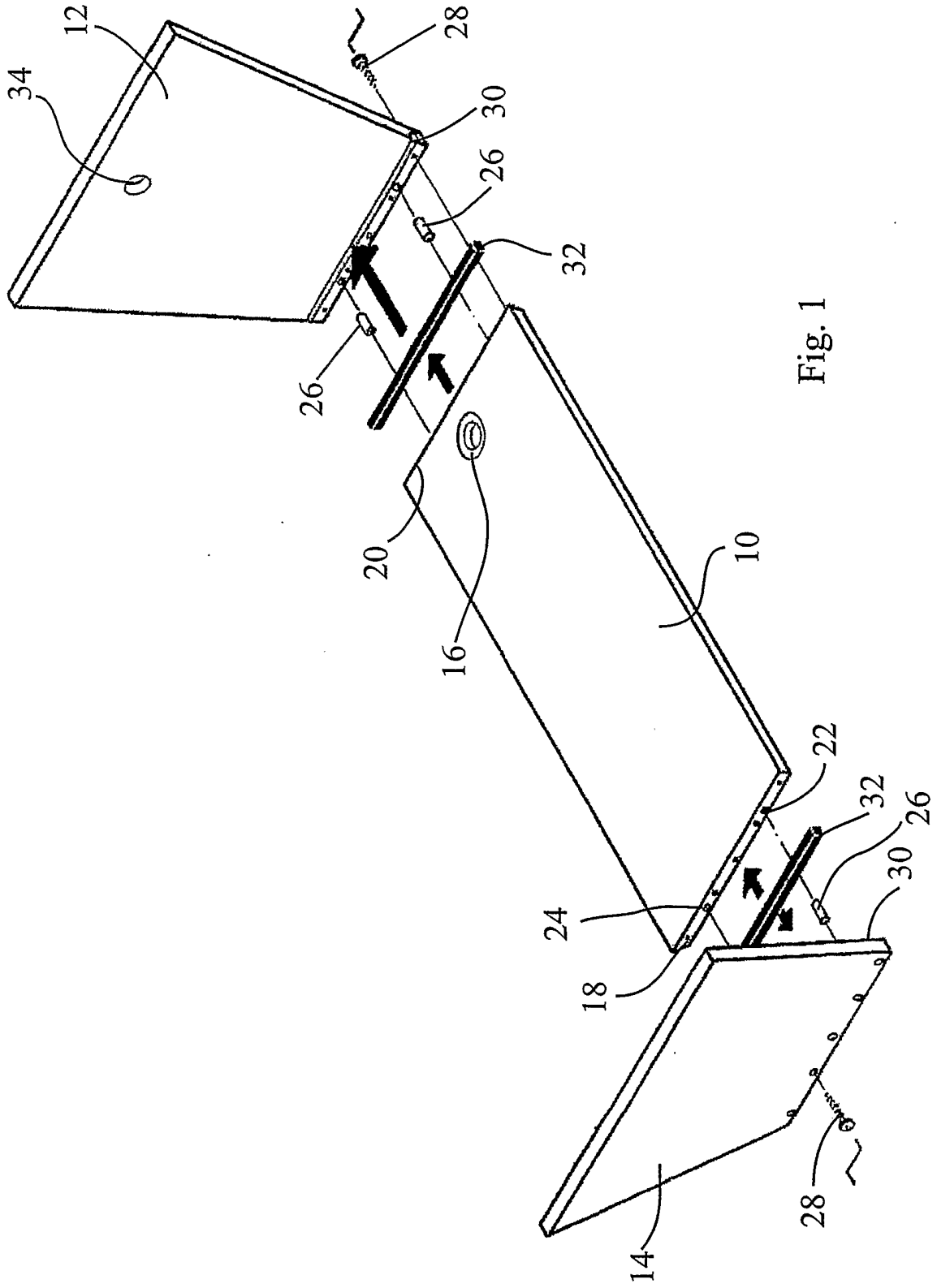

Fig. 1

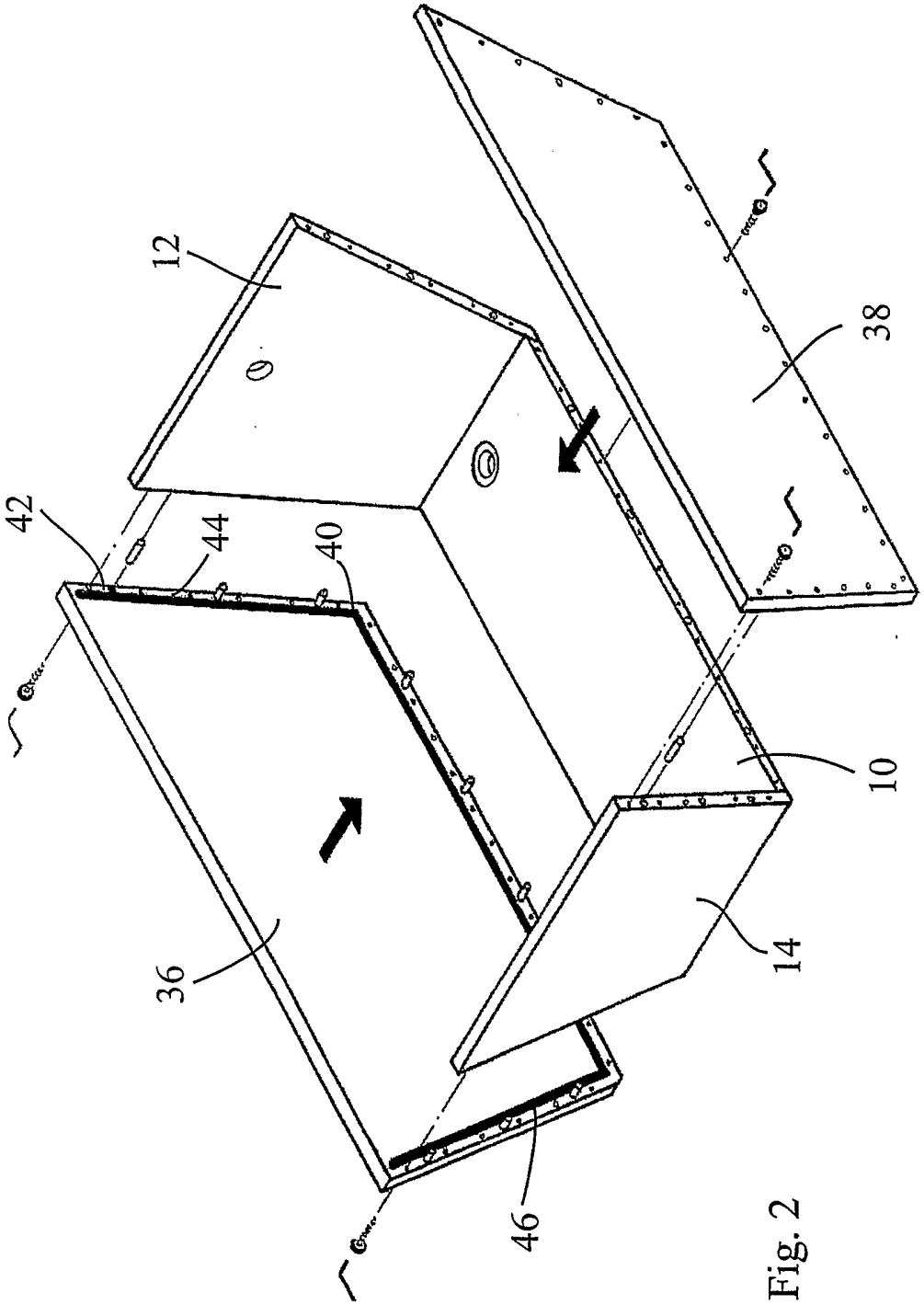

Fig. 2

INTERNATIONAL SEARCH REPORT

International application No
PCT/DK2006/000002

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47K3/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47K B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	AU 58011 80 A (SMITH & BROWN-MAPLE FURNISHING LTD) 6 November 1980 (1980-11-06) claim 1; figures 1,2	1,2
A	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 04, 31 May 1995 (1995-05-31) & JP 07 016165 A (TOOMA:KK), 20 January 1995 (1995-01-20) abstract	1,2

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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Date of the actual completion of the international search	Date of mailing of the international search report
16 March 2006	23/03/2006

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/DK2006/000002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
AU 5801180 A	06-11-1980	NONE	
JP 07016165 A	20-01-1995	NONE	