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(54) Closing system in plastic tank for washing machine

(57) Union sytem between the two parts of a washing machine tank, being of the kind of those tanks that are made up of two halves, remaining open the union base in both, so that one of the halves coincides with the frontal part of the washing machine and the other defines the closed back part of the tank with the axial central hole for the pass of the turn spindle of the drum, so that the two halves (1) and (2) that form the washing machine tank have, in relationship to their backing base, the assembly means between them and the closing and fixing means, so that th assembly means in the tank half (1) are defined by a whole of axial projectings (6), with regard to the backing perimeter, that are finished off like a tip of harpoon.

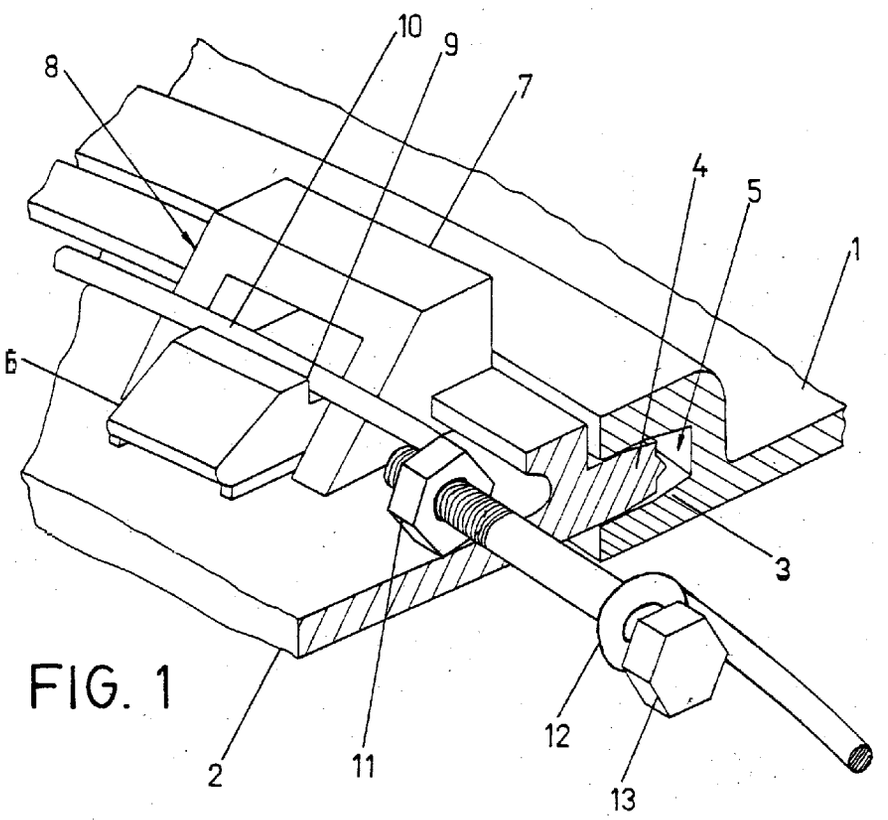

FIG. 1

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Description

OBJECT OF THE INVENTION.

As is expressed in the title of the present descriptive report, the following invention consists on a union system between the two parts of a washing machine tank, being of the kind of those plastic tanks that are defined starting from two halves that are obtained from amould, which are backed by its open base for forming the tank, being joined between them so that in relationship to the backed bases, one of the tank halves has some axial projectings that are finished off like a tip of harpoon while the base of the other tank half has some radial projectings like a inverted U, with the external surface defining an inclined plane.

In the union between the two tank halves, the axial projectings that are finished off like a tip of harpoon of one of the tank halves cross over the hollows of the radial projectings like a inverted U of the other half to the inclined external surface, remaining the extreme like a tip of harpoon slightly separated with regard to the cited surface, allowing the placement of a flange between the cited extreme and the inclined plane that is defined by the external surface of the radial U-shaped projectings.

The cited flange remains perimetrically to the tank in relationship to the inclined surface of the radial projections like a inverted U, being one of its extremed finished off by a nut while other extreme is finished off by a ring-shaped body, so that placing a screw in the ring-shaped body so that its head comes across, and threading the same one to the nut of the opposed extreme in which the flange is finished off, causing the fix of both halves between them, since the flange comes across the projection of the axial projecting of the other half and sliding on the inclined plan, it materializes a interlocked union without the minimum play, and at the same time it can be easily disassembled by the technical assistance service when the fix screw is unscrewed, being able to be assembled again.

Definitively, it is a question of obtaining a closing system, between the two parts that form the plastic tank of a washing machine, wery economic and that at the same time allows their separation and later new union between the two halves in those exceptional cases in which the washing machine tank must be manipulated by the technical assistance service because of technical motives.

FIELD OF APLICATION.

The closing system that is presented in the present descriptive report is specially applicable in the closing between the two halves of washing machine tank of plastic material, so that both halves are obtained from mould, not having to increase the mould complexity for their manufacture since the elements that materialize the union, that also are obtained from a mould, do not increase the price neither the procces nor the product.

Thus, the two tank halves define the tank structure through their union according to their central perimeter with the interposition of the corresponding watertightness joint, while one of the bases of one of the tank halves remains open for being in relationship to the washing machine door, and the other base of the other half defines the closed back part with an axial central hole for the pass of the drum spindle.

BACKGROUND OF THE INVENTION.

Conventionally, the plastic tanks of the washing machines are manufatured from a mould according to two halves that form through their union the washing machine tank that will lodge the drum so that in the manufacture of the own tank body, the accessory elements for its subjection and for the union of other elements are defined, as well as for being able to materialize the union between the two halves, for forming a watertight body.

Thus, the two halves that form the washing machine tank are perimetrically joined according to their central part so that one of the bases of one of the halves is open for remaining in relationship to the frontal of the washing machine door, and the other half defines the back part of the tank with the axial central hole for the pass of the spindle of the drum that will lodge the tank.

For materializing the union between the two tank halves in relationship to the open union base, some radial lungs are defined so that they are endowed of some holes for the threaded of the respective screws that will realize the union.

Likewise, the corresponding o-ring seal, that will guarantee a watertight closing, is placed between both union bodies.

In this way, the union between the both halves will be done by a whole of screws that fix both bodies between them, so that one or several workers must realize the screws threaded, which requires the use of long time, since we can consider that about 17 screws are used for the union between both halves.

With this configuration, we must have into account that the amount of cited screws must be used for obtaining the tank, with the cost that it means, as well as the bigger time that is spent in the threaded of all them, which definitively means a high cost as a consequence of the added value of the used screws and the amount of workforce that is necessary for carrying out the closing operation.

In this way, if the washing machine with this configuration must be disassembled because of technical necessities, its two halves can be disassembled unscrewing all the fixing screws, and later can be assembled again fixing the two halves that form the tank by means of the union screws.

Likewise, the holder of the present dossier is also the holder of the Invention Patent P9600222, in which " a closing system for plastic washing machine tank " is

claimed, being the plastic tank of the kind of those that are formed by the union of two halves, so that one of the halves has some axial projectings, in relationship to the perimeter of the backing base, that are finished off like a tip of harpoon while the other tank half has some U-shaped projectings in inverted position, in relationship to the perimeter of its backing base to the other half, that coincides with the axial projectings of the other half.

With this structure, the fastening between both halves is materialized when the projections of the extremes like a harpoon of the axial projecting come across the free extreme of the inverted U-shaped projectings.

In the other hand, the two halves that form the tank have some projectings that coincide among them, for their union by means of the respective screws and nuts, in the exceptional case in which the tank must be disassembled and thus, being able to assemble it again.

DESCRIPTION OF THE INVENTION.

In the present report, an union system between the two halves of a washing machine tank is described, being of the kind of those tanks that are made up of two halves or parts, remaining open the union base in both, while one of halves of the other base, that also is open, coincides with the frontal part that is relative to the washing machine door, and the other one defines the closed back part of the tank with the axial central hole for the pass of the turn spindle of the drum, so that the backing base of one of the halves of the washing machine tank is finished off in a U-shaped outline, while the base of the other tank half is finished off by an edge that is inserted in the interior of the U-shaped outline of the other half, coming across the corresponding o-ring seal.

In the other hand, the two halves that form the tank have, in relationship to their backing base, the means of assembly between them as well as the closing and fixing means.

Thus, the assembly means of the two halves that form the tank through their union are defined in one of them by a whole of axial projectings with regard to the perimeter of the backing base, that are finished off like a tip of harpoon while the assembly means of the other tank half are defined by some inverted U-shaped radial projectings, in relationship to which ones, the axial projectings of the other tank half are placed in the assembly of the same one.

The internal surface of the radial projectings of one of the halves or parts of the tank defines an inclined plan, being the extreme like a tip of harpoon of the corresponding axial projecting in relationship to the cited internal surface in the assembly of the other tank half.

The closing and fixing means of the two halves of the washing machine tank are defined by an open flange of steel which is finished off by a nut in one of its extremes, while its other extreme is finished off by a ring-shaped body.

The cited flange remains perimetrically to the tank in relationship to inclined surfaces of the radial projections of the corresponding tank half, coming across the projections of the extremes like a tip of harpoon of the axial projectings of the other tank half, materializing the closing and the fixing by means of a screw whose head come across the o-ring seal of the corresponding flange extreme and whose threaded rod is threaded in the nut of the opposed extreme, exerting the closing pressure on the perimetric joint in its threaded.

In this way, if we thread the screw, the flange extremes are closed, sliding by the inclined surfaces of the radial projections of the corresponding tank half, dragging the axial projectings for obtaining the closing between the two tank halves, so that the edge of one of them presses on the o-ring seal that is lodged in the interior of the U-shaped outline that finishes off the backing base of the other half.

The great advantage of the union system that is proposed for the two halves or parts of a washing machine tank is based on that it can be disassembled only unscrewing the screw, allowing the later closing of the two tank halves by means of the flange, with a total reliability.

In order to complement the description which is done hereinafter and with the purpose of providing a better understanding of its characteristics, the present descriptive report is accompanied by a drawing, in whose figures the most significant details of the invention are defined in an illustrative and not limitative way.

BRIEF DESCRIPTION OF THE DESIGNS,

Figure 1.- It shows a detailed view in perspective of the union system between the two halves of the washing machine tank, by means of a flange that remains in relationship to the inclined plan that is defined by the internal surface of the inverted u-shaped projections of one of the tank halves, and that is closed by means of a screw that is threaded in the corresponding nut that is finished off by one of the open extremes of the fix flange.

Figure 2.- It shows a detailed sectioned of the way of acting of the flange for materializing a perfect closing between both detachable halves of the tank, so that we can observe as the flange remains on an inclined plan, coming across the projection of the axial projecting of one of the halves that is finished off like a tip of harpoon.

DESCRIPTION OF A PREFERRED EMBODIMENT.

In view of the above cited figure and in accordance with the adopted numbering we can observe as the two halves (1) and (2), that form the washing machine tank through their union, are joined between them by their backing base so that one of halves is finished off according to an U-shaped outline (3) for fitting the edge (4), in which the other half (2) that forms the washing machine tank is finished off, into the defined lodging.

Likewise, the half (1) of the washing machine tank

has a whole of axial projectings (6) that are finished off like a tip of harpoon in its backing base, while the other half (2) has some U-shaped radial projectings (7) in a inverted position, which remain during the assembly in relationship to the axial projectings (6) of the other half (1).

The radial projectings (7) have the internal surface of the same ones according to an inclined plan, being the projecting (9) of the extreme like a tip of harpoon finished off by the radial projectings of the other tank half, so that they remain slightly separated from the cited inclined surface, so that it is allowed to place a fix flange (10), between the projecting (9) of the extreme like a tip of harpoon of the axial projectings (6) and the inclined internal surface (8) of the inverted U-shaped radial projectings (7), for joining both tank halves.

The open flange (10) of steel is finished off by a nut (11) in one of its extremes, while its other extreme is finished off by a ring-shaped body (12) in which a screw, whose head come across it, is lodged while its threaded rod is threaded in the nut (11) so that its threaded cause the progressive closing of the flange (10), descending by the inclined plan (8) of the inverted U-shaped projections (7), pressing on the projection (9) of the axial projectings (6) of the other tank half.

With this structure, such as it is observed in the figure 2 of the designs, when the flange (10) is closed by the progressive threaded of the screw (13) in the nut (11), the edge (4) of the tank half (2) presses on the o-ring seal (14) that is placed in the housing (5) that is defined by the outline (3) in which the tank (1) is finished off, materializing a perfect closing since all possible play is eliminated.

Besides when the closing of the two halves (1)) and (2) is done, a great advantage emerges since the tank can be disassembled in a simple way, unscrewing the screw (13) from the nut (11) if the tank manipulation by theTechnical Assistance service is necessary, with an added advantage that consists on the tank can be assembled again in a simple and fast way, backing their two halves and placing the axial projectings (6) in relatioship to the radial projectings (7) for closing finally the flange (10) again, such as before it has been specified, since it is not necessary the use of some special tool or instrument.

Definitively, the assembly of the two tank parts (1) and (2) will be the following one:

The two halves (1)) and (2) that form the tank are backed so that the edge (4) of the tank half (2) remains in contact on the joint (14) that is placed in the interior of the U-shaped outline (3) in which the tank half (1)) is finished off, while at the same time the axial projections (6) of the tank half (1)) cross over the projectings (7) like a U inverted of the tank (2), so that the internal surface of the U-shaped projectings (7) define an inclined plan.

Finally, an open flange (10) is placed perimetrically to the tank outline in relationship to the inclined plans (8) that define the internal surfaces of the inverted U-shaped projections (7), coming across the extreme projection (9) of the axial projectings (6), so that the open extremes of the flange (10) are respectively finished off by a nut (11), and by a ring-shaped body (12).

With this structure, the materialization of the fix of both halves will be carried out placing a screw (13) whose head comes across the ring-shaped projecting (12), while its threaded rod is threaded in the nut (11), realizing the respective closing of the flange that implies the approximation of both halves, pressing the edge (4) on the joint (14).

To disassemble the two tank halves (1) and (2), we only have to unscrew the screw (13), so that later there is the possibility of being able to assembly the tank in an identical way that the described one without the minimum lack of reliability.

As an added advantage in the own tank assembly the closed flange can be assembled, without lacks of workforce.

Claims

1. UNION SYSTEM BETWEEN THE TWO PARTS OF A WASHING MACHINE TANK, being of the kind of those tanks that are made up of two halves, remaining open the union base in both while in one of the halves the other base coincides with the frontal part of the washing machine door, and the other one defines the closed back part of the tank with the axial central hole for the pass of the turn spindle of the drum, and characterized in that the two parts (1)) and (2) that form the washing machine tank have, in relationship to their backing base, the assembly means between them and the closing and fixing means.

2. UNION SYSTEM BETWEEN THE TWO PARTS OF A WASHING MACHINE TANK, according to the first claim and characterized in that the assembly means of both parts (1) and (2) are defined in the tank half (1) by a whole of axial projectings (6), with regard to the perimeter of the backing base, that are finished like tip of harpoon, while the assembly means of the other tank half (2) are defined by some radial projectings (7) like a inverted U, so that the axial projecting (6) are placed during the tank assembly in relationship to the projectings (7) of the other half (2).

3. UNION SYSTEM BETWEEN THE TWO PARTS OF A WASHING MACHINE TANK according to the first and second claims and characterized in that the internal surface of the radial projectings (7) of the tank half (2) remaining with regard to them, the free extremes like tip of harpoon of the corresponding axial projecting (6) of the other half, being defined an in-

clined plane.

4. UNION SYSTEM BETWEEN THE TWO PARTS OF A WASHING MACHINE TANK according to the first claim and characterized in that the means of closing and fixing of the two parts (1) and (2) of the tank are defined by an open flange (10) of steel, which is finished off by a nut (11)) in one of its extremes, while its other extreme is finished off by a ring-shaped body.

5. UNION SYSTEM BETWEEN THE TWO PARTS OF A WASHING MACHINE TANK according to the first and fourth claims and characterized in that the flange (10) remains placed in a perimetric way with regard to the tank, in relationship to the inclined surfaces (8) of the radial projections (7) of the tank half (2), acting as a stop on the projections (9) of the extremes, like tip of harpoon, of the axial projectings (6) of the other tank half, materializing the closing and fixing through a screw (13) whose head acts as a stop on the ring-shaped body (12) and whose threaded rod is inserted into the nut (11), causing the closing pressure on the perimetric joint (14).

6. UNION SYSTEM BETWEEN THE TWO PARTS OF A WASHING MACHINE TANK, according to the first and fourth claims and characterized in that the two parts (1)) and (2) of the tank are detachable, unscrewing the screw (13) so that they can be assembled again without the minimum lack of reliability.

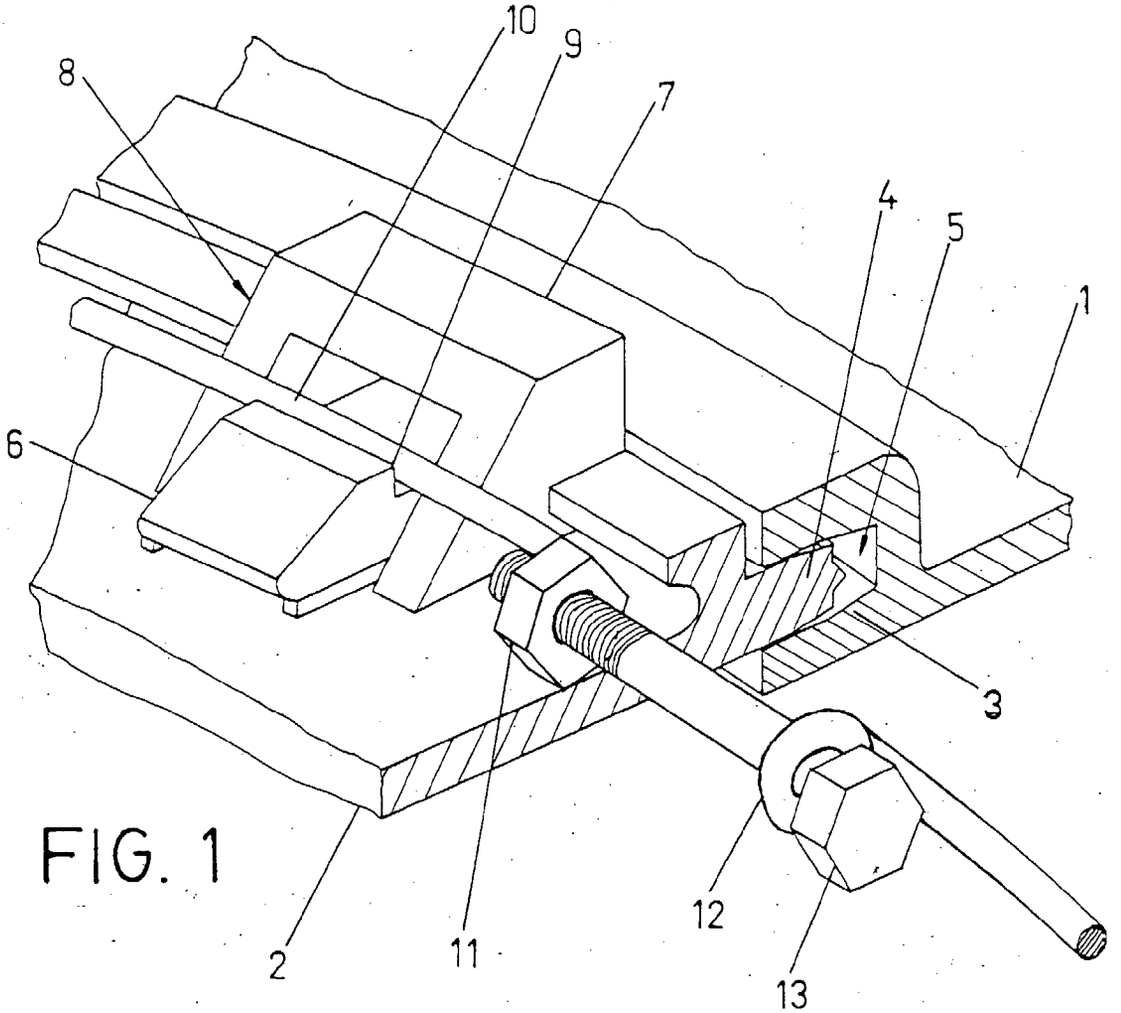

FIG. 1

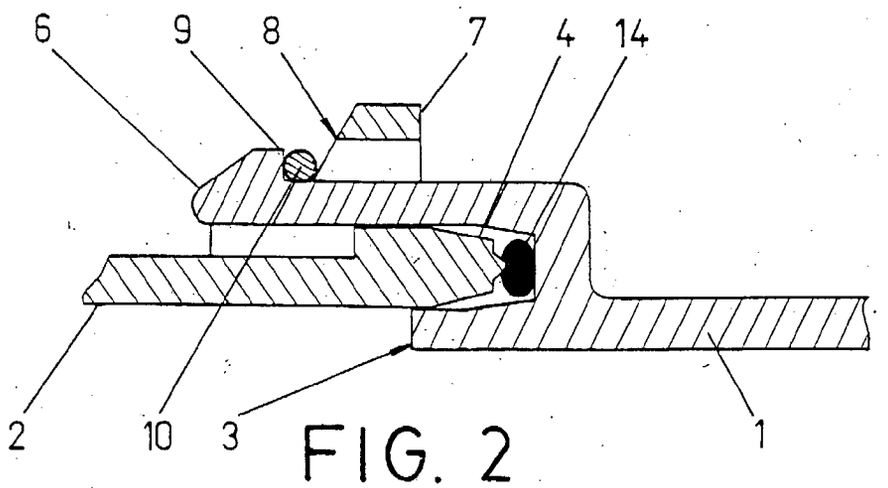

FIG. 2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 50 0054

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
P,D, X	EP 0 789 104 A (BALAY SA) 13 August 1997 * abstract; figures *	1,2	D06F37/26
X	EP 0 272 949 A (CIAPEM) 29 June 1988 * abstract; figures *	1	
A	EP 0 210 143 A (PIANI G & SASSO LEMP A) 28 January 1987 * abstract; figures *	4-6	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)
D06F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	7 August 1998	Helpiö, T.

CATEGORY OF CITED DOCUMENTS

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