

Description

[0001] The invention involves apparatus used in appliances such as washing machines which have movable internal parts, providing for fixation of the movable parts to the body of the appliance during transport of the appliance.

[0002] Washing machines contain body elements with an oscillation group having a drum and a washing chamber. The oscillation group, in order to dampen the vibration produced by the dynamic movements, is connected to the body with springs and other impact dampening elements. But this situation is a major problem during transport of the washing machine. The oscillation group, by striking the body, is the cause of damage. In order to eliminate this negative situation, DE 19525316 discloses a holding apparatus. The holding apparatus is formed from a self-tapping screw that inserts into the oscillation group, passing through the inside of a plastic cylindrical impact absorbing element having a neck piece. There being a wide diameter and a small diameter hole made on the body toward the oscillation group, the holding apparatus is passed through the wide diameter hole, and its neck piece being moved into the small diameter hole, it is fixed in a way that is centered to the holes and the oscillation group between the neck surface of the holding apparatus on the one hand and the end piece on the other. Next, the screw is passed through the inside of the impact dampening element and screwed to the oscillation group. So that the holes made in the body do not disturb the appearance of the washing machine, they are made only in the rear wall. The fixation elements, attached from the rear surface and extending toward the front surface, produce a strong resistance preventing motion of the oscillation group in the front-back direction, but the resistance to shear stresses produced by movements toward the side walls remains inadequate.

[0003] To eliminate this negative situation, another hole is made in addition to the holes in the rear wall, forming a claw recess, and a holding support element is locked in the hole by means of the claw. The holding support element, on the one hand resting against the neck's upper segment, remaining on the rear wall of the holding element, and on the other hand be secured to the body, provides an additional support resisting the shear stresses.

[0004] The need for freedom of planar movement of the holding element on account of the neck moving from the wide hole at the rear wall into a narrow hole prevents the holding element from having a locking element with a claw, enabling its easy attachment and removal at the outward facing top part, without changing the shape of the rear wall. The use of a two-part structure to correct this situation, however, causes considerable loss of time during the first installation of the appliance and prior to transport for whatever reason. For after putting the holding apparatus in place in the hole, it is necessary for the support element to take up a position resting against the holding apparatus. For if one selects the material and surface to be low friction for a support element that will pass inside a single hole in a plane and press against a piece resting on it, it will quite often get dislodged, making it hard to ensure a centering which is needed for the installation.

[0005] Reference is also made to prior art documents WO 2006/117 253 A1 and WO 2007/039 594 A1.

[0006] The present invention involves a design for the fixation element which eliminates all of the above mentioned problems and provides additional advantages for the relevant technical field.

[0007] Starting with the prior art, the aim of the invention is to ensure an easy fixation of the bodies of appliances having moving parts.

[0008] Another goal of the invention is to provide a one-piece holding element with increased resistance to shear stresses for appliances having movable parts.

[0009] Another goal of the invention is to provide a fixation apparatus for an oscillation group that is easily locked.

[0010] To achieve these goals, a new household appliance is realized, comprising a body formed from walls producing a closed volume, with movable arrangement, a through hole oriented to said movable arrangement, produced in one wall of said body, a spacer element, having a neck segment, seated in a fixation channel in the body and passing through said through hole, and a bolt securing the movable element together with said spacer element.

[0011] In a preferred embodiment, in order to provide stability to shear stresses reaching the neck region of said spacer element, it is characterized by at least one fixation element, on the one hand having a locking element fitted into a locking seat on the body and on the other hand communicating with said spacer element by at least one bridge means, allowing it to take up a position facilitating the passage of said spacer element by bending. The bridge means both assures a state of communication of the fixation element with the spacer element and is no hindrance to the bending movement by making contact with the wall during the advancing of the spacer element in the through hole.

[0012] In a preferred embodiment of the invention, said bridge means is the joining surface of the opposite corners of said fixation element and said spacer element. Thus, for example, the plastic injection molding process can be used to make the bridge means as a single piece together with the spacer and fixation elements.

[0013] In another preferred embodiment of the invention, it is characterized by at least one bending notch produced on the bridge means, in order to assure freedom of bending at most at a predetermined distance toward the body when said fixation element is in the free state.

[0014] In accordance with a further preferred embodiment of the invention, the movable arrangement to be fixed by the spacer element is an oscillation group.

[0015] In accordance with yet another preferred embodiment of the invention, the household appliance is configured

as a laundry treatment machine.

In this regard, a laundry treatment machine may be understood to be a laundry dyer, a washing machine or a washer/dryer machine that is configured both for washing and drying. Most preferably, the household appliance is a washing machine.

[0016] The structure and characteristic features of the invention and all its advantages will be explained more clearly by means of the figures provided hereafter and the detailed explanation making reference to these figures and for this reason its evaluation should be done with these figures and detailed explanation in mind.

Figure 1a: View from above of one embodiment of the invention.

Figure 1b: View from the front of one embodiment of the invention, without the bolt.

Figure 1c: Representation of the hole forms in the rear wall of the invention.

1	Rear wall	35 Bridge
11	Through hole	351 Notch
12	Fixation hole	36 Support extension
13	Lock channel	37 Flange
2	Washing Chamber	38 Neck
21	Seat	39 Hole
3	Spacer apparatus	391 Claw
31	Extension	4 Hose
32	Hose holder	5 Bolt
33	Locking piece	
34	Lock tongue	

DETAILED EXPLANATION OF THE INVENTION

[0017] This detailed explanation, being only an important example for a better understanding of the notion of the invention, will produce no restrictive effect in light of the additionally provided figure.

[0018] The embodiment of the invention shown in Fig. 1a: in a washing machine having a rectangular prismatic body (not shown in the figure), there is a wide-circumference hole (11) in the rear wall (1) as shown in Fig. 1c, a smaller diameter fixation hole (12) communicating with the latter, and a spacer apparatus (3) fitted in a lock channel (13) in another part of the through hole (11). Said spacer apparatus (3), as shown in Fig. 1a, is fixed between the washing chamber (2), forming the outer vessel of the movable arrangement that is an oscillation group, and the rear wall (1).

[0019] The oscillation group comprises said washing chamber (2), a rotatable drum (not shown) disposed in the washing chamber (2) and drive means (not shown) to rotate said drum. Further components like sensors, a suds pump and electric or hydraulic connections (all not shown) may also be present.

[0020] The spacer apparatus (3) has a piece ensuring the spacing between the rear wall (1) and the washing chamber (2), formed from a cylindrical extension (31), a flange (37) in the form of a rectangular plate, communicating with one circumferential surface of said extension (31), and a hole (39) in the middle of the flange (37), opening along the length of the extension (31). Furthermore, the spacer apparatus (3) carries a locking piece (33), being an extension of the flange (37) at one end and being attached to the flange (37) by a bridge (35), which is weakened by a notch (351) to enable folding and having a locking tongue (34) at one end. In order to secure the water drain hose (4) of the washing machine, a hook-shaped hose holder (32) section is located on the flange (37).

[0021] A neck (38) of the extension (31), narrowing its diameter, is produced on a section near the flange (37). The height of said neck (38) is larger than the thickness of the rear wall (1). As for the diameter of the neck (38) section, it is less than the width of the fixation hole (12). In this way, first the spacer apparatus is moved through the through hole (11), being wider than the diameter of the extension (31) but smaller than the width of the flange (37), ensuring that the flange (37) is seated onto the rear wall (1). Next, the fixation of the flange (37) on the rear wall (1) is assured with support of the extension (31) piece of the neck (38) from beneath the rear wall (1) by moving the neck (38) so that it will pass through the fixation hole (12). Meanwhile, the locking piece (33) extending from the bridge (35) is moved forward in a way that completely closes the through hole (11), without its bottom producing any hindrance on the top surface of the rear wall (1). The locking piece (33) being positioned at the through hole (11), the user will apply pressure to it and in this way the locking tongue (34) passes into the lock channel (13) and the locking piece (33) is secured to the rear wall

(1). In this way, the locking piece (33) will prevent movement of the flange (37) on the rear wall (1), being in contact with the bridge (35).

[0022] A bolt (5) is passed through the hole (39) running through the inside of the extension (31) of the spacer apparatus (3). The bolt (5), extending outside the hole, inserts into a seat (21) produced on the washing chamber (2) in a portion suitable for the fixation hole (12). The bolt (5) is easily attached to the extension (31), irremovably, with fixation claws (391) inside the hole. The head of the bolt (5) is seated on the flange (37). In this way, a jolting of the washing chamber (2) is prevented, for example, in response to its axial movement during transport, thanks to the neck (38) being connected to the rear wall (1) and the washing chamber (2) is held by the threads of the bolt (5). Jolting of the flange (37) is prevented, in that shear forces are propagated to the rear wall (1) with transfer of the force from the bridge (35) and support extension (36) to the lock tongue (34), and from there to the seated lock channel (13). After the fixation, the hose (4) will be fixed in position, moving it out from the hose holder (32).

[0023] If it is desired to dismantle the apparatus, the locking tongue (34) is removed from the locking channel (13). Bending the bridge (35) by means of the notch (351), the locking piece (33) located on it is lifted upward. In this way, by pulling the neck (38) toward the through hole (11), it is easily transferred to the wide diameter and the extension (31) is taken out from the wide hole (11). The angle of the notch (351) is such as to allow for a bending of the locking piece (33) with the bridge (35) by an angle of several degrees toward the flange (37).

[0024] The extent of protection of the invention defined in the appended claims, is not in any way confined to the statements in this detailed explanation, which is merely an example. A person who is expert in the field will be able to produce similar embodiments in light of the above statements, without departing from the basic theme of the invention.

Claims

1. A household appliance, comprising a body formed from walls producing a closed volume, with a movable arrangement (2) contained in said body (1), a through hole (11) oriented to said movable arrangement (2), produced in one wall (1) of said body (1), a spacer element (31), having a neck segment (38), seated in a fixation channel (12) in the body (1) and passing through said through hole (11), and a bolt (5) securing the movable element (2) together with said spacer element (31), in order to provide stability to shear stresses reaching the neck region (38) of said spacer element (31), **characterized by** at least one fixation element (33), on the one hand having a locking element (34) fitted into a locking seat (13) on the body and on the other hand communicating with said spacer element (31) by at least one bridge means (35), allowing it to take up a position facilitating the passage of said spacer element (3) by bending.
2. A household appliance per claim 1, in which said bridge means is the joining surface of the opposite corners of said fixation element (33) and said spacer element (31).
3. A household appliance per any of the above claims, **characterized by** at least one bending notch (351) produced on the bridge means (35), in order to assure freedom of bending at most at a predetermined distance toward the body when said fixation element (33) is in the free state.
4. A household appliance per any of the above claims, wherein said movable arrangement (2) is an oscillation group (2).
5. A household appliance per any of the above claims, which is configured as a laundry treatment machine, particularly a washing machine.

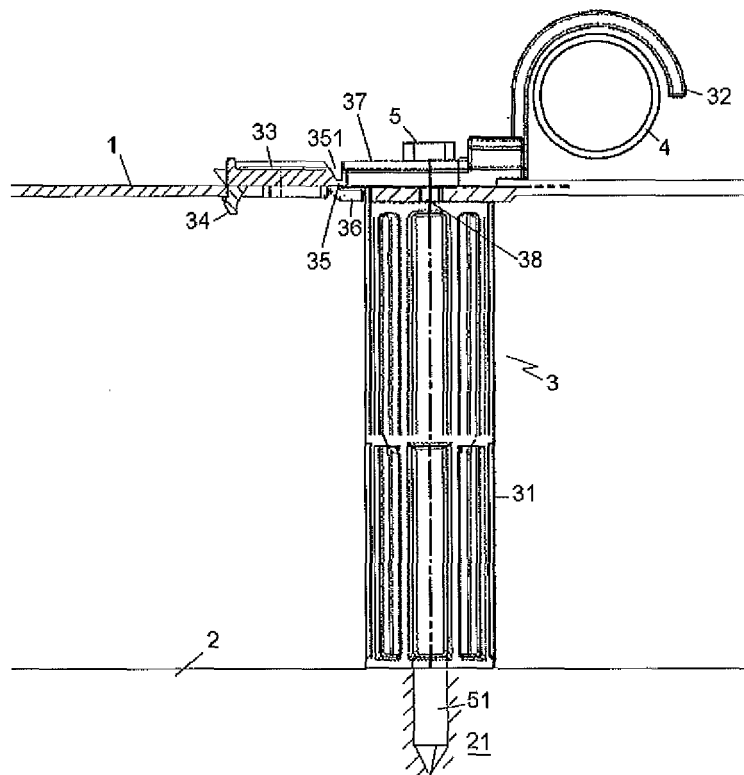


Fig.1a

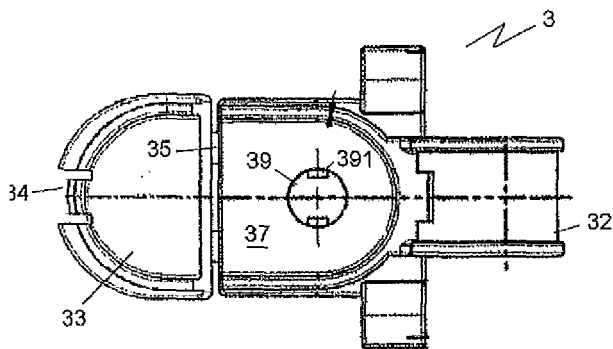


Fig.1b

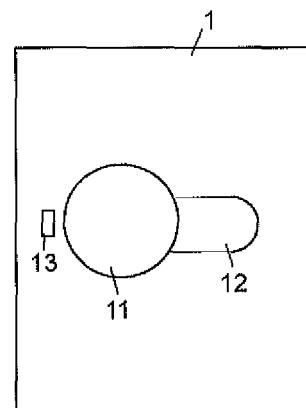


Fig.1c



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 12 3581

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
P,A	WO 2007/039594 A (BSH BOSCH SIEMENS HAUSGERAETE [DE]; CAUDEVILLA DE SOLA ANGEL [ES]; KOC) 12 April 2007 (2007-04-12) * the whole document *	1	INV. D06F39/00
D,A	DE 195 25 316 A1 (AZ AUSRUEST ZUBEHOER GMBH [DE]) 16 January 1997 (1997-01-16) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 May 2008	Examiner Stroppa, Giovanni
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 12 3581

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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19-05-2008

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 2007039594	A	12-04-2007	ES 2281263 A1	16-09-2007
DE 19525316	A1	16-01-1997	NONE	

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 19525316 [0002]
- WO 2006117253 A1 [0005]
- WO 2007039594 A1 [0005]