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(54) Detergent dispensing device for dishwashing machines.

(57) A device for dispensing liquid and powder detergents, in particular for dishwashing machines.

The dispensing device (10) is suited to be fitted in an aperture of an internal wall (11) of the wash chamber of the machine, particularly in the wall (11) of the loading door. The dispensing device (10) is provided with peripheral walls (13) and elastically yielding tongue members (15) having step shaped front portion (17) securing the dispensing device (10) to the edge of the aperture of said internal wall (11); a clamping frame member (20) resting against the wall (11) of the machine fits on the outside around at least part of peripheral walls (13) of the dispensing device (10), the clamping frame (20) in its turn, is provided with elastically flexible lugs (22) which will come into contact with the step shaped portion (13) of said tongue members (15), and wedging member (24) inserted into the space (25) between an outer side wall (13) and corresponding tongue members (15) of the dispensing device (10) of the dispensing device (10).

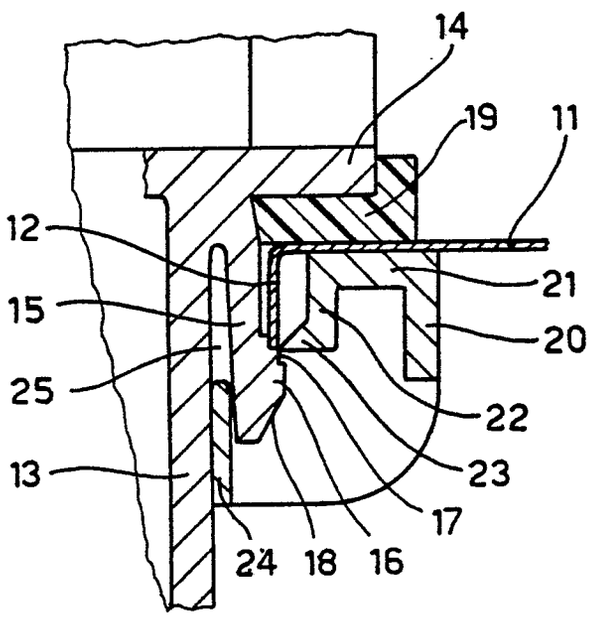

Fig. 2

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DETERGENT DISPENSING DEVICE FOR DISHWASHING MACHINES

The invention concerns a dispensing device for liquid or powder detergents adapted to be fitted in an aperture provided in an internal wall of a wash chamber, in particular in the internal wall of the loading door of a dishwasher or similar machine.

Currently used detergent dispensing devices for dishwashing machines are fitted into an aperture formed in an internal wall of the wash chamber by means, for example, of screws or similar fasteners, or by using attachment systems which have proved to be mostly unreliable and ill-suited to the various conditions of use and which, in addition, make no provision for a totally automatic fitting.

Accordingly, an object of the invention is to provide a detergent dispensing device for dishwashing machines, which is provided with snap-fitting means allowing a firm and reliable fitting in an aperture of a wall of the washing chamber of the machine.

A further object of this invention is to provide a dispensing device, as defined above, which is provided with fastening means allowing a fully automatic fitting of the device that can withstand to stress or deformations of plastic material, caused by repeated thermal cycles during use of the machine.

The above-stated requirements can be obtained by means of a detergent dispensing device for dishwashing machines, comprising fastening means for its fitting in an aperture of an internal wall of a wash chamber, in particular in the wall of the loading and unloading door of a dishwasher, according to claim 1.

The invention will be described hereunder with reference to the example shown in the appended drawings, in which:

Fig. 1 is a front view of a detergent dispensing device fitted in a wall of a wash chamber of a dishwashing machine, according to the invention;

Fig. 2 is a sectional view of an enlarged detail of figure 1;

Fig. 3 is a top view of a particular embodiment of a peripheral fastening frame for the dispensing device of figure 1;

Fig. 4 is a view along the line 4-4 of figure 3;

Fig. 5 is an enlarged sectional view along the line 5-5 of figure 4.

In figure 1 reference 10 indicates a general type of provided in an internal wall 11 of the wash chamber of a dishwashing machine; as shown in figure 2, the aperture in the wall 11 of the chamber, has inwardly bent peripheral edges 12 to which the dispensing de vice 10 is attached, though the bent edges 12 may be omitted.

The device 10 usually comprises a body defining the trays for the detergent, said body being delimited by peripheral walls 13 which extend from an outwardly protruding peripheral edge or step portion 14 of the body 10 of the dispensing device.

Along at least two opposite peripheral walls 13, on the outside and from a peripheral edge 14, the body 10 of the dispensing device comprises a plurality of elastically flexible or yielding tongue members 15 which are positioned parallely to and spaced apart from the outside surface of the walls 13. Each tongue member 15 is rearwardly directed from the peripheral edge 14 and comprises an enlarged head 16 having a step-shaped front portion 17 and an inclined surface 18 to facilitate and enable the automatic insertion of the device through the aperture in the wall 11 by partially elastically bending touques 15 towards the wall 13 of the body 10. Additionally, reference number 19 indicates a sealing gasket which is disposed between the wall 11 of the dishwashing machine and the flange 14 of the dispensing device.

The fastening means of the device, as shown in figure 1 and in the detail in figure 2, also comprise a peripheral frame 20, or equivalent element, which partly or totally surrounds the body of the dispensing device. As may be seen in the enlarged detail of figure 2, the frame 20 has a flat base portion 21 which come into contact with the internal face of the wall 11 which is opposite the one in contact with the sealing gasket 19, as well as comprises one or more elastically flexible lugs 22 which will come into contact with the step-shaped front surface 17, of the enlarged head 16 of the flexible tongues 15 attaching the dispensing device to the aperture of the wash chamber wall 11.

In particular each flexible lug 22 of the fastening frame, has a protruding edge portion 23, of triangular shape, which will engage of be brought into contact with the corresponding opposing flexible tongue 15 of the dispensing device.

In addition, located so as to correspond with each flexible lug 22, the fastening frame 20 comprises a clamping strip 24 suitably spaced from the lugs 22, which is wedged with a certain pressure into the gap 25 between the opposing faces of a lateral wall 13 of the body 10 of the dispensing device and the aforesaid clamping tongues 15.

As a result of the opposing actions of the flexible lugs 22 and strip 24 of the clamping frame, which are positioned on the two opposing sides of each clamping tongue 15 and given the inclination of the step-shaped edge 17, the fastening frame 20

is prevented from being displaced, thereby guaranteeing a fastening arrangement that is practical and secure in use and which remains such even when the whole device is subject to repeated heating and cooling cycles, as normally happens during use of the relevant dishwashing machines.

The particular staggered positioning of the clamping strip 24 and the fastening frame 20 has the effect that any force or action tending to make the frame 20 rotate will always cause the latter to adhere still more both against the tongues 15 of the dispensing device and against the wall 11 of the wash chamber of the machine.

A preferred embodiment of the fastening frame 20 is shown in the views in figures 3 to 5.

In the case described, the frame 20 takes the form of a rectangular frame, in two separate parts 20a and 20b that will fit around the entire body of the dispensing device, on four sides. Each half 20a and 20b of the frame essentially comprises one channel-shaped element 26 having inner wall provided with a plurality of elastically flexible lugs 22 and a strip or strip portions 24 having reinforcement bridging web member to give the channel the requisite rigidity. Each clamping lug 22, as previously described, has an triangular-shaped edge 23 which will engage with the steps 17 of the enlarged head 16 of a matching tongue of the dispensing device. The design of the clamping frame in two parts is advantageous because it facilitates easy adaptation to any practical needs that may be encountered in fitting the metering devices in question. The frame part 20b illustrated by dashed lines in figure 3 is identical in shape to the frame part 20a shown by a continuous lines.

In the case shown the frame 20, as previously stated, surrounds the whole periphery of the body 10 of the dispensing device although the clamping frame could be limited so as to attach only onto two opposing sides or walls of the device, or only along a part of them, without however thereby departing from the innovative principles claimed for this invention.

Claims

1. A detergent dispensing device for fitting into an aperture of an internal wall (11) of the wash chamber of a dishwashing machine, in particular the wall (11) of a loading door, in which the device comprises a body (10) having lateral walls (13) having a laterally protruding edge (14), and in which at least two opposing lateral walls (13) of the body (10) have elastically flexible clamping tongues (15) for attachment of the body (10) to the edges (12) of the aperture in said internal wall (11) of the machine, characterized by the fact that said clamping tongues (15) are positioned at a short distance and parallel to the lateral walls (13), from the peripheral edge (14) of said body (10), said tongues (15) comprising an head portion (17) having a step-shaped front face, and fastening means in the form of a peripheral frame (20) surrounding at least a part of the body (10) of the dispensing device, said fastening frame (20) having a base portion (21) resting against the internal surface of the wall (11) and elastically flexible lug members (22) protruding from said base portion (21), said lug members (22) engaging said tongues (15) and a clamping strip (24), on said frame (20) wedging into the gap (25) between opposing faces of a peripheral wall (13) of the dispensing device (10) and said clamping tongues (15).

2. A device as claimed in claim 1, characterized by the fact that each flexible tongues (15) of the body (10) of the device comprises an enlarged head portion (16) having a steps shaped front surface (17).

3. A device as claimed in claim 1, characterized by the fact that each flexible lug member (21) of the fastening frame (20) has a laterally protruding edge (23).

4. A device as claimed in claim 3, characterized by the fact that said lug members (21) of the fastening frame (20) have a protruding edge (23) of triangular shape.

5. A device as claimed in any of the previous claims, characterized by the fact that the clamping strip (24) is laterally staggered with respect to the clamping lug members (22) of the fastening frame (20).

6. A device as claimed in any of the previous claims, characterized by the fact that the fastening frame (26) is in the form of a channel-shaped element.

7. A device as claimed in claim 1, characterized by the fact that the fastening frame (20) surrounds the entire body (10) of the dispensing device.

8. A metering device as claimed in claim 7, characterized by the fact that the fastening frame (20) comprises two separate halve frame members (20a, 20b).

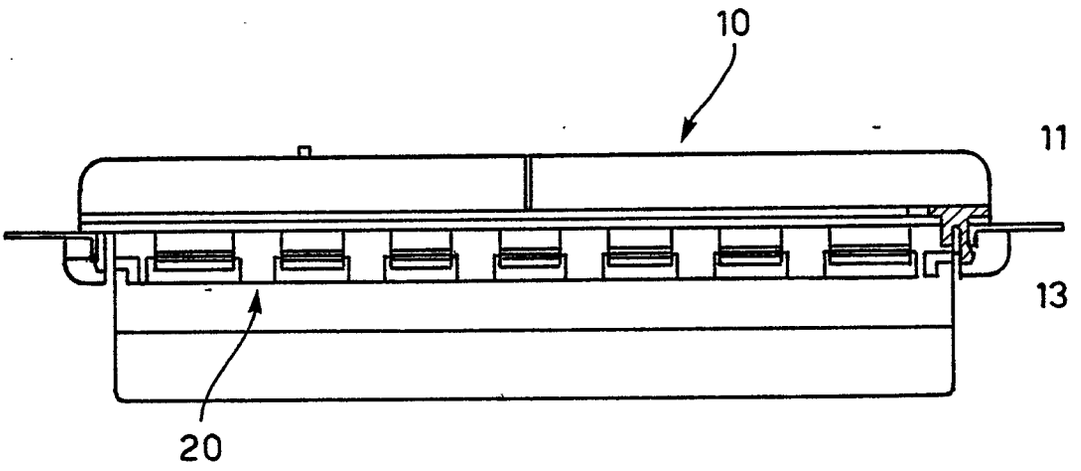

Fig. 1

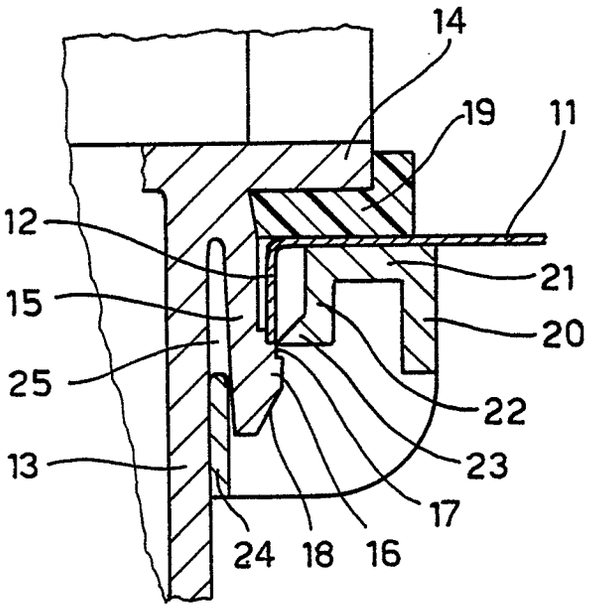

Fig. 2

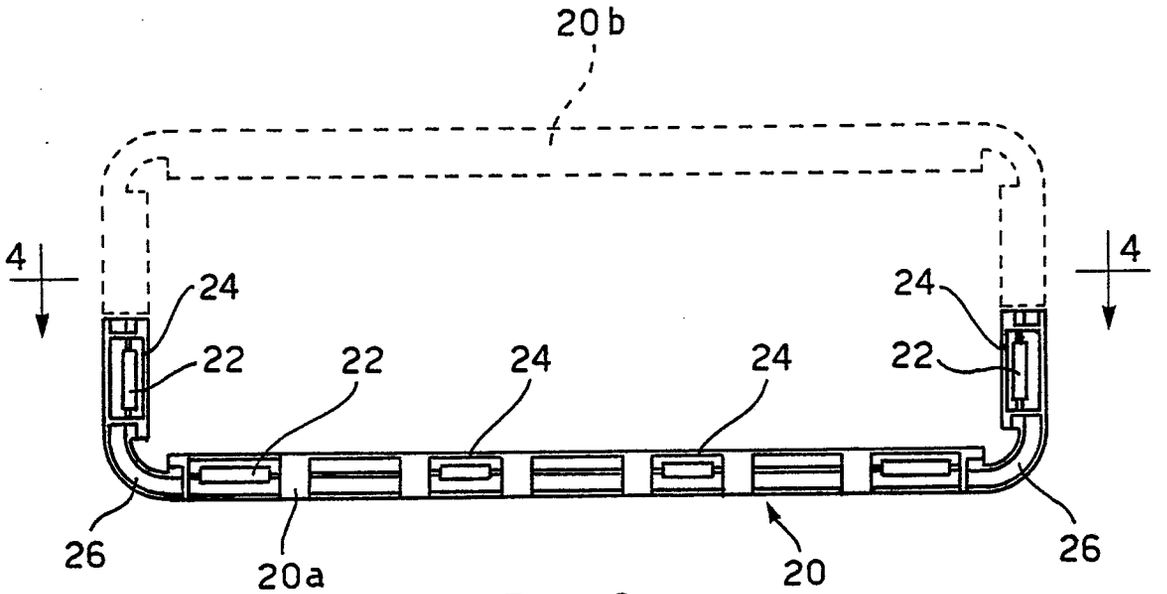

Fig. 3

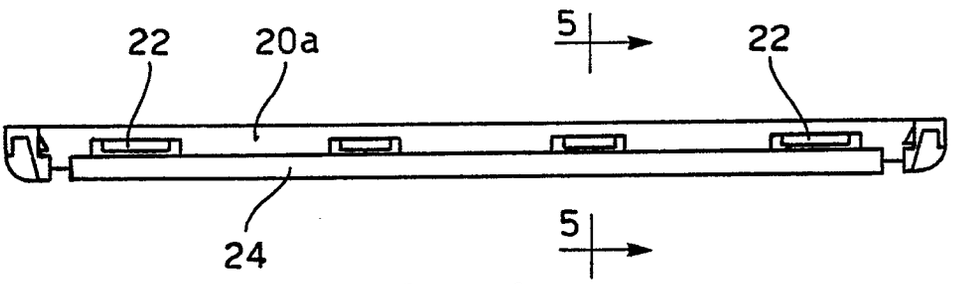

Fig. 4

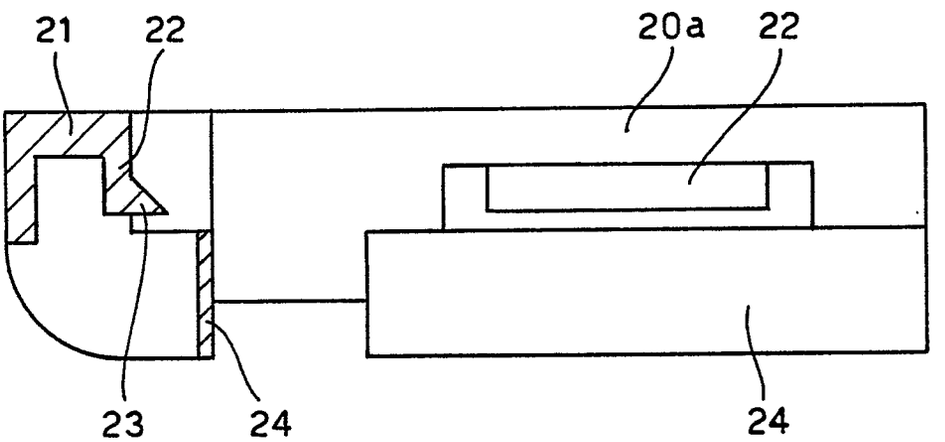

Fig. 5

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 10 8821

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.4)
Y	EP-A-0207520 (AWECO) * the whole document *	1	A47L15/44
A		2	
Y	AU-A-433205 (PRESSAC LTD) * page 6, lines 7 - 22; figures 1-5 *	1	
A	DE-A-2156033 (SWF) * claim 1; figure 1 *	1	
A	FR-A-2541738 (CGEE ALSTHOM) * figures 7a, 7b *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

A47L
D06F
H02B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 SEPTEMBER 1989	SCHARTZ J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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