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54 **Detergent dispensing device for dishwashing machines.**

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**EP-A- 0 207 520**  
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**FR-A- 2 541 738**

73 Proprietor: **TECNOPLASTICA PREALPINA S.p.A.**  
**Via Beccaria No 1**  
**I-21049 Tradate Varese(IT)**

72 Inventor: **Fontana, Giuseppe**  
**Via Zara No. 35**  
**I-21049 Tradate, Varese(IT)**

74 Representative: **Petruzzelli, Antonio**  
**Via E. De Amicis No. 25**  
**I-20123 Milano (IT)**

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## Description

The invention concerns a dispensing device for liquid or powder detergents, which is apt 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, the device having the features defined in the preamble of Claim 1.

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.

From EP-A-0207520 a detergent dispensing device is known, in which reversaly oriented and elastically yielding tongue means are provided on the outer walls of the detergent container, which engage the turned down edge of an aperture in a wall portion of the washing machine and cooperate with an oppositely oriented peripheral edge of the same container to retain the same in the aperture of the wall of said machine. In said device no means are provided to prevent the yielding of the retaining tongues and their deformation caused during the use of the washing machine, therefore no firm fastening of the device is allowed. From FR-A-2.541.738 a fastening device is known for fastening an apparatus to an aperture of a wall, preventing axial displacement of the apparatus; rearward oriented hooking tongues are formed on the front face of the apparatus to cooperate with cam means are provided on a shoulder of the same apparatus and a rotatable annular member to lock said apparatus against the wall. The fastening device according to FR-A-2.541.738 does not allow automatic fitting of the apparatus and therefore could not be used in combination with different snap-hooking device.

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 dishwashers or similar 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 detergent dispensing device fitted in an aperture 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 device 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 lateral walls 13 provided with a laterally which extend from an outwardly protruding outer peripheral edge 14 on the body of the dispensing device 10.

Along at least two opposite lateral walls 13, on the outside and from a peripheral edge 14, the body 10 of the dispensing device comprises a plurality of elastically flexible damping tongues 15 which are arranged parallel to the lateral walls 13 and positioned at a short distance from the peripheral edge 14 of the body. Each tongue 15 is rearwardly directed and protruding towards inside 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 tongues 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 or 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 dispensing

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 dishwasher or similar machine, in particular of the wall (11) of a loading door, the device comprising a body (10) with lateral walls (13) provided with a laterally protruding outer peripheral edge (14), at least two opposing lateral walls (13) of the body (10) comprising 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, said clamping tongues (15) being arranged parallel to the lateral walls (13), and positioned at a short distance from the peripheral edge (14) of said body (10), said tongues (15) comprising a head portion (16) having a step-shaped front face, (17) to engage the edge (12) of said wall (11) characterized in that said clamping tongues (15) are protruding towards the inside from said outer peripheral edge (14) of the body (10), That fastening means are provided 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 That a clamping strip (24) is provided on said fastening 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 (22) of the fastening frame (20) has a laterally pro-

truding edge (23).

4. A device as claimed in claim 3, characterized by the fact that said lug members (22) of the fastening frame (20) have a protruding edge (23) of triangular shape. 5
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). 10
6. A device as claimed in any of the previous claims, characterized by the fact that the fastening frame (20) is in the form of a channel-shaped element. 15
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. 20
8. A device as claimed in claim 7, characterized by the fact that the fastening frame (20) comprises two separate half frame members (20a, 20b). 25

#### Patentansprüche

1. Eine Spülmittel-Ausgabevorrichtung zum Einsetzen in eine Öffnung einer Innenwand (11) der Spülkammer einer Geschirrspül- oder ähnlichen Maschine, insbesondere einer Wand (11) einer Beladungstür, wobei die Vorrichtung ein Gehäuse (10) mit Seitenwänden (13) aufweist, die ausgestattet sind mit einem seitlich vorstehenden äußeren peripheren Rand (14), wobei mindestens zwei sich gegenüberliegende Seitenwände (13) des Gehäuses (10) elastisch flexible Klemmzungen (15) zum Anbringen des Gehäuses (10) an den Rändern (12) der Öffnung in besagter Innenwand (11) der Maschine aufweisen, wobei die besagten Klemmzungen (15) parallel zu den Seitenwänden (13) angeordnet sind und sich in geringer Entfernung vom peripheren Rand (14) des besagten Gehäuses (10) befinden, wobei die besagten Klemmzungen (15) einen Kopfteil (16) aufweisen, der eine Vorderseite (17) von abgestufter Form besitzt, um in die Ränder (12) der besagten Wand (11) einzugreifen, gekennzeichnet durch den Umstand, daß die besagten Klemmzungen (15) von besagtem äußeren peripheren Rand (14) des Gehäuses (10) zur Innenseite hin hervorstehen, daß eine Befestigungsvorrichtung in Form eines peripheren Rahmens (20) vorgesehen ist, der zumindest 30

einen Teil des Gehäuses (10) der Ausgabevorrichtung umfaßt, wobei besagter Befestigungsrahmen (20) einen Basisteil (21) aufweist, der an der Innenfläche der Wand (11) aufliegt, und elastisch flexible Vorsprünge (22) aufweist, die an besagtem Basisteil (21) vorstehen, wobei besagte Vorsprünge (22) in die besagten Zungen (15) eingreifen, und daß eine Klemmleiste (24) an besagtem Befestigungsrahmen (20) vorgesehen ist, die sich in der Aussparung (25) zwischen gegenüberliegenden Seiten einer peripheren Wand (13) der Ausgabevorrichtung (10) und besagten Klemmzungen (15) verkeilt.

2. Eine Vorrichtung wie unter Patentanspruch 1 beschrieben, gekennzeichnet durch den Umstand, daß jede flexible Zunge (15) des Gehäuses (10) der Vorrichtung einen verbreiterten Kopfteil (16) aufweist, der eine Vorderseite (17) von abgestufter Form aufweist.
3. Eine Vorrichtung wie unter Patentanspruch 1 beschrieben, gekennzeichnet durch den Umstand, daß jeder flexible Vorsprung (22) des Befestigungsrahmens (20) einen seitlich vorstehenden Rand (23) aufweist.
4. Eine Vorrichtung wie unter Patentanspruch 3 beschrieben, gekennzeichnet durch den Umstand, daß die besagten Vorsprünge (22) des Befestigungsrahmens (20) einen vorstehenden Rand (23) von dreieckiger Form aufweisen.
5. Eine Vorrichtung wie unter einem beliebigen der vorstehenden Patentansprüche beschrieben, gekennzeichnet durch den Umstand, daß die Klemmleiste (24) gegenüber den Klemmvorsprüngen (22) des Befestigungsrahmens (20) seitlich versetzt angeordnet ist.
6. Eine Vorrichtung wie unter einem beliebigen der vorstehenden Patentansprüche beschrieben, gekennzeichnet durch den Umstand, daß der Befestigungsrahmen (20) die Form eines kanalförmigen Elements aufweist.
7. Eine Vorrichtung wie unter Patentanspruch 1 beschrieben, gekennzeichnet durch den Umstand, daß der Befestigungsrahmen (20) das gesamte Gehäuse (10) der Ausgabevorrichtung umläuft.
8. Eine Vorrichtung wie unter Patentanspruch 7 beschrieben, gekennzeichnet durch den Umstand, daß der Befestigungsrahmen (20) zwei separate Rahmenelementhälften (20a, 20b) aufweist.

## Revendications

1. Dispositif distributeur de détergent destiné à s'encaster dans une ouverture d'une paroi interne (11) de la chambre de lavage d'un lave-vaisselle ou d'un appareil analogue, notamment la paroi (11) d'une porte de chargement, le dispositif comprenant un corps (10) avec des parois latérales (13), muni d'un bord périphérique extérieur faisant saillie latéralement (14), au moins deux parois latérales en regard (13) du corps (10) comprenant des languettes de serrage (15) souples élastiquement pour la fixation du corps (10) sur les bords (12) de l'ouverture ménagée dans la paroi interne (11) de l'appareil, les languettes de serrage (15) étant disposées parallèlement aux parois latérales (13), et positionnées à une courte distance du bord périphérique (14) du corps (10), les languettes (15) comprenant une portion de tête (16) avec une face avant en forme de gradins (17) pour venir en contact avec le bord (12) de la paroi (11), caractérisé en ce que les languettes de serrage (15) font saillie vers l'intérieur à partir du bord périphérique extérieur (14) du corps (10), en ce que des moyens de fixation sont prévus sous forme d'un châssis périphérique (20) entourant au moins une partie du corps (10) du dispositif distributeur, le châssis de fixation (20) ayant une portion de base (21) reposant contre la surface interne de la paroi (11) et des éléments d'oeillets souples élastiquement (22) faisant saillie à partir de la portion de base (21), ces éléments d'oeillets (22) coopérant avec les languettes (15) et en ce qu'une bande de serrage (24) est prévue sur le châssis de fixation (20) pour s'encaster dans l'espace libre (25) entre les faces en regard d'une paroi périphérique (13) du dispositif distributeur (10) et des languettes de serrage (15).
 

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2. Dispositif selon la revendication 1, caractérisé par le fait que chaque languette souple (15) du corps (10) du dispositif comprend une portion de tête agrandie (16) avec une surface avant (17) en forme de gradins.
 

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3. Dispositif selon la revendication 1, caractérisé par le fait que chaque élément d'oeillet souple (22) du châssis de fixation (20) présente un bord (23) faisant saillie latéralement.
 

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4. Dispositif selon la revendication 3, caractérisé par le fait que les éléments d'oeillets (22) du châssis de fixation (20) présente un bord faisant saillie (23) de forme triangulaire.
 

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5. Dispositif selon l'une quelconque des revendications précédentes, caractérisé par le fait que la bande de serrage (24) est décalée latéralement par rapport aux éléments d'oeillets de serrage (22) du châssis de fixation (20).
 

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6. Dispositif selon l'une quelconque des revendications précédentes, caractérisé par le fait que le châssis de fixation (20) se présente sous la forme d'un élément profilé en U.
 

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7. Dispositif selon la revendication 1, caractérisé par le fait que le châssis de fixation (20) entoure la totalité du corps (10) du dispositif distributeur.
 

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8. Dispositif selon la revendication 7, caractérisé par le fait que le châssis de fixation (20) comprend deux moitiés d'éléments de châssis (20a, 20b).
 

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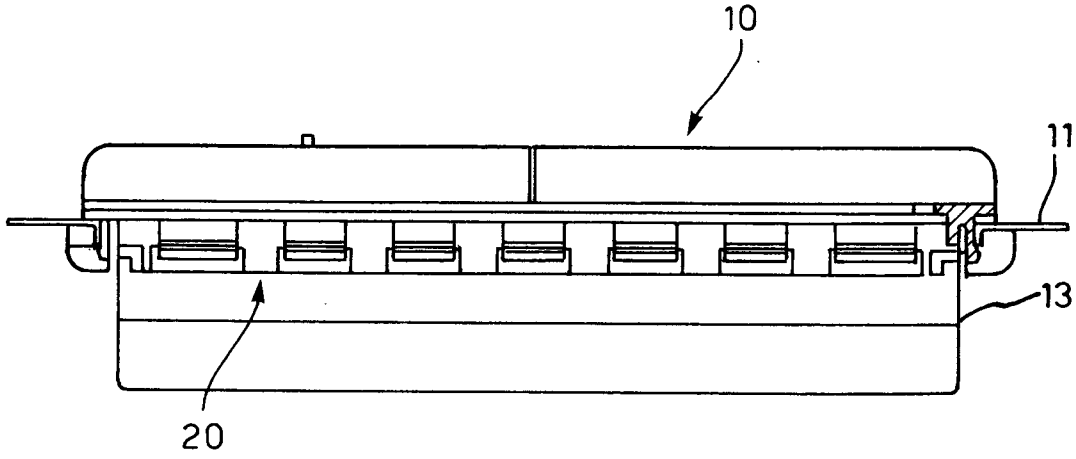


Fig. 1

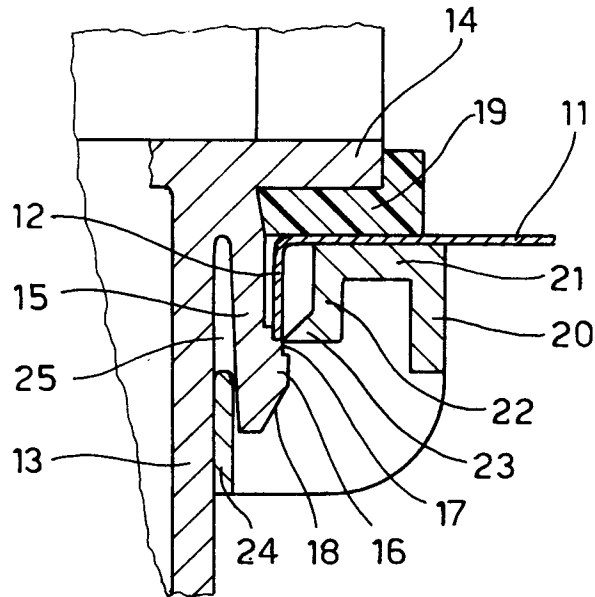


Fig. 2

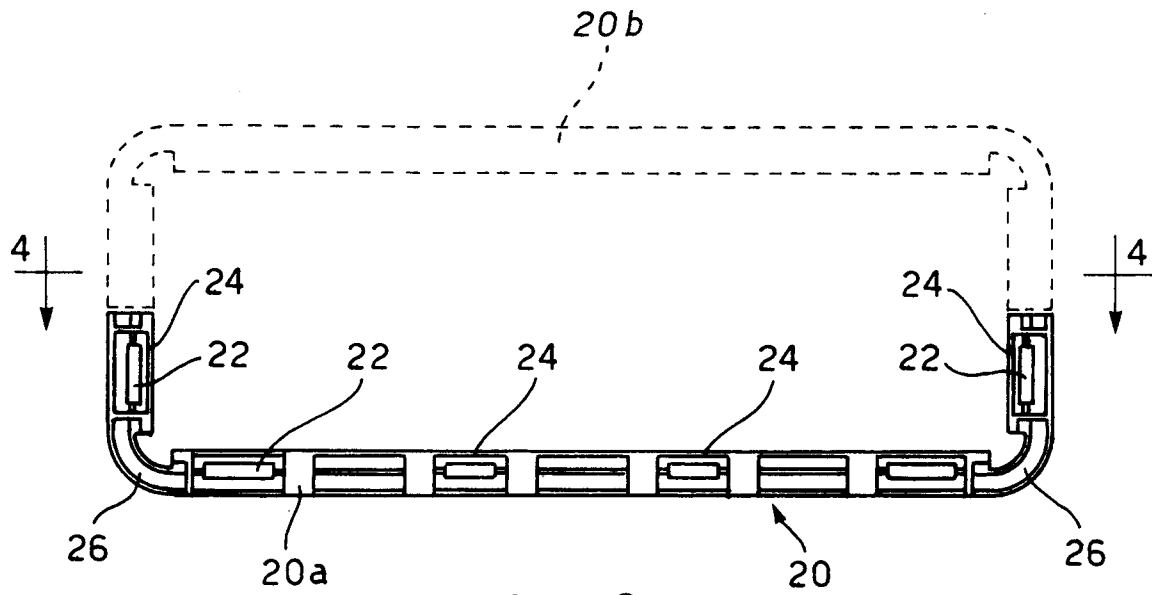


Fig. 3

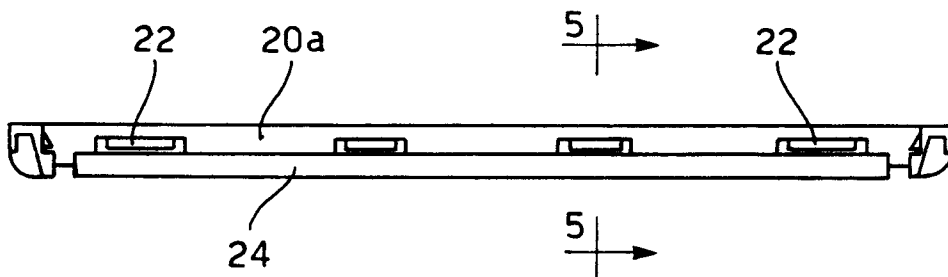


Fig. 4

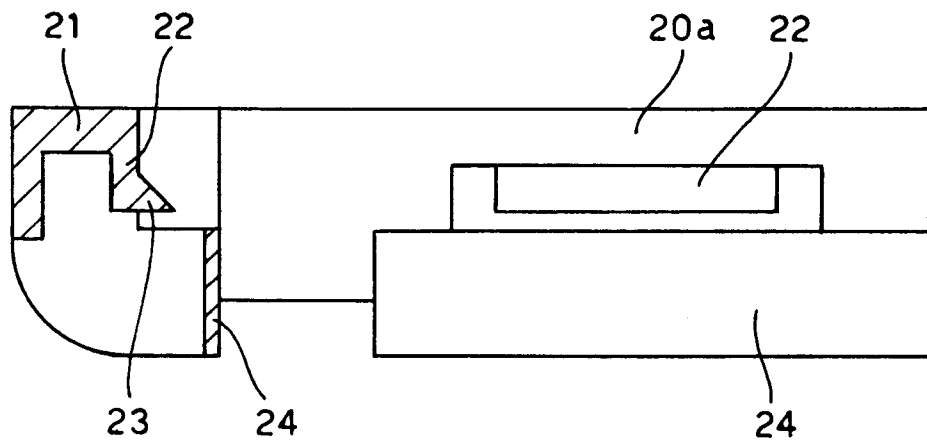


Fig. 5