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(54) **Top-loading washing machine with lid having front control device**

Von oben befüllbare Waschmaschine mit vorderer Steuervorrichtung im Deckel

Machine à laver à chargement par le haut avec hublot équipé d'un dispositif de commande frontal

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Description

[0001] The invention relates to an improved type of washing machine or clothes drier of the domestic top-loading type.

[0002] Washing machines of the domestic top-loading type are known where the control device for opening the top door or lid is arranged generally in an upper or inclined portion of the upper part of the unit of the said machine.

[0003] In a domestic context the user approaching the machine in order to open it is often carrying the washing load or other objects and therefore has to free him/herself of these objects before the machine can be operated.

[0004] This necessity results in a number of operations which could be avoided if it were possible to operate the control device for opening the door without using one's hands.

[0005] From the patents JP 2002-315993 and JP 2002-315993, both in the name of Matsushita, and the patent JP 2002-011291 in the name of Hitachi it is known to arrange the control device to be operated manually for opening the top lid in an advanced but protected position in the zone of the front top edge of the unit of the machine; this solution prevents accidental activation of machine operation and accidental opening of the top hatch; although safe, nevertheless this type of machine obviously involves the use of at least one hand and therefore does not fulfil the object of the present patent.

[0006] From the patents JP-03-293000 in the name of Matsushita and the patents JP 2005-279179 and JP 2005-218662 in the name of Hitachi it is known, in a top-loading washing machine, to arrange the corresponding control panel in a position connected to one of the parts which form the top hatch and which must be folded together in order to allow access to the tub below.

[0007] This configuration therefore allows access to and operation of the control panel only when said hatch, i.e. said foldable parts thereof, is/are closed.

[0008] This constraint obviously improves the safety of the machine since it cannot be started if the top lid is still open.

[0009] However, in this case also, this feature means that operation of the associated control devices must be performed by means of one hand which performs a precise movement from the top downwards.

[0010] From US 5,742,964 it is known, a top-loading washing machine comprising two waterproof reed switches to detect the opening and the closing of the lid respectively, a driving/rotating means for raising and lowering the lid, a switch for activating the driving/rotating means, which is located at the front and lower portion of the outer casing.

[0011] From US 2002/0109445 it is known, a top-loading appliance includes a door pivotally mounted over an access opening. A push-push latch normally retains the door in a closed position. A gas-charged cylinder or strut is mounted within the appliance and connected to one end of a lever arm, with the other end of the lever arm

being connected to the door for automatically move the door to the open position after the latch has been released.

[0012] From US 3,991,520 it is known, a front-loading appliance comprising a push to open door opening assembly including an opening piece positioned between front and back panels of a substantially hollow door with a pushbutton section projecting through the front panel and an actuator ram projecting through the back panel.

[0013] A fulcrum point is provided and an integral spring maintains the fulcrum against the front panel and the pushbutton projecting through the front panel. Actuation of the pushbutton pivots the device around the fulcrum against the spring to force the actuator ram from the rear panel into contact with an appliance cabinet wall thereby biasing the door away from the cabinet wall and overcoming a releasable closure device which maintains the door in a closed position.

[0014] It would therefore be desirable, and it is the object of the present patent, to provide a top-loading washing machine or clothes drier provided with means for opening the top lid, which may be operated by the user also without using one hand and in particular which can also be reached easily by other parts of the user's body and preferably by the hips of the said user.

[0015] A further object of the invention is to provide said control device in a position situated in the upper zone of the panel or front surface of the machine.

[0016] These objects are achieved with a particular type of top-loading washing machine or clothes drier provided with the means and characteristics described by means of a nonlimiting example and with reference to the accompanying drawings in which:

- 35 - Fig. 1 shows a simplified and perspective view of a top-loading washing machine or clothes drier;
- Fig. 2 shows a perspective and dynamic view of an improved embodiment of a machine according to the invention;
- 40 - Fig. 3 shows a view of a first detail of the machine according to Fig. 2;
- Fig. 4 shows a view of a second detail of the machine according to Fig. 2;
- 45 - Fig. 5 shows a simplified and perspective view, from the rear, of a fourth detail of Fig. 2, already assembled in the machine shown partially cut-away.

[0017] With reference to Fig. 1, a domestic top-loading washing machine or clothes drier according to the known art comprises a tub containing a rotating drum (not shown) inside which the washing load is introduced.

[0018] Said machine is composed externally of a parallelepiped unit, the top side of which is formed by a top lid 1 which is normally hinged in the rear zone 3 thereof and which closes the top surface of the machine body underneath, which terminates towards the top in a surface, usually an edge 2, which delimits from the top the hopper part which leads from the top into the said tub.

[0019] The unit has, towards the front, a vertical front side 4 inside which locking means (not shown) are fitted, said locking means being able to engage with corresponding engaging members situated underneath said lid.

[0020] Said locking and engaging means are used to lock the lid 1 against said edge 2 when said lid is lowered into the closing position, while mutual release thereof is performed by means of suitable members which can be operated manually and are arranged on the rear part of the top side of the machine or on any other part of the lid or in any case on the top part of the machine.

[0021] Although simple, the fact of positioning said control device for releasing the lid on any part directed towards the top of the machine, whether it be the lid itself or the part thereof not occupied by said lid, gives rise to the difficulty that the said control device must necessarily be operated manually; this obviously is not a major problem as regards the more general use of the machine.

[0022] However, in some circumstances which frequently arise, this results in a certain difficulty and inconvenience as regards operation: in fact often the user approaches the machine holding the garments to be washed in one hand or else they are contained inside a basket, bag, etc., which are in turn held in the hands.

[0023] In order to open the lid, therefore, the user must put down said container, often resting it on the ground, in order to free his/her hands and then obviously operate the control device releasing the lid, open manually the said lid and finally take hold again of the laundry container, often lifting it from the ground, in order to extract from it the garments to be introduced into the drum.

[0024] In order to eliminate these troublesome and often tiring operations, in a top-loading washing machine according to the invention, the control means for opening the lid are generally not situated on the surface of the machine directed upwards, but consist of a simple pressure-operated part 5 which is fairly wide as shown in the figures and is arranged in the top and front zone of the machine and therefore in a position which can be readily accessed by the user.

[0025] In particular, the position of this pressure-operated part is suitably chosen so that the user may operate it by simply pressing against it with a part of the body, typically by means of a side pressure of the hip, i.e. without releasing the load held in the hands.

[0026] With reference to Fig. 2, advantageously said pressure-operated part 5 is preferably arranged on the front portion 6 of the lid 1, both so as to avoid complications in the design of the unit and so that it is positioned at the correct height.

[0027] In this case, and with reference to Fig. 3, said pressure-operated part usually causes release of the engaging means 10 which are obviously mounted in a suitable and bottom zone of the said hatch 1.

[0028] With reference to Fig. 4, release of said locking means without using the hands is obviously pointless if the lid must then be raised manually; in order to overcome

this problem, the machine is usually provided with resilient means, preferably a torsion bar 7, or also more than one thereof, obviously mounted between the lid itself and the body of the machine, in the lid hinging zone.

5 [0029] This therefore allows, upon operation of said pressure-operated part 5, the lid itself to be raised immediately and automatically.

[0030] However, it could easily happen that said automatic raising movement occurs too rapidly, in particular at the end of the travel movement, i.e. when said resilient means have developed all their extensive and lifting force, when in fact the lifting speed of the hatch 1 is maximum, and this could result in sudden stoppage of the hatch against any stopping part situated on the machine body.

[0031] In order to avoid this further drawback, said machine is therefore provided with braking means which permanently control the movement between said lid and the machine body.

20 [0032] Advantageously and with reference to Figures 4 and 5, said braking means substantially consists of a damping piston 9 which has two arms on which the thrust to be attenuated is applied and which must therefore function reactively, a first arm 9A being connected to the lid 1 and the second arm 9B being connected to the rear portion 11 of said top surface or top edge (2).

Claims

- 30
1. Domestic top-loading washing machine comprising:
 - a top lid (1) positioned so as to close the top surface or the top edge (2) of said machine and hinged in the rear zone (3) thereof;
 - and a front side (4);
 - locking means (10) able to engage/disengage selectively into/from a position for closing said lid against said top surface (2);
 - external control means able to operate said locking means so as to arrange the latter selectively in the disengaged/engaged state, **characterized in that** said external control means comprise a pressure-operated part (5) situated on an upper portion of the front side (4) of said machine and said top lid (1) is provided with resilient means able to raise said lid towards the open position, if released by said locking means.
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 - 50 2. Machine according to the preamble of Claim 1, **characterized in that** said external control means comprise a pressure-operated part (5) situated on the front portion (6) of said top lid (1).
 - 55 3. Machine according to Claim 1 or 2, **characterized in that** said resilient means comprise at least one torsion bar (7) which is arranged in the top part of said machine in the hinging zone of said lid.

4. Machine according to any one of the preceding claims, **characterized in that** braking means are provided for controlling automatically the raising speed of said lid when it is released by said locking means and operated by said resilient means.
5. Machine according to Claim 4, **characterized in that** said braking means comprise a damping piston (9) mounted between s.aid lid and a rear portion of said top surface or top edge (2).

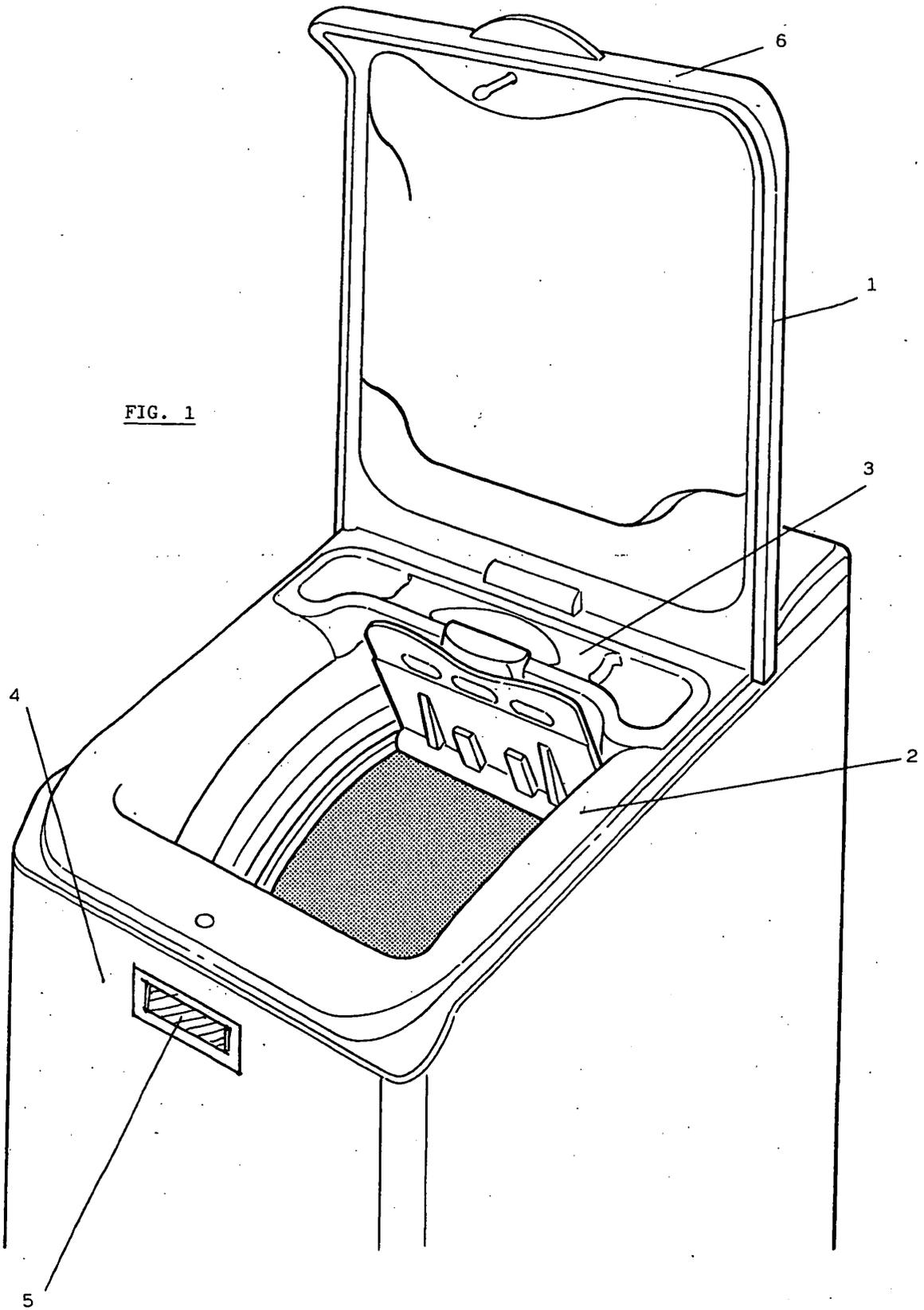
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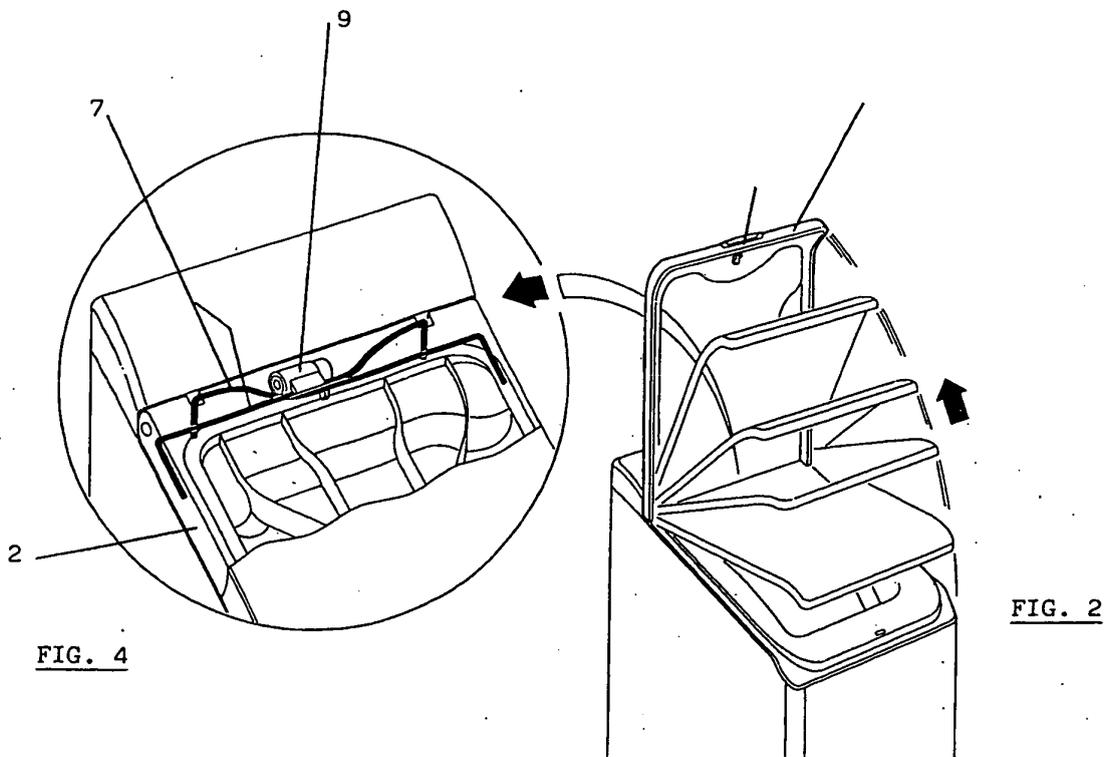
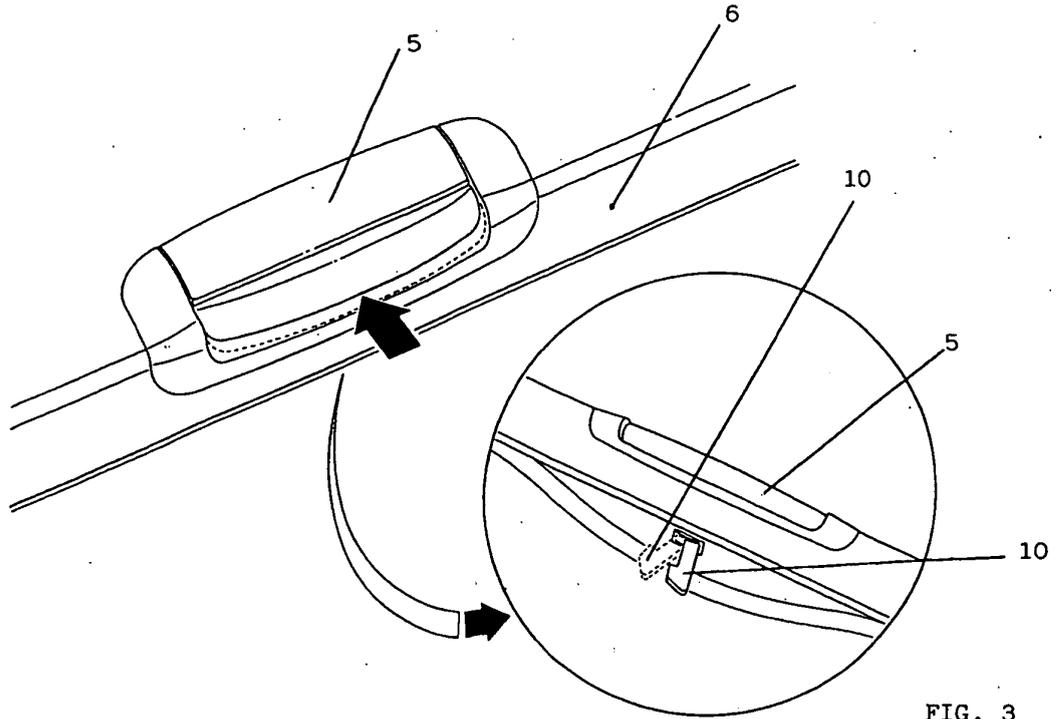
1. Toplader-Haushaltswaschmaschine, die Folgendes umfasst:
- einen oberen Deckel (1), der so positioniert ist, dass er die Oberseite bzw. den oberen Rand (2) der Maschine bedeckt und der im hinteren Bereich (3) derselben drehbar befestigt ist;
 - und eine Vorderseite (4);
 - Verriegelungsmittel (10), die geeignet sind, wahlweise in eine Position zum Schließen des Deckels an der Oberseite (2) einzugreifen oder sich aus einer solchen Position zu lösen;
 - äußere Kontrollmittel, die geeignet sind, die Verriegelungsmittel so zu bedienen, dass diese im eingreifenden oder im gelösten Zustand angeordnet sind, **dadurch gekennzeichnet, dass** die äußeren Kontrollmittel einen druckbetätigten Teil (5) aufweisen, der in einem oberen Teil der Vorderseite (4) der Maschine angeordnet ist, und dass der obere Deckel (1) mit elastischen Mitteln versehen ist, die dazu ausgeführt sind, den Deckel in die geöffnete Position anzuheben, wenn sie durch die Verriegelungsmittel gelöst werden.
2. Maschine gemäß dem Oberbegriff von Anspruch 1, **dadurch gekennzeichnet, dass** die äußeren Kontrollmittel einen druckbetätigten Teil (5) aufweisen, der im vorderen Teil (6) des oberen Deckels (1) angeordnet ist.
3. Maschine gemäß Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die elastischen Mittel mindestens einen Drehstab (7) umfassen, der im oberen Teil der Maschine im Scharnierbereich des Deckels angeordnet ist.
4. Maschine gemäß einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** Bremsmittel vorgesehen sind, die automatisch die Hebegeschwindigkeit des Deckels kontrollieren, wenn er von den Verriegelungsmitteln gelöst und von den elastischen Mitteln betätigt wird.

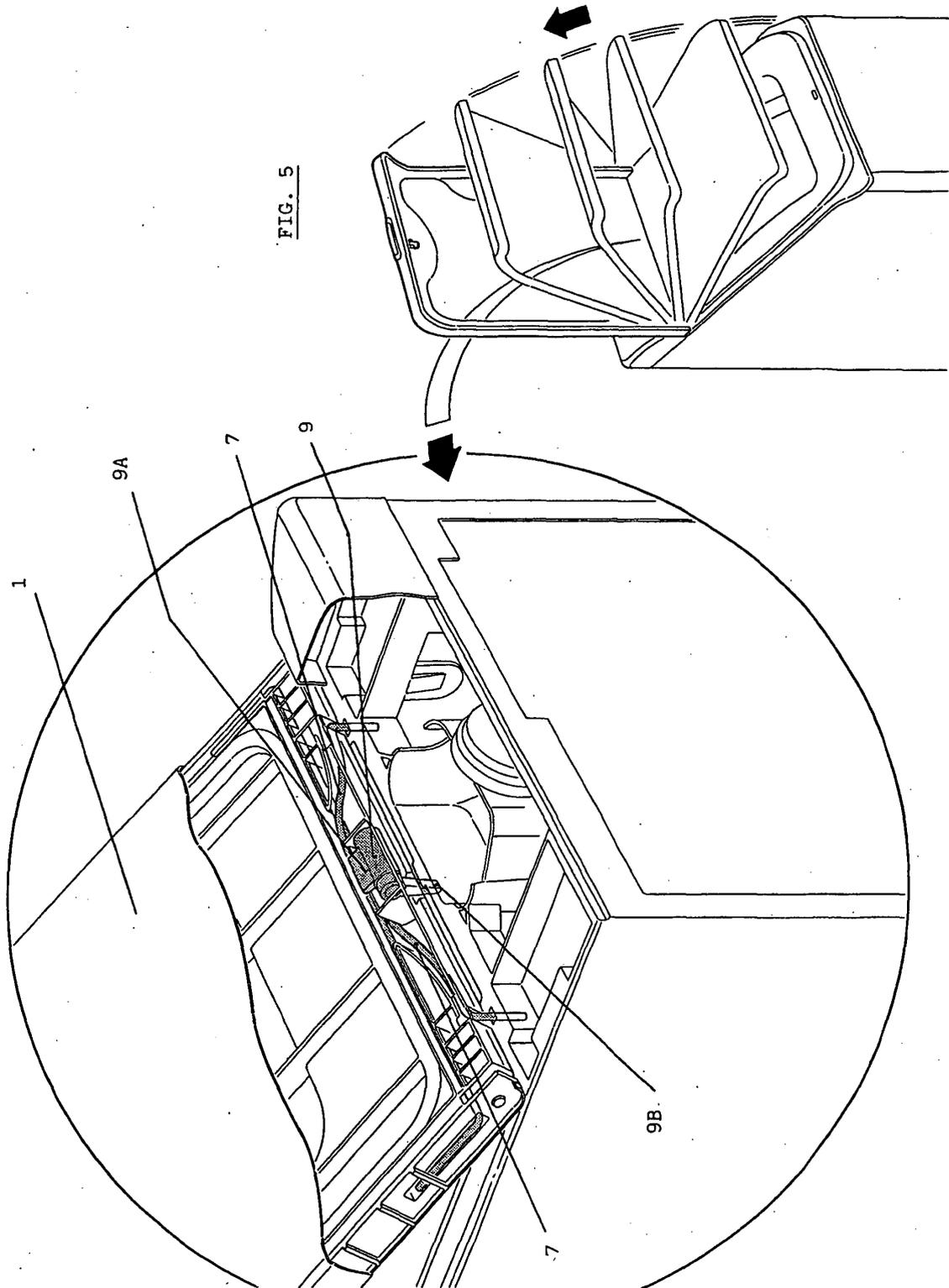
5. Maschine gemäß Anspruch 4, **dadurch gekennzeichnet, dass** die Bremsmittel einen Dämpfungskolben (9) umfassen, der zwischen dem Deckel und einem hinteren Teil der Oberseite oder des oberen Randes (2) montiert ist.

Revendications

1. Machine à laver domestique à chargement par le haut comprenant :
- un couvercle supérieur (1) positionné de façon à fermer la surface supérieure ou le bord supérieur (2) de ladite machine et articulé par charnière dans la zone arrière (3) de celle-ci ;
 - un côté avant (4) ;
 - un moyen de verrouillage (10) capable de s'engager/dégager sélectivement dans/d'une position pour fermer ledit couvercle contre ladite surface supérieure (2) ;
 - un moyen de commande externe capable d'actionner ledit moyen de verrouillage de façon à agencer ce dernier sélectivement dans l'état dégagé/engagé, **caractérisé en ce que** ledit moyen de commande externe comprend une partie actionnée par pression (5) située sur une portion supérieure du côté avant (4) de ladite machine et ledit couvercle supérieur (1) est muni d'un moyen résilient capable d'élever ledit couvercle vers la position ouverte, s'il est libéré par ledit moyen de verrouillage.
2. Machine selon le préambule de la revendication 1, **caractérisée en ce que** ledit moyen de commande externe comprend une partie actionnée par pression (5) située sur la portion avant (6) dudit couvercle supérieur (1).
3. Machine selon la revendication 1 ou 2, **caractérisée en ce que** ledit moyen résilient comprend au moins une barre de torsion (7) qui est agencée dans la partie supérieure de ladite machine dans la zone de charnière dudit couvercle.
4. Machine selon l'une quelconque des revendications précédentes, **caractérisée en ce que** des moyens de freinage sont prévus pour commander automatiquement la vitesse d'élévation dudit couvercle lorsqu'il est libéré par ledit moyen de verrouillage et actionné par ledit moyen résilient.
5. Machine selon la revendication 4, **caractérisée en ce que** ledit moyen de freinage comprend un piston d'amortissement (9) monté entre ledit couvercle et une portion arrière de ladite surface supérieure ou dudit bord supérieur (2).







REFERENCES CITED IN THE DESCRIPTION

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