



(11) **EP 1 424 428 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
09.06.2010 Bulletin 2010/23

(51) Int Cl.:
D06F 39/02 (2006.01)

(21) Application number: **03027144.9**

(22) Date of filing: **26.11.2003**

(54) **Device for supplying a washing agent in a washing machine**

Vorrichtung zum Zuführen von Waschmittel in einer Waschmaschine

Dispositif pour alimenter en produit de lavage une machine à laver

(84) Designated Contracting States:
DE

(30) Priority: **29.11.2002 IT to20021030**

(43) Date of publication of application:
02.06.2004 Bulletin 2004/23

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Description

[0001] The present invention relates to a device for supplying a washing agent in a washing machine, particularly a machine for washing laundry, of the kind defined in the preamble of claim 1.

[0002] GB-A-2 187 763 discloses a device of this kind wherein the limitation wall includes an upper stationary portion and a lower movable portion rotatably hinged to the stationary portion about an essentially horizontal axis. When the user of the washing machine intends to use a powder washing agent he/she manually sets the movable portion of the limitation wall in a pivoted-out or removed position. When the user intends to use a liquid washing agent the said movable portion of the limitation wall is to be preliminarily set manually in a pivoted-in, lowered position in which it essentially prevents the liquid washing agent from prematurely leaking to the washing container or tub of the machine. In either case, the movable portion of the limitation wall remains in the preliminarily set position throughout the washing cycle, the washing agent being at a proper time flushed out with a flow of water.

[0003] DE 19617471 A1 discloses a syringe-like dispensing device adapted to supply either a viscous or a liquid washing agent to the washing tub of a washing machine. The dispensing device may be operated manually or automatically by the washing program control.

[0004] An object of the present invention is to provide an improved supply device of the type specified initially, which can be used equally well with washing agents of the solid or powder type, or of the liquid type.

[0005] This and other objects are achieved according to the invention with a supply device whose principal characteristics are defined in the attached Claim 1.

[0006] Further characteristics and advantages of the invention will be made clear by the following detailed description, provided purely by way of example and without restrictive intent, with reference to the attached drawings, in which:

Figure 1 is a perspective view of a washing machine provided with a supply device according to the present invention;

Figure 2 is a partial view in section, taken along the line II-II of Figure 1; and

Figures 3 and 4 are views similar to that of Figure 2, showing the supply device according to the invention in two other operating conditions.

[0007] In Figure 1, the letters WM indicate the whole of a washing machine. This machine comprises, in a known way, a supporting housing 1, of generally parallelepipedal shape.

[0008] In the illustrated example of embodiment, the machine WM is of the front loading type, and thus has a front door 2 for access to the washing chamber.

[0009] The washing machine WM comprises a device 10 for supplying washing agents, such as detergents and the like.

[0010] In the illustrated example, this device 10 comprises an essentially box-like container 11, fitted in the machine WM in such a way that it is movable between a retracted closed condition (Figures 3 and 4) and an (at least partially) extended open condition (Figures 1 and 2).

[0011] The container 11 forms at least one receptacle 12 which is open at the top.

[0012] In the illustrated example of embodiment, the receptacle 12 is delimited frontally by a frontal wall 13 of the box-like container 11, and laterally by a pair of longitudinal walls 14 and 15, which are essentially vertical and parallel to each other. The receptacle 12 is delimited below by a bottom wall indicated by 16 in Figure 2 and the subsequent figures.

[0013] In the embodiment shown in the drawings, the receptacle 12 is delimited at its rear by a wall 17 fitted so that it can swing, like a "butterfly" valve, about an essentially horizontal axis A located at a predetermined height above the bottom wall 16.

[0014] The delimiting wall 17 has a breadth equal to the transverse distance between the lateral walls 14 and 15 of the receptacle 12, and in an intermediate area of its vertical walls it has corresponding pins with horizontal axes 17a and 17b, aligned with each other and engaged rotatably in corresponding apertures provided in the lateral walls 14 and 15 of the receptacle 12.

[0015] The delimiting wall 17 can swing between a position of containment, shown in Figures 2 and 3, in which it extends essentially in a vertical plane, against a stop 18 integral with the box-like container 11, and an inclined discharge position (Figure 4) in which it extends in a plane inclined downwards and towards the interior of the machine, so that its lower edge or margin is spaced vertically apart from the bottom wall 16 of the container 11.

[0016] A spring 19 is associated with the delimiting wall 17, and tends to push this wall into the containment position, against the stop element 18. In the illustrated example, this spring is a torsion spring, with an upper arm 19a which bears on a stop 20 integral with the box-like container 11, and a lower arm 19b which bears on a stop 21 integral with the wall 17.

[0017] The upper portion of the delimiting wall 17 has a formation 22, creating a centring recess 23, on its face which is turned towards the interior of the machine WM.

[0018] With reference to Figures 1, 3 and 4, the delimiting wall 17 is associated with a controlled actuator device, illustrated only partially in these figures, in which it is indicated as a whole by 24.

[0019] In the illustrated embodiment, this actuator device comprises a rod-shaped pushing member 25 which is translatable essentially in its axial direction. The end of this pushing member 25 which points towards the box-like container 11 can engage in the centring recess 23 of the delimiting wall 17.

[0020] The actuator device 24 is made in such a way

that the pushing member 25 can assume a retracted rest position (Figure 3) in which it allows the delimiting wall 17 to place itself and remain in the containment position, under the action of the spring 19, and an advanced operating position (Figure 4) in which it places the delimiting wall 17 in the discharge position, against the action of the return spring 19.

[0021] The pushing member 25 can be moved from the rest position to the operating position in one of various known ways, for example by means of a solenoid, an electric motor, or other means. In one embodiment which is not illustrated, the movement of this pushing member can be controlled directly by a movable member of a hydraulic distributor device (of a known type) designed to supply a flow of water to the receptacle 12 of the box-like container 11, to wash out and thus evacuate the washing agent contained therein.

[0022] For operation, the user intending to carry out a washing cycle pulls out the box-like container 11, placing it for example in the position shown in Figures 1 and 2. In this condition, the delimiting wall 17, which is carried by the box-like container 11, is disengaged from the actuator device 24, and particularly from the pushing member 25. This wall 17, which can conveniently be provided with a seal around its periphery if necessary, delimits the rear of the receptacle 12 formed in the box-like container 11. The user can then pour a quantity of a washing agent, which can be solid or in powder form or liquid, into the receptacle 12. If the washing agent is liquid, the wall 17 prevents the liquid washing agent from flowing into the washing machine WM.

[0023] The user then recloses the box 11, which is then placed in the configuration shown in Figure 3. In this condition, the delimiting wall 17 is positioned next to the pushing member 25, which however is in its retracted rest condition.

[0024] When the washing machine WM has been started, in the stage of the washing cycle in which the washing agent previously poured or loaded into the receptacle 12 is to be supplied to the washing chamber of the machine, a device for controlling the operation of the machine activates the actuator device 24, whose pushing rod 25 moves to the advanced operating position shown in Figure 4, causing the delimiting wall 17 to swing towards its discharge position. In this condition, the washing agent previously loaded into the receptacle 12 can be supplied to the washing chamber of the machine. In particular, if this washing agent is of the liquid type, it can be supplied by the natural downward flow of the agent and/or as a result of its washing out by a flow of water supplied to the receptacle. On the other hand, if the previously loaded washing agent is of the solid or powder type, this agent is transferred to the washing chamber by being washed out by a flow of water supplied in a known way to the receptacle 12 by means of a suitable hydraulic distribution device.

[0025] The supply device according to the invention makes it possible to use a washing agent of the liquid,

solid, or powder type without affecting the process.

[0026] In a variant embodiment which is not illustrated, the movable delimiting wall 17 of the receptacle 12 is not fitted on the box-like container 11, but can be brought into a fixed position by the structure 1 of the washing machine WM in such a way that it extends into the box-like container 11, which, as in the example of embodiment described above, can slide with respect to the said wall in its movement between the retracted closed condition and its at least partially extended open condition.

Claims

1. Device (10) for supplying a washing agent in a washing machine (WM), particularly a machine for washing laundry, comprising a container (11) movable with respect to the machine (WM) between a retracted closed position and an at least partially extracted open position and in which is formed a receptacle (12) open at the top; the receptacle (12) being adapted to receive a quantity of a solid or powdered or liquid washing agent poured thereinto; the said container (11) being associated with a wall (17) delimiting the said receptacle (12) and movable between a containment position and a discharge position; the device (10) being **characterized by** elastic return means (19) which tend to keep the said delimiting wall (17) in the containment position both when the container (11) is in the extracted position to allow the receptacle (12) to be loaded with a quantity of a washing agent, and when the container (11) is in the retracted closed position; the said delimiting wall (17) being associated with controllable actuator means (24, 25) for causing the said wall (17) to move from the containment position to the discharge position when the container (11) is in the retracted closed position.
2. Device according to Claim 1, in which the said container (11) is fitted in the machine (WM) in such a way that it is movable between a retracted closed condition and an at least partially extended open condition, the said delimiting wall (17) being carried by this container (11), and the associated actuator means (24 and 25) being fitted in the machine (WM, 1) in such a way that they can control the position of the delimiting wall (17) when the container (11) is in its retracted closed position.
3. Device according to Claim 1, in which the said container (11) is fitted in the machine (WM, 1) in such a way that it is movable between a retracted closed condition and an at least partially extended open condition, and the delimiting wall (17) and the associated actuator means (24 and 25) are fitted in the structure (1) of the machine (WM) in such a way that

the said delimiting wall (17) extends into the container (11), which can slide with respect to the said wall (17) in its movement between the closed condition and the open condition.

4. Device according to any one of the preceding claims, in which the said delimiting wall (17) is fitted so that it can rotate (swing) about an essentially horizontal axis (A), located at a predetermined height above the bottom (16) of the said receptacle (12).
5. Device according to Claim 4, in which the said actuator means (24 and 25) comprise a movable pushing member (25) for interacting with a portion of the said delimiting wall (17) within which is made a formation (22) which creates a centring recess (22) for the said pushing member (25).

Patentansprüche

1. Vorrichtung (10) zum Zuführen eines Waschmittels in eine Waschmaschine (WM), insbesondere eine Maschine zum Waschen von Wäsche, umfassend einen Behälter (11), welcher in Bezug auf die Maschine (WM) zwischen einer eingefahrenen geschlossenen Stellung und einer wenigstens teilweise ausgefahrenen offenen Stellung bewegbar ist und in welchem eine an der Oberseite offene Aufnahme (12) ausgebildet ist; wobei die Aufnahme (12) dazu ausgebildet ist, eine Menge eines hinein gefüllten festen oder pulverförmigen oder flüssigen Waschmittels aufzunehmen; wobei dem Behälter (11) eine Wand (17) zugeordnet ist, die die Aufnahme (12) abgrenzt und die zwischen einer Behaltestellung und einer Abgabestellung bewegbar ist; wobei die Vorrichtung (10) **gekennzeichnet ist durch** ein elastisches Rückstellmittel (19), das dazu tendiert, die Abgrenzungswand (17) in der Behaltestellung zu halten, sowohl dann, wenn sich der Behälter (11) in der ausgefahrenen Stellung befindet, um zu ermöglichen, dass die Aufnahme (12) mit einer Menge eines Waschmittels befüllt wird, als auch dann, wenn sich der Behälter (11) in der eingefahrenen geschlossenen Stellung befindet; wobei der Abgrenzungswand (17) steuerbare/regelbare Betätigungsmittel (24, 25) zugeordnet sind, um zu bewirken, dass sich die Wand (17) von der Behaltestellung zur Abgabestellung bewegt, wenn sich der Behälter (11) in der eingefahrenen geschlossenen Stellung befindet.
2. Vorrichtung nach Anspruch 1, bei der der Behälter (11) in der Maschine (WM) in einer solchen Weise angebracht ist, dass er zwischen einem eingefahrenen geschlossenen Zustand und einem wenigstens teilweise ausgefahrenen offenen Zustand bewegbar ist, wobei die Abgrenzungswand (17) durch diesen

Behälter (11) gelagert ist und wobei die zugeordneten Betätigungsmittel (24 und 25) in der Maschine (WM, 1) in einer solchen Weise angebracht sind, dass sie die Stellung der Abgrenzungswand (17) steuern/regeln können, wenn sich der Behälter (11) in seiner eingefahrenen geschlossenen Stellung befindet.

3. Vorrichtung nach Anspruch 1, bei der der Behälter (11) in der Maschine (WM, 1) in einer solchen Weise angebracht ist, dass er zwischen einem eingefahrenen geschlossenen Zustand und einem wenigstens teilweise ausgefahrenen offenen Zustand bewegbar ist, und wobei die Abgrenzungswand (17) und die zugeordneten Betätigungsmittel (24 und 25) in der Struktur (1) der Maschine (WM) derart angebracht sind, dass sich die Abgrenzungswand (17) in den Behälter (11) erstreckt, der bezüglich der Wand (17) in seiner Bewegung zwischen dem geschlossenen Zustand und dem offenen Zustand gleiten kann.

4. Vorrichtung nach einem der vorangehenden Ansprüche, bei der die Abgrenzungswand (17) derart angebracht ist, dass sie sich um eine im Wesentlichen horizontale Achse (A) drehen (schwenken) kann, die sich in einer vorbestimmten Höhe über dem Boden (16) der Aufnahme (12) befindet.
5. Vorrichtung nach Anspruch 4, bei der die Betätigungsmittel (24 und 25) ein bewegbares Schiebeelement (25) umfassen zum Zusammenwirken mit einem Abschnitt der Abgrenzungswand (17), innerhalb dem eine Formation (22) gebildet ist, die eine Zentrierungsvertiefung (22) für das Schiebeelement (25) schafft.

Revendications

1. Dispositif (10) pour alimenter un agent de lavage dans une machine à laver (WM) particulièrement une machine à laver le linge, comprenant un récipient (11) mobile par rapport à la machine (WM) entre une position fermée où il est rentré et une position ouverte où il est au moins en partie sorti et dans lequel est formé un réceptacle (12) ouvert sur le haut ; le réceptacle (12) étant adapté pour recevoir une certaine quantité d'un agent de lavage solide ou en poudre ou liquide versé dedans ; ledit récipient (11) étant associé à une paroi (17) délimitant ledit réceptacle (12) et mobile entre une position de retenue et une position de déchargement ; le dispositif (10) étant **caractérisé par** des moyens de rappel élastiques (19) qui tendent à garder ladite paroi de délimitation (17) dans la position de retenue à la fois quand le récipient (11) est dans la position où il est sorti pour permettre au réceptacle (12) d'être chargé avec une certaine

quantité d'un agent de lavage, et quand le récipient (11) est dans la position fermée où il est rentré ; ladite paroi de délimitation (17) étant associée avec des moyens d'actionneur pouvant être commandés (24, 25) pour faire se déplacer ladite paroi (17) de la position de retenue à la position de décharge quand le récipient (11) est dans la position fermée où il est rentré.

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2. Dispositif selon la revendication 1, dans lequel ledit récipient (11) est monté dans la machine (WM) de telle manière qu'il est mobile entre un état fermé où il est rentré et un état ouvert où il est au moins en partie sorti, ladite paroi de délimitation (17) étant supportée par ce récipient (11), et les moyens d'actionneur associés (24 et 25) étant montés dans la machine (WM, 1) de telle manière qu'ils peuvent commander la position de la paroi de délimitation (17) quand le récipient (11) est dans sa position fermée où il est rentré.

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3. Dispositif selon la revendication 1, dans lequel ledit récipient (11) est monté dans la machine (WM, 1) de telle manière qu'il est mobile entre un état fermé où il est rentré et un état ouvert où il est au moins en partie sorti, et la paroi de délimitation (17) et les moyens d'actionneur associés (24 et 25) sont montés dans la structure (1) de la machine (WM) de telle manière que ladite paroi de délimitation (17) s'étend dans le récipient (11), qui peut coulisser par rapport à ladite paroi (17) dans ce mouvement entre l'état fermé et l'état ouvert.

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4. Dispositif selon l'une quelconque des revendications précédentes, dans lequel ladite paroi de délimitation (17) est montée de telle manière qu'elle peut tourner (basculer) autour d'un axe sensiblement horizontal (A), situé à une hauteur prédéterminée au-dessus du fond (16) dudit réceptacle (12).

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5. Dispositif selon la revendication 4, dans lequel lesdits moyens d'actionneur (24 et 25) comprennent un élément de poussée mobile (25) pour interagir avec une partie de ladite paroi de délimitation (17) à l'intérieur de laquelle est faite une formation (22) qui crée un évidement de centrage (22) pour ledit élément de poussée (25).

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FIG. 1

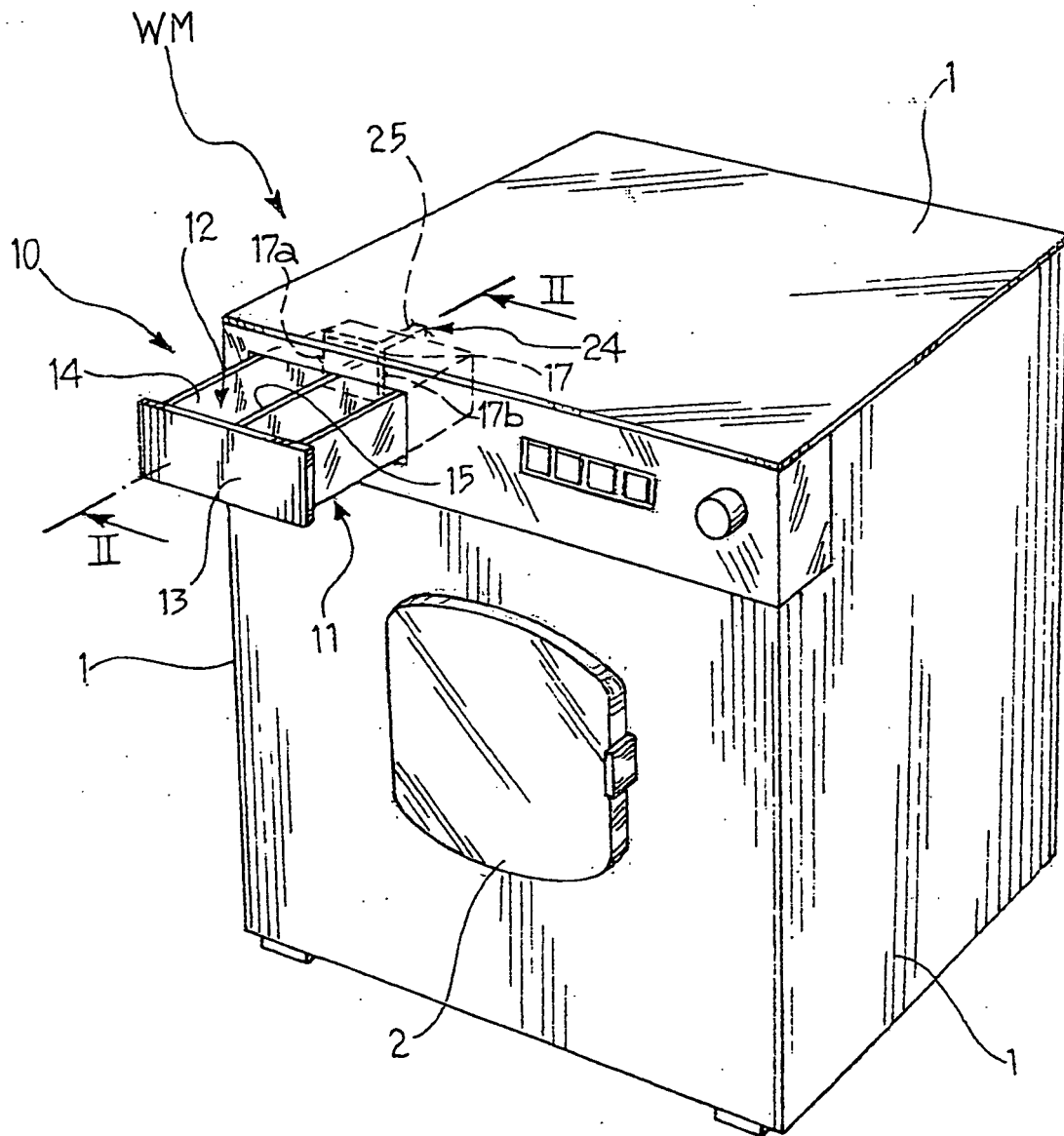
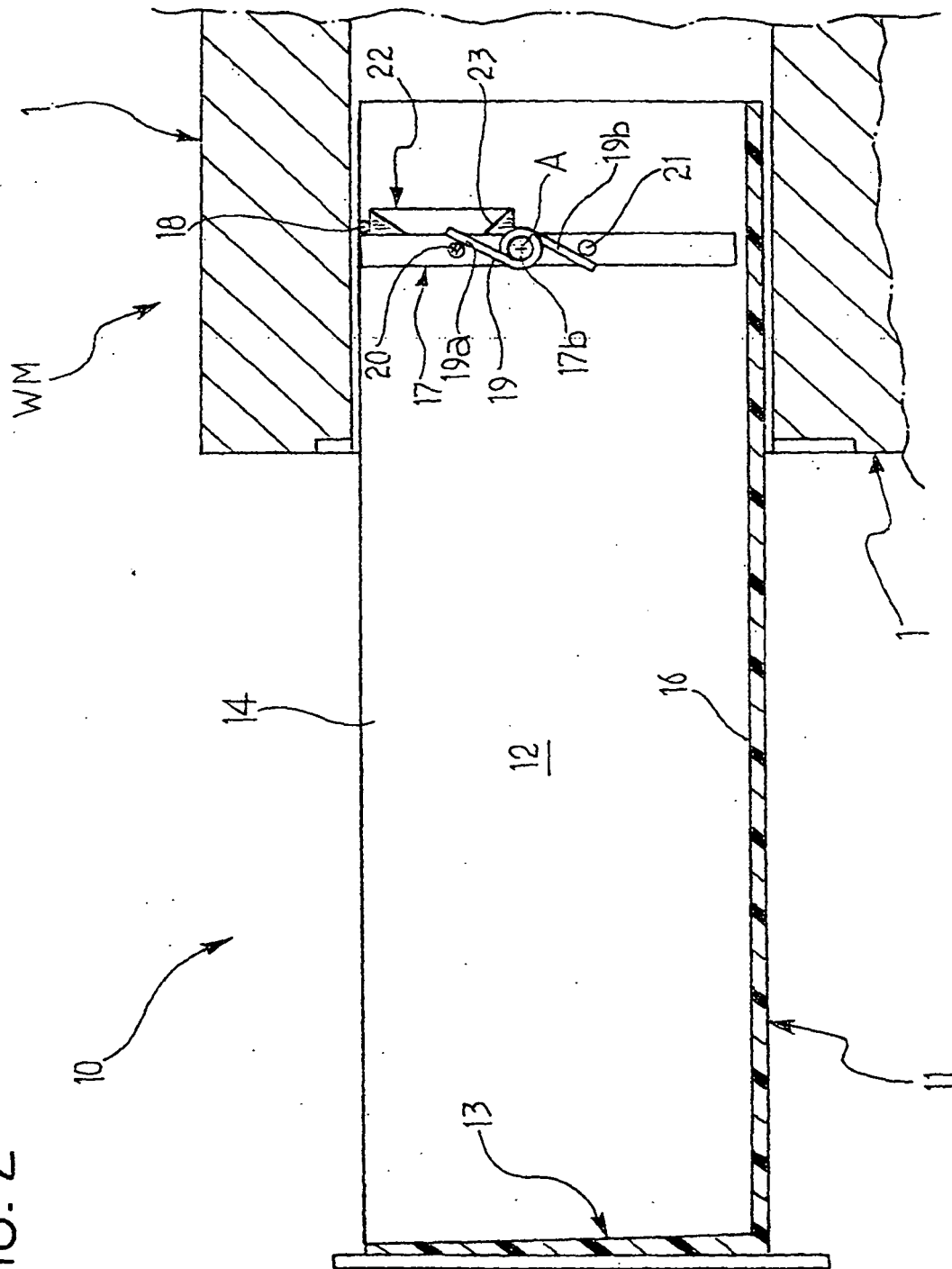


FIG. 2



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MM

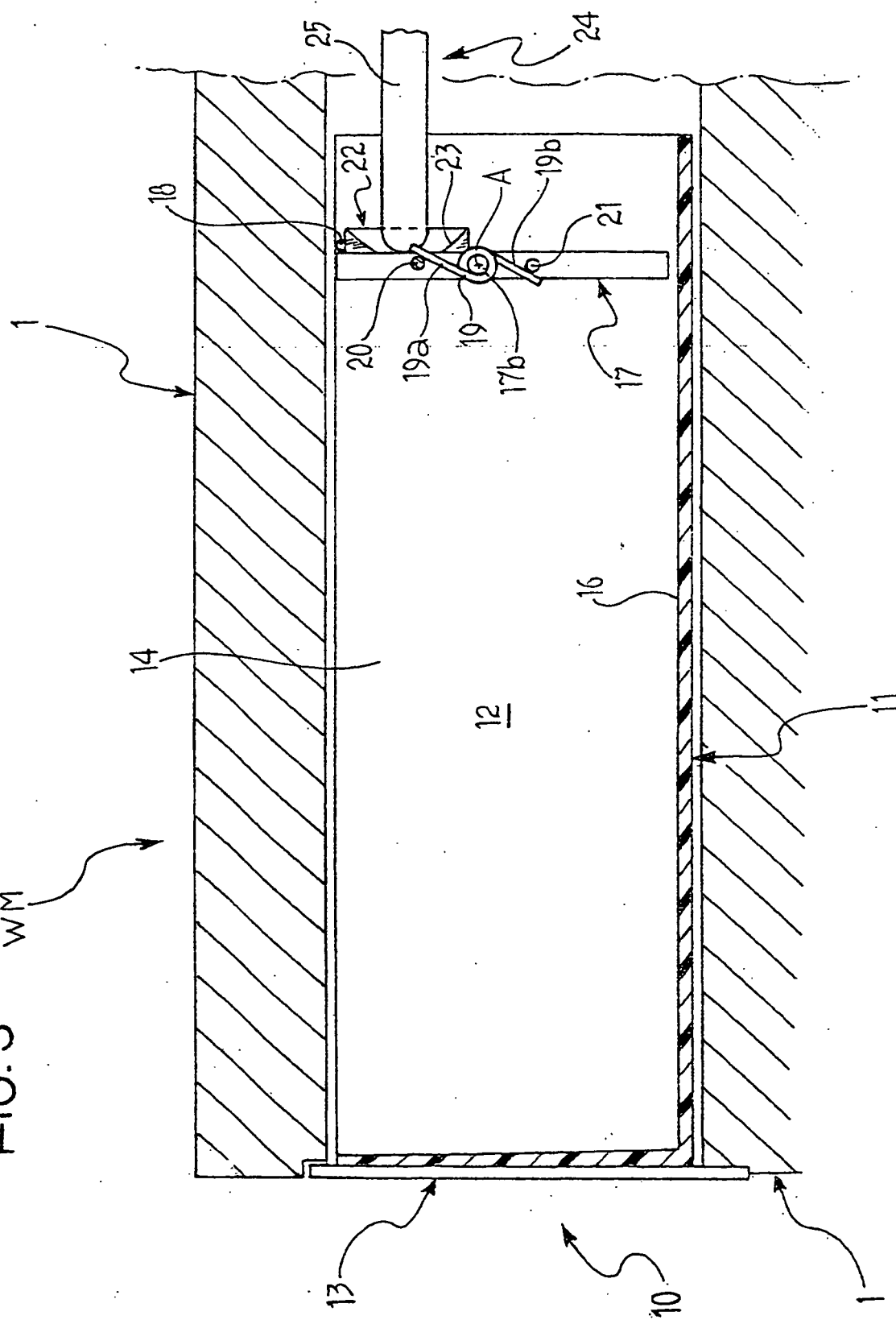
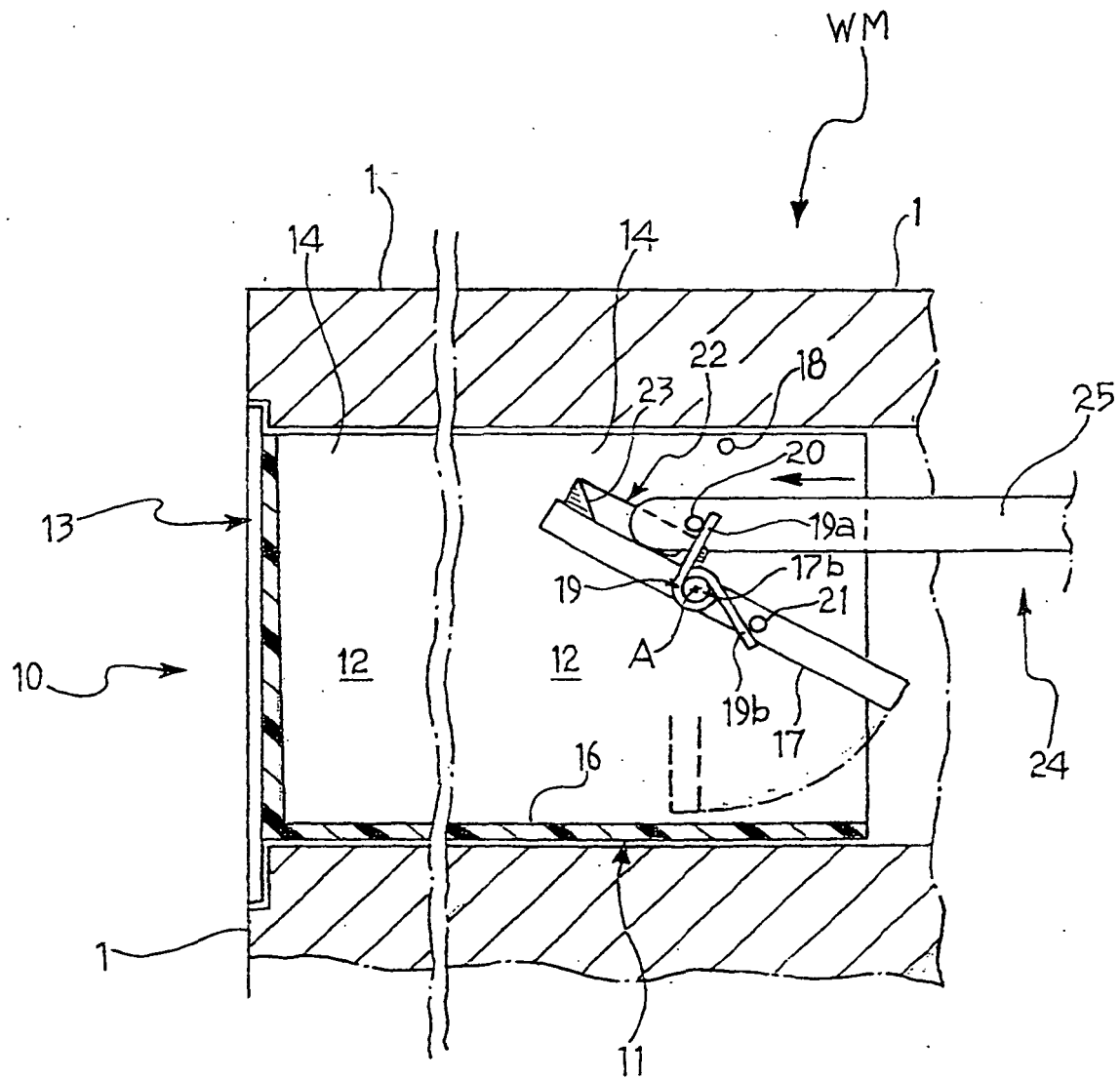


FIG. 4



REFERENCES CITED IN THE DESCRIPTION

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