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(54) **Laundry washing machine**

Waschmaschine

Machine à laver le linge

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EP 2 889 419 B1

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Description

Field of the invention

[0001] The invention relates to a laundry washing machine, or a washing machine having dryer function, having a detergent storing compartment for storing a detergent.

Background of the invention

[0002] Conventionally, laundry washing machines include a detergent feeding device having a compartment for storing a detergent to be used for washing the laundry.

[0003] The detergent is poured into the compartment before the beginning of a washing cycle and, during the washing cycle, the detergent is delivered to the laundry, typically by means of a flow of water.

[0004] When using a liquid detergent, it can flow, e.g. for gravity action, towards an outlet of the detergent feeding device, thus being delivered to the laundry before the actual beginning of the washing cycle.

[0005] For this reason, it is known to use washing machines in which a partition element is used to partially obstruct a passage from the detergent compartment to the outlet of the feeding device, in order to prevent undesired flow of liquid detergent. When a powder detergent is used, the partition element can be moved or removed, thus allowing the flow of water to deliver the powder to the outlet.

[0006] An example of such washing machine is disclosed in EP 2 284 309, relating to a washing and/or drying machine, comprising a detergent feeding device having at least one detergent storing compartment for storing a detergent. The detergent compartment comprises an outlet for a detergent and water mixture, and a pivoted partition element arranged in the detergent compartment, wherein in a first position the partition element separates a partial compartment in the detergent compartment from the outlet for storing an amount of liquid detergent in the partial compartment, and in a second position the partition element provides passage from the partial compartment to the outlet. In the first position the partition element is inclined with respect to the bottom of the detergent compartment, such that from the first position the partition element can be pivoted to the second position only in one pivoting direction and wherein the pivoting path of the partition portion of the partition element from the first to the second position is partially situated in the partial compartment.

[0007] In order to displace the partition element from the first to the second position it is necessary to grasp it with a hand for rotating it. Nevertheless, at least when in the first position i.e. the one suitable for liquid detergent, the partition element is positioned inside the detergent compartment and it is not easily reachable by the hand of the user. Furthermore, during use, the partition element is reached by the liquid detergent and typically users

find it quite unpleasant to touch parts with residual of detergent deposited thereon.

[0008] A similar solution is also described in GB 2 187 763 relating to a washing agent feed device for a washing machine comprising a rearward flow limitation wall with a stationary portion and a movable portion as bulkhead partition for liquid washing agent. The portions are connected together by way of a hinge. The partition has an outline shape substantially corresponding with the profile of a passage below the stationary wall portion and is movable into the passage.

[0009] In document EP 2 374 926 the limitation wall is part of a dividing wall, that latter comprising the upper fixed portion hinged with the limitation wall, so that on its lower position it closes the detergent chamber, and on its upper position it is constrained with the fixed portion,

[0010] Also this solution is subjected to the same previously listed drawbacks.

[0011] Document DE 1970549 U discloses a limitation wall that can be rotated by the movement of the compartment closure cap.

[0012] Document KR 2005-0118618 discloses a limitation wall mountable in two positions to a partition fixed wall provided between two detergent chambers.

[0013] These solutions are subject to the complexity of layout, due to the number of the components involved.

Summary of the invention

[0014] An object of the invention is to provide a laundry washing machine that overcomes the drawbacks of known laundry appliances.

[0015] Another object of the invention is to provide an improved washing machine comprising a detergent storage compartment suitable for using both a powder and a liquid detergent.

[0016] A further object is to provide a washing machine comprising a partition element which can be displaced between two different positions inside the detergent storage compartment according to the kind of detergent used, in which the partition element can be easily displaced without requiring the user to insert his or her hand into the detergent storage compartment.

[0017] According to the invention it is provided a laundry washing machine comprising:

- a laundry treating chamber;
- at least one detergent storing compartment for storing a detergent;
- an outlet through which the detergent is delivered from the detergent storing compartment to the laundry treating chamber;
- a partitioning device for at least partially preventing passage of detergent through a bottom portion of the detergent storing compartment towards the outlet, the partitioning device comprising:

a pivotable partition element arranged in the de-

tergent compartment and pivotable about a horizontal axis such that it can be displaced between a first, lowered, position, in which passage of detergent through the bottom portion is at least partially prevented, and a second, lifted, position in which passage of detergent is allowed; wherein the partitioning device further comprises an operative element extending in a direction opposite to the pivotable partition element with respect to the horizontal axis wherein said operative element is formed by a rotary knob, radially extending from a shaft of said partitioning device rotatable about said horizontal axis and to which said partition element is connected, wherein said operative element comprises a grip portion positioned above an horizontal plane α comprising said horizontal axis both in said first and said second position, such that said grip portion can be reached by the hand of a user when the partition element is both in the first and in the second position, and rotated in order to displace the pivotable partition element between the first and second positions.

[0018] It is to be understood that in the laundry washing machine according to the invention the pivotable partition element can be easily operated since its grip portion can be easily reached by the hand of the user when it is positioned both in a position suitable for the liquid detergent and in a position suitable for the powder one. In particular, when the partition element is in the first lowered position, the grip portion can be easily reached without requiring the user to put his or her hand into the detergent storage compartment since it develops in a direction opposite to the partition element and is always positioned above the horizontal plane α .

[0019] It has to be understood that in the present application, expression "horizontal", in particular when referred to axis or planes, refers to a condition in which the laundry washing machine is positioned in "typical use condition", i.e. placed on the floor of a building.

[0020] According to another aspect of the invention, the washing machine further comprises a releasable retaining device of the partitioning device capable of retaining the pivotable partition element at least in the second lifted position. In this manner, even if the first and second positions of the partition element are separated only by a limited rotation, the risk that the partition element returns from the second lifted position to the lower one is remarkably limited. This is particularly advantageous since if a limited rotation is required, only a limited volume is necessary in order to operate the partition element, thus allowing a particularly compact solution.

[0021] Preferably, the releasable retaining device comprises a recess and a respective projection, respectively formed on the partitioning device and on the detergent storing compartment or vice versa, the projection being at least partially housed in the recess when the

pivotable partition element is in the second lifted position. This makes it possible to retain the partition element in a precise position with a simple solution that can be easily obtained by plastic moulding.

[0022] According to a further embodiment, the partitioning device is pivotally mounted between side walls of the detergent storing compartment, the recess or the projection being formed on at least one of the side walls. This allows to easily realize the recess or the projection. Furthermore, if the side walls are sufficiently deformable, the projection can be easily released from the recess by elastically deforming the side walls

[0023] Preferably, the partition element is rotated of an angle lower than 90 degrees when displaced between the first and second position. In this manner, only a limited space is required for rotating the partition element.

[0024] According to a further aspect, the partition element is displaced from the first lowered position to the second lifted position by rotating it in a lifting direction concordant to a delivery direction of the detergent from the storing compartment to the outlet. This allows to avoid that the partition element enters the volume defined by storing compartment when rotated between the two positions, thus minimizing the risk of pouring detergents thereon. According to a preferred embodiment, the washing machine further comprises an extractable drawer, the detergent storage compartment being formed on the extractable drawer and the device being pivotally mounted on the drawer, thus allowing a particularly simple solution in the manufacturing of the partitioning device.

[0025] Preferably, the drawer further comprises an auxiliary storage compartment for storing detergent or other laundry treating agent, the auxiliary storage compartment being positioned on the drawer next to the detergent storage compartment along a sliding direction of the drawer, the retaining device being positioned between the auxiliary storage compartment and the detergent storage compartment.

[0026] In this manner, the operative position can be easily reached by even partially withdrawing the drawer.

[0027] According to a preferred embodiment, a passage connecting the detergent storage compartment to the outlet is defined in the drawer, the partitioning device being positioned upstream of the passage, the auxiliary storage compartment being formed above the passage thus allowing a particularly compact solution.

[0028] Preferably, the drawer comprises a cover portion, a window being defined in the cover portion through which the operative element passes, such that the operative element projects above the cover portion and the partition element is located underneath the cover portion both in the first position and in the second position of the partition element. This allows at the same time to protect the partition element, e.g. by drops of detergent, and to make the operative element easily reachable.

[0029] Preferably, the shaft is defined by a cylindrical body with two axially projection pins, the recess/es or the projection/s being formed on shoulder/s of the cylindrical

body adjacent to the pins. In this manner, also the partitioning device can be easily manufactured by plastic moulding.

[0030] According to a preferred embodiment, the shaft is snap-fitted on openings formed on the side walls of the detergent storage compartment, thus allowing an easy assembling of the partitioning device on the detergent storage compartment.

[0031] According to another aspect of the invention, a through-opening is defined in the partition element through which the detergent can pass when the partition element is in the first lowered position. In this manner, since the operative element extends in the opposite direction of the partition element, and, accordingly, also of the through opening, the detergent can be delivered to the outlet without touching the operative element.

[0032] In a preferred embodiment the through-opening is arranged in such a way to be positioned below horizontal plane α at least when the partition element is in the first, lowered, position; in this way, even when a liquid detergent is used, operative element is not touched (or at most only barely touched) by detergent, thus remaining clean, since if the level of detergent reaches the through-opening, the detergent comes out through the latter and does not reach the operative element.

Brief description of the drawings

[0033] These and other features and advantages of the invention will be better apparent from the following description of some exemplary and non-limitative embodiments, to be read with reference to the attached drawings, wherein:

- Fig. 1 is a front perspective view of the washing machine of the present invention in a "typical use condition" (i.e. positioned on the floor of a building);
- Figs. 2 and 2A are a front perspective view of the washing machine of Fig. 1, in which a drawer is partially withdrawn from a respective supporting structure, and a detail thereof;
- Fig. 3 is a front perspective view of the drawer of the washing machine of the present invention;
- Figs. 4 and 4A are a front perspective view, in section, of the drawer of Fig. 3, in which a partition element of a partitioning device is located in a first, lowered, position suitable for liquid detergents, and a detail thereof;
- Figs. 5 and 5A are a front perspective view, in section, of the drawer of Fig. 3, in which the partition element is located in a second, lifted, position suitable for powder detergents, and a detail thereof;
- Fig. 6 is an exploded perspective view of the drawer of Fig. 3;
- Fig. 7A-C are different perspective views of the partitioning device;
- Fig. 8 is a perspective view, in detail, of the drawer of Fig. 3 in which a cover portion has been removed;

and

- Fig. 9 is a perspective view, in detail, of the drawer of Fig. 3 in which the cover portion and the partitioning device have been removed.

Detailed description of the invention

[0034] With reference initially to Fig. 1, a laundry washing machine realized according to the present invention is globally indicated with the reference number 100.

[0035] It should be noted that in the context of the present invention with the expression "washing machine" is referred both to a "standard" washing machine, adapted only for washing and rinsing the laundry, and to a washer-drier, which is adapted for washing, rinsing, and also for drying the laundry.

[0036] The washing machine 100 comprises an outer casing 101, preferably but not necessarily parallelepiped-shaped, and a treatment chamber 107 for receiving the laundry and in general the clothes and garments to be washed and/or dried.

[0037] An aperture is defined in a front bulkhead of the casing, facing the treatment chamber 107 and thus allowing loading and unloading the laundry in the machine.

The washing machine 100 further comprises a door assembly 102, preferably pivotally supported on the casing 101 and displaceable between a closed position, shown in Figs. 1 and 2 and in which the aperture is closed or preferably sealed, and an open position in which access to the drum is granted.

[0038] According to the present embodiment, in the front face of the casing 101 are also located a control panel 103 of the machine 100 and a drawer 1 suitable for containing detergents and other agents for treating the laundry, such as softener or bleach.

[0039] In other words, the device 100 according to present embodiment is a front-load device. Nevertheless it will be appreciated that the present invention could also apply to different type of washing laundry machines, such as top-loading ones.

[0040] With reference to Fig. 2, the drawer 1 is slidably associated to a supporting structure 104, preferably formed by a receptacle in which the drawer 1 can be housed. The supporting structure 104 defines a housing, capable of receiving therein the drawer 1 such that when the drawer is fully inserted in the housing a front panel 105 of the drawer is flush with the front bulkhead of the casing. Preferably, the front panel 105, or more in general the drawer 1, comprises a handle 106, by means of which the drawer 1 can be pulled and extracted from the housing, sliding along a sliding direction S.

[0041] Figs. 2 and 2A depict the drawer 1 in a partially withdrawn position, in which a detergent storing compartments 10, adapted for receiving the detergent to be used during washing cycles, is extracted from the receptacle 104. Preferably, the drawer 1 further comprises an auxiliary storing compartment 11, e.g. adapted for receiving detergent to be used during a pre-wash cycle, and laun-

dry treating agent compartments 12 and 13, adapted for receiving other laundry treating agents, such as bleach or softener.

[0042] It can be easily appreciated that, in this partial withdrawn position, the detergents and the other agents can be poured inside the compartment 10, as well as in the other compartments 11, 12 and 13.

[0043] According to a preferred embodiment, the auxiliary storage compartment 11 is positioned on the drawer 1 next to the detergent storage compartment 10 along the sliding direction S of said drawer 1. Preferably, the other compartments 12 and 13 are located sideway of the auxiliary storage compartment 11 and of the detergent storage compartment 10.

[0044] With reference to Fig. 4 and 4A, an outlet 3 is defined in the drawer 1, through which the detergent is delivered from the detergent storing compartment 10 to the laundry treating chamber 107, e.g. by a detergent feeding line, not shown in the Figures.

[0045] According to a further preferred embodiment, a passage 14, connecting the detergent storage compartment 10 to the outlet 3 is also defined in the drawer 1. Preferably, the auxiliary storage compartment 11 is formed above the passage 14.

[0046] According to a preferred embodiment, the detergent storage compartment 10 is adapted to receive a flow of water for delivering the detergent from the compartment 10 to the outlet 3, passing through passage 14, as it is required during the washing cycle.

[0047] It will be therefore appreciated that if a liquid detergent is used, it may flow towards passage 14 and outlet 3 even when no water flows in the detergent storage compartment 10.

[0048] In order to avoid that liquid detergent flows towards the outlet 3 and reaches the laundry, or the feeding line, before the actually required by the washing cycle, or at least partially preventing this, the washing machine further comprises a partitioning device 2, at least partially preventing passage of detergent through a bottom portion 10' of the detergent storing compartment 10 towards the outlet 3.

[0049] To this end, the partitioning device 2 comprises a pivotable partition element 20 arranged in the detergent compartment 10 and pivotable about a horizontal axis X such that it can be located in a first, lowered, position, in which passage of detergent through said bottom portion 10' is at least partially prevented by the presence of the partition element 20. Preferably, the partition element 20 is complementary shaped to the cross section of the bottom portion 10' of the detergent storing compartment 10 with respect to a delivery direction d of the detergent.

[0050] With reference also to Fig. 5 and 5A, the partition element 20 can be rotated about the horizontal axis X to a second, lifted, position in which passage through said bottom portion 10' of detergent is allowed. It will be therefore appreciated that this position is more suitable when powder detergent is used, since the flow of water is not obstructed by the partition element 20 and the risk

of powder being stuck on the partition element is remarkably reduced.

[0051] In order to rotate the partition element 20 between the first and the second position, the partitioning device 2 further comprises an operative element 21 extending in a direction opposite to the partition element 20 with respect to the horizontal axis X. The operative element 21 comprises a grip portion 210 positioned above an horizontal plane α comprising the horizontal axis X, i. e. axis X lies in plane α , both in the first and the second position of the partition element 20.

[0052] In this manner, as will be better described in the following, the grip portion 210 can be easily reached by the hand of a user when said partition element 20 is both in the first and the second position for rotating it between said positions.

[0053] According to a preferred embodiment, the drawer 1 comprises a cover portion 4 into which a window 42 is defined for the passage of the operative element 21. Accordingly, the operative element 21 can project above the cover portion 4, thus making it easily reachable, while the partition element 20 is located underneath the cover portion 4, for protecting it both in its first position and in the second position.

[0054] Preferably, a through-opening 23, shown in Fig. 7A-C, is defined in the partition element 21, through which the detergent can pass when the partition element 20 is in the first lowered position. It will be therefore appreciated that since the through-opening 23 is positioned above the bottom portion 10' when the partition element 20 is in the lowered position, the detergent will be delivered to the outlet 3 only when a suitable flow of water is provided in the detergent storing compartment 10. Also, the through-opening 23 is preferably positioned below the horizontal plane α at least when the partition element 20 is in the first lowered position and, in this manner, even when a liquid detergent is used the operative element 21 is not touched by any detergent, thus remaining clean.

[0055] According to a preferred embodiment, the operative element 21 is formed by a rotary knob, radially extending from a cylindrical body 22 of the partitioning device 2. The cylindrical body 22, together with axially projecting pins 25, forms a shaft of the partitioning device, rotatable about the horizontal axis X and to which the partition element 21 is connected. Preferably, pins 25, or more in general the shaft, are snap-fitted into openings 17 formed side walls 15 of the detergent storage compartment 10 and shown in Fig. 9. In order to allow an easier snap-fitting of the pins 25 into the openings 17, the side walls preferably comprises a tilted portion 16. When an end of the pins 25 abuts on the tilted portion 16, side walls 15 are pushed apart, thus permitting an easier insertion into the openings 17. According to a further preferred embodiment, the operative element 21 has an irregular surface, e.g. formed by a plurality of notches 211, improving the grip of a finger or of a thumb and, accordingly, allowing an easier rotation of the knob, or

more in general of the operative element, and of the partition element 20.

[0056] Always according to a preferred embodiment, the operative element 21 and the detergent storing compartment 10 comprises respective reference signs 212 and 112, that, when aligned, indicated that partition element 20 is in a certain position, e.g. in the first or the second position.

[0057] According to another aspect of the invention, the washing machine 100 further comprises a releasable retaining device 5 of the partitioning device 2, shown in Fig. 8, capable of retaining the pivotable partition element 20 at least in the second lifted position. In other words, the partition element 20, when retained in the lifted position shown in Fig. 5 and 5A, will not be rotated by gravity, but a stronger force, as the one that may be provided by a user acting on the rotary knob, will be required in order to release it from the lifted position.

[0058] With reference, in particular, to Figs. 7A-C and 8, the releasable retaining device 5 preferably comprises a recess 51 and a respective projection 55, respectively formed on the partitioning device 2 and on the detergent storing compartment 10. It will be anyhow appreciated that according to an alternative embodiment, the recess 51 can be formed on the storing compartment and the projection on the partitioning device.

[0059] The projection 55 is at least partially housed in the recess 51 when the pivotable partition element 21 is in the second lifted position, thus retaining the partitioning device in such position.

[0060] Preferably, the projection 55 is formed on at least one of the side walls 15 of the detergent storage compartment 10.

[0061] In this manner, since the side walls 15 are partially elastically deformable, they can be easily moved apart as the surface of the recess 51 abuts on the projection 55 when the operating portion 21 is rotated for releasing the retaining device 5.

[0062] According to a preferred embodiment, the retaining device 5 comprises further recesses or projections 5. For example, a second recess 50' can be provided on the partitioning device 2 for retaining the partition element 20 in an intermediate position between said first and second position, which can be used, e.g. for gel detergents. Furthermore, also a recess 50 corresponding to the first lowered position can be provided.

[0063] According to a preferred embodiment, the recess 51, as well as other recesses 50', 51, are formed on a shoulder 22' of the cylindrical body 22 adjacent to the pins 25.

[0064] Preferably, the shoulder 22' is also provided with an enlarged portion 52 located in an angular position adjacent to the recess 50 and/or 51 and opposed to the other recess. In this manner, when the partitioning device 2 is retained by engaging the projection 15 in either recess 50 or recess 51, respectively corresponding to the first and second position, the partitioning device can rotate only in one direction.

[0065] It should be appreciated that the retaining device 5 allows to keep the partition element 20 in the lifted position even if this position is separated by a limited angle of rotation from the first lowered position. This allows to maintain the partition element 20 covered by the cover portion 4 in each operative position, i.e. in the first, the second and in the intermediate ones.

[0066] Therefore, according to a preferred embodiment, the pivotable partition element 20 is rotated of an angle lower than 90 degrees, preferably lower than 45 degrees, when displaced between the first and the second position.

[0067] According to a further preferred embodiment, with reference again to Fig. 4 and 4A, the use of the retaining device 5 also allows to displace the pivotable partition element 20 from the first lowered position to the second lifted position by rotating it in a lifting direction 1 concordant to a delivery direction d of the detergent from the storing compartment 10 to the outlet 3.

[0068] Furthermore, preferably, the distance from the axis X to a bottom surface of the detergent storing compartment 10 is lower than the radial development of the partition element 20 from the axis X. In this manner, from the lowered position only rotation of the partition element 20 in one direction, corresponding to the lifting direction 1, is permitted.

Claims

1. A laundry washing machine (100) comprising:

- a laundry treating chamber (107);
- at least one detergent storing compartment (10) for storing a detergent;
- an outlet (3) through which the detergent is delivered from said detergent storing compartment (10) to said laundry treating chamber (107);
- a partitioning device (2) for at least partially preventing passage of detergent through a bottom portion (10') of said detergent storing compartment (10) towards said outlet (3),

said partitioning device (2) comprising:

- a pivotable partition element (20) arranged in said detergent compartment (10) and pivotable about a horizontal axis (X) such that it can be displaced between a first, lowered, position, in which passage of detergent through said bottom portion (10') is at least partially prevented, and a second, lifted, position in which passage through said bottom portion (10') of detergent is allowed;
- an operative element (21) extending in a direction opposite to said pivotable partition element (20) with respect to said horizontal axis (X),

characterized in that

said operative element (21) is formed by a rotary knob, radially extending from a shaft (22, 25) of said partitioning device (2) rotatable about said horizontal axis (X) and to which said partition element (20) is connected **and in that** said operative element (21) comprises a grip portion (210) positioned above an horizontal plane (α) comprising said horizontal axis (X) both in said first and said second position, such that said grip portion (210) can be reached by the hand of a user when said partition element (20) is both in said first and said second position and rotated in order to displace said pivotable partition element (20) between said first and second positions.

2. The washing machine (100) according to claim 1, further comprising a releasable retaining device (5) of said partitioning device (2) capable of retaining said pivotable partition element (20) at least in said second lifted position.
3. The washing machine (100) according to claim 2, wherein said releasable retaining device (5) comprises a recess (51) and a respective projection (55), respectively formed on said partitioning device (2) and on said detergent storing compartment (10) or vice-versa, said projection (55) being at least partially housed in said recess (51) when said pivotable partition element (21) is in said second lifted position.
4. The washing machine (100) according to claim 3, wherein said partitioning device (2) is pivotally mounted between side walls (15) of said detergent storing compartment (10), said recess (51) or said projection (55) being formed on at least one of said side walls (15).
5. The washing machine (100) according to claim 3 or 4, wherein said releasable retaining device (5) comprises a second recess (50') and/or a second projection for retaining said partition element (20) in an intermediate position between said first and second position.
6. The washing machine (100) according to any of the preceding claims, wherein said pivotable partition element (20) is rotated of an angle lower than 90 degrees when displaced between said first and second position.
7. The washing machine (100) according to any of the preceding claims, wherein said pivotable partition element (20) is displaced from said first lowered position to said second lifted position by rotating it in a lifting direction (1) concordant to a delivery direction (d) of the detergent from said storing compartment (10) to said outlet (3).

8. The washing machine (100) according to any of the preceding claims, further comprising an extractable drawer (1), said detergent storage compartment (10) being formed on said extractable drawer (1) and said partitioning device (5) being pivotally mounted on said drawer (1).
9. The washing machine (100) according to claim 8, wherein said drawer (1) further comprises an auxiliary storage compartment (11) for storing detergent or other laundry treating agent, said auxiliary storage compartment (11) being positioned on said drawer (1) next to said detergent storage compartment (10) along a sliding direction (S) of said drawer (1), said partitioning device (2) being positioned between said auxiliary storage compartment (11) and said detergent storage compartment (10).
10. The washing machine (100) according to claim 9, wherein a passage (14) connecting said detergent storage compartment (10) to said outlet (3) is defined in said drawer (1), said partitioning device (2) being positioned upstream of said passage (14), said auxiliary storage compartment (11) being formed above said passage (14).
11. The washing machine (100) according to any of claims 8-10, wherein said drawer (1) comprises a cover portion (4), a window (42) being defined in said cover portion (4) through which said operative element (21) passes, such that said operative element (21) projects above said cover portion (4) and said partition element (20) is located underneath said cover portion (4) both in said first position and in said second position of said partition element (20).
12. The washing machine (100) according to any of claims 3-5, wherein said shaft is defined by a cylindrical body (22) with two axially projecting pins (25), said recess/es (50', 51) or said projection/s (55) being formed on shoulder/s (22') of said cylindrical body (22) adjacent to said pins (25).
13. The washing machine (100) according to any of the preceding claims, wherein a through-opening (23) is defined in said partition element (20) through which the detergent can pass when said partition element (20) is in said first lowered position.
14. The washing machine (100) according claim 13, wherein said through-opening (23) is arranged in such a way to be positioned below said horizontal plane (α) at least when said partition element (20) is in said first, lowered, position.

Patentansprüche

1. Waschmaschine (100), die Folgendes umfasst:

- eine Wäschebehandlungskammer (107); 5
- wenigstens eine Waschmittelaufbewahrungskammer (10) zum Aufbewahren eines Waschmittels; 10
- einen Auslass (3), durch welchen das Waschmittel von der Waschmittelaufbewahrungskammer (10) zur Wäschebehandlungskammer (107) fließt;
- eine Trennungsvorrichtung (2) zum wenigstens teilweisen Verhindern des Durchfließens von Waschmittel durch einen Unterteil (10') der Waschmittelaufbewahrungskammer (10) in Richtung des Auslasses (3), 15

wobei die Trennungsvorrichtung (2) Folgendes umfasst:

- ein schwenkbares Trennelement (20), das in der Waschmittelaufbewahrungskammer (10) angeordnet ist und um eine Horizontalachse (X) derart schwenkbar ist, dass es zwischen einer ersten abgesenkten Position, in der ein Durchfließen von Waschmittel durch den Unterteil (10') wenigstens teilweise verhindert wird, und einer zweiten angehobenen Position, in der ein Durchfließen von Waschmittel durch den Unterteil (10') gestattet wird, versetzt werden kann; 20
- ein Bedienelement (21), das sich bezogen auf die Horizontalachse (X) in einer zum schwenkbaren Trennelement (20) entgegengesetzten Richtung erstreckt, **dadurch gekennzeichnet, dass** 25

das Bedienelement (21) durch einen Drehknopf gebildet wird, der sich von einem Schaft (22, 25) der Trennungsvorrichtung (2) radial erstreckt und um die Horizontalachse (X) rotierbar ist und mit welchem das Trennelement (20) verbunden ist, und dadurch, dass das Bedienelement (21) einen Griffabschnitt (210) umfasst, der über einer Horizontalebene (α), die die Horizontalachse (X) sowohl in der ersten als auch der zweiten Position umfasst, positioniert ist, so dass der Griffabschnitt (210) durch die Hand eines Benutzers erreicht werden kann, wenn sich das Trennelement (20) sowohl in der ersten als auch der zweiten Position befindet, und rotiert werden kann, um das schwenkbare Trennelement (20) zwischen der ersten und der zweiten Position zu versetzen. 30 35 40 45 50

2. Waschmaschine (100) nach Anspruch 1, die weiterhin eine lösbare Haltevorrichtung (5) der Trennungsvorrichtung (2) umfasst, die fähig ist, das schwenkbare Trennelement (20) wenigstens in der zweiten angehobenen Position zu halten. 55

3. Waschmaschine (100) nach Anspruch 2, wobei die lösbare Haltevorrichtung (5) eine Aussparung (51) und einen entsprechenden Vorsprung (55) umfasst, die jeweils an der Trennungsvorrichtung (2) und an der Waschmittelaufbewahrungskammer (10) oder umgekehrt ausgebildet sind, wobei der Vorsprung (55) wenigstens teilweise in der Aussparung (51) untergebracht ist, wenn das schwenkbare Trennelement (21) sich in der zweiten angehobenen Position befindet.

4. Waschmaschine (100) nach Anspruch 3, wobei die Trennungsvorrichtung (2) schwenkbar zwischen Seitenwänden (15) der Waschmittelaufbewahrungskammer (10) montiert ist, wobei die Aussparung (51) oder der Vorsprung (55) an wenigstens einer der Seitenwände (15) ausgebildet ist.

5. Waschmaschine (100) nach Anspruch 3 oder 4, wobei die lösbare Haltevorrichtung (5) eine zweite Aussparung (50') und/oder einen zweiten Vorsprung zum Halten des Trennelements (20) in einer Zwischenposition zwischen der ersten und der zweiten Position umfasst.

6. Waschmaschine (100) nach einem beliebigen der vorstehenden Ansprüche, wobei das schwenkbare Trennelement (20) um einen Winkel von weniger als 90 Grad rotiert wird, wenn es zwischen der ersten und der zweiten Position versetzt wird.

7. Waschmaschine (100) nach einem beliebigen der vorstehenden Ansprüche, wobei das schwenkbare Trennelement (20) durch Rotieren in einer einer Fließrichtung (d) des Waschmittels von der Waschmittelaufbewahrungskammer (10) zum Auslass (3) entsprechenden Anheberichtung (1) von der ersten abgesenkten Position in die zweite angehobene Position versetzt wird.

8. Waschmaschine (100) nach einem beliebigen der vorstehenden Ansprüche, die weiterhin ein ausziehbares Einschubfach (1) umfasst, wobei die Waschmittelaufbewahrungskammer (10) am ausziehbaren Einschubfach (1) ausgebildet ist und die Trennungsvorrichtung (5) am Einschubfach (1) schwenkbar montiert ist.

9. Waschmaschine (100) nach Anspruch 8, wobei das Einschubfach (1) weiterhin ein sekundäres Aufbewahrungsfach (11) zum Aufbewahren von Waschmittel oder sonstigen Textilbehandlungsmitteln umfasst, wobei das sekundäre Aufbewahrungsfach (11) am Einschubfach (1) in einer Gleitrichtung (S) des Einschubfachs (1) neben der Waschmittelaufbewahrungskammer (10) positioniert ist, wobei die Trennungsvorrichtung (2) zwischen dem sekundären Aufbewahrungsfach (11) und der Waschmit-

telaufbewahrungskammer (10) positioniert ist.

10. Waschmaschine (100) nach Anspruch 9, wobei ein Durchlass (14), der die Waschmittelaufbewahrungskammer (10) mit dem Auslass (3) verbindet, im Einschubfach (1) definiert ist, wobei die Trennungsvorrichtung (2) dem Durchlass (14) vorgelagert positioniert ist und das sekundäre Aufbewahrungsfach (11) über dem Durchlass (14) ausgebildet ist.
11. Waschmaschine (100) nach einem beliebigen der Ansprüche 8-10, wobei das Einschubfach (1) einen Abdeckungsabschnitt (4) umfasst und in dem Abdeckungsabschnitt (4) ein Fenster (42) definiert ist, durch welches das Bedienelement (21) hindurchgeht, so dass das Bedienelement (21) aus dem Abdeckungsabschnitt (4) hervorragt, und sich das Trennelement (20) sowohl in der ersten Position als auch der zweiten Position des Trennelements (20) unter dem Abdeckungsabschnitt (4) befindet.
12. Waschmaschine (100) nach einem beliebigen der Ansprüche 3-5, wobei der Schaft durch einen zylindrischen Körper (22) mit zwei axial hervorragenden Stiften (25) definiert ist, wobei der/die Aussparung/en (50', 51) oder Vorsprung/Vorsprünge (55) neben den Stiften (25) an einer Schulter oder Schultern (22') des zylindrischen Körpers (22) ausgebildet sind.
13. Waschmaschine (100) nach einem beliebigen der vorstehenden Ansprüche, wobei eine Durchgangsöffnung (23) im Trennelement (20) definiert ist, durch welche das Waschmittel fließen kann, wenn sich das Trennelement (20) in der ersten abgesenkten Position befindet.
14. Waschmaschine (100) nach Anspruch 13, wobei die Durchgangsöffnung (23) angeordnet ist, um sich wenigstens dann, wenn sich das Trennelement (20) in der ersten abgesenkten Position befindet, unterhalb der Horizontalebene (α) zu befinden.

Revendications

1. Machine à laver le linge (100), comprenant:
 - une chambre de traitement de linge (107);
 - au moins un compartiment de stockage de détergent (10) pour stocker un détergent;
 - une sortie (3) à travers laquelle le détergent est délivré à partir dudit compartiment de stockage de détergent (10) à ladite chambre de traitement de linge (107);
 - un dispositif de cloisonnement (2) pour empêcher au moins partiellement le passage de détergent à travers une partie inférieure (10') dudit

compartiment de stockage de détergent (10) en direction de ladite sortie (3),

ledit dispositif de cloisonnement (2) comprenant:

- un élément de cloison pivotant (20) agencé dans ledit compartiment de détergent (10) et pivotant autour d'un axe horizontal (X) de telle sorte qu'il puisse être déplacé entre une première position abaissée, dans laquelle le passage de détergent à travers ladite partie inférieure (10') est au moins partiellement empêché, et une seconde position élevée, dans laquelle le passage de détergent à travers ladite partie inférieure (10') est autorisé;
- un élément d'actionnement (21) qui s'étend dans une direction opposée audit élément de cloison pivotant (20) par rapport audit axe horizontal (X), **caractérisée en ce que**

ledit élément d'actionnement (21) est formé par un bouton rotatif, qui s'étend radialement à partir d'un arbre (22, 25) dudit dispositif de cloisonnement (2) et qui est rotatif autour dudit axe horizontal (X) et auquel ledit élément de cloison (20) est connecté, et **en ce que** ledit élément d'actionnement (21) comprend une partie d'agrippement (210) qui est positionnée au-dessus d'un plan horizontal (α) comprenant ledit axe horizontal (X) à la fois dans ladite première et dans ladite seconde positions, de telle sorte que ladite partie d'agrippement (210) puisse être atteinte par la main d'un utilisateur lorsque ledit élément de cloison (20) se trouve à la fois dans ladite première et dans ladite seconde positions et être tournée dans le but de déplacer ledit élément de cloison pivotant (20) entre lesdites première et seconde positions.

2. Machine à laver (100) selon la revendication 1, comprenant en outre un dispositif de retenue relâçable (5) dudit dispositif de cloisonnement (2) capable de retenir ledit élément de cloison pivotant (20) au moins dans ladite seconde position élevée.
3. Machine à laver (100) selon la revendication 2, dans laquelle ledit dispositif de retenue relâçable (5) comporte un évidement (51) et une saillie respective (55), formés respectivement sur ledit dispositif de cloisonnement (2) et sur ledit compartiment de stockage de détergent (10) ou vice versa, ladite saillie (55) étant au moins partiellement logée dans ledit évidement (51) lorsque ledit élément de cloison pivotant (21) se trouve dans ladite seconde position élevée.
4. Machine à laver (100) selon la revendication 3, dans laquelle ledit dispositif de cloisonnement (2) est monté de façon pivotante entre des parois latérales (15)

- dudit compartiment de stockage de détergent (10), ledit évidement (51) ou ladite saillie (55) étant formé(e) sur au moins une desdites parois latérales (15).
- 5
5. Machine à laver (100) selon la revendication 3 ou 4, dans laquelle ledit dispositif de retenue relâchable (5) comporte un second évidement (50') et/ou une seconde saillie pour retenir ledit élément de cloison (20) dans une position intermédiaire entre lesdites première et seconde positions.
- 10
6. Machine à laver (100) selon l'une quelconque des revendications précédentes, dans laquelle ledit élément de cloison pivotant (20) est tourné d'un angle inférieur à 90 degrés lorsqu'il est déplacé entre lesdites première et seconde positions.
- 15
7. Machine à laver (100) selon l'une quelconque des revendications précédentes, dans laquelle ledit élément de cloison pivotant (20) est déplacé à partir de ladite première position abaissée jusqu'à ladite seconde position élevée en le tournant dans une direction d'élévation (1) qui correspond à une direction de distribution (d) du détergent à partir dudit compartiment de stockage (10) jusqu'à ladite sortie (3).
- 20
8. Machine à laver (100) selon l'une quelconque des revendications précédentes, comprenant en outre un tiroir extractible (1), ledit compartiment de stockage de détergent (10) étant formé sur ledit tiroir extractible (1) et ledit dispositif de cloisonnement (5) étant monté de façon pivotante sur ledit tiroir (1).
- 25
9. Machine à laver (100) selon la revendication 8, dans laquelle ledit tiroir (1) comprend en outre un compartiment de stockage auxiliaire (11) pour stocker du détergent ou un autre agent de traitement de linge, ledit compartiment de stockage auxiliaire (11) étant positionné sur ledit tiroir (1) à la suite dudit compartiment de stockage de détergent (10) le long d'une direction de coulissement (S) dudit tiroir (1), ledit dispositif de cloisonnement (2) étant positionné entre ledit compartiment de stockage auxiliaire (11) et ledit compartiment de stockage de détergent (10).
- 30
10. Machine à laver (100) selon la revendication 9, dans laquelle un passage (14) qui relie ledit compartiment de stockage de détergent (10) à ladite sortie (3) est défini dans ledit tiroir (1), ledit dispositif de cloisonnement (2) étant positionné en amont dudit passage (14), ledit compartiment de stockage auxiliaire (11) étant formé au-dessus dudit passage (14).
- 35
11. Machine à laver (100) selon l'une quelconque des revendications 8 à 10, dans laquelle ledit tiroir (1) comprend une partie de recouvrement (4), une fenêtre (42) étant définie dans ladite partie de recouvrement (4) à travers laquelle ledit élément d'actionnement (21) passe, de telle sorte que ledit élément d'actionnement (21) fasse saillie au-dessus de ladite partie de recouvrement (4) et que ledit élément de cloison (20) soit situé en dessous de ladite partie de recouvrement (4) à la fois dans ladite première position et dans ladite seconde position dudit élément de cloison (20).
- 40
12. Machine à laver (100) selon l'une quelconque des revendications 3 à 5, dans laquelle ledit arbre est défini par un corps cylindrique (22) avec deux broches saillant axialement (25), ledit/lesdits évidement(s) (50', 51) ou ladite/lesdites saillie(s) (55) étant formé(es) sur un ou plusieurs épaulement(s) (22') dudit corps cylindrique (22) à proximité desdites broches (25).
- 45
13. Machine à laver (100) selon l'une quelconque des revendications précédentes, dans laquelle une ouverture traversante (23) est définie dans ledit élément de cloison (20) à travers laquelle le détergent peut passer lorsque ledit élément de cloison (20) se trouve dans ladite première position abaissée.
- 50
14. Machine à laver (100) selon la revendication 13, dans laquelle ladite ouverture traversante (23) est ménagée de manière à être positionnée en dessous dudit plan horizontal (α) au moins lorsque ledit élément de cloison (20) se trouve dans ladite première position abaissée.
- 55

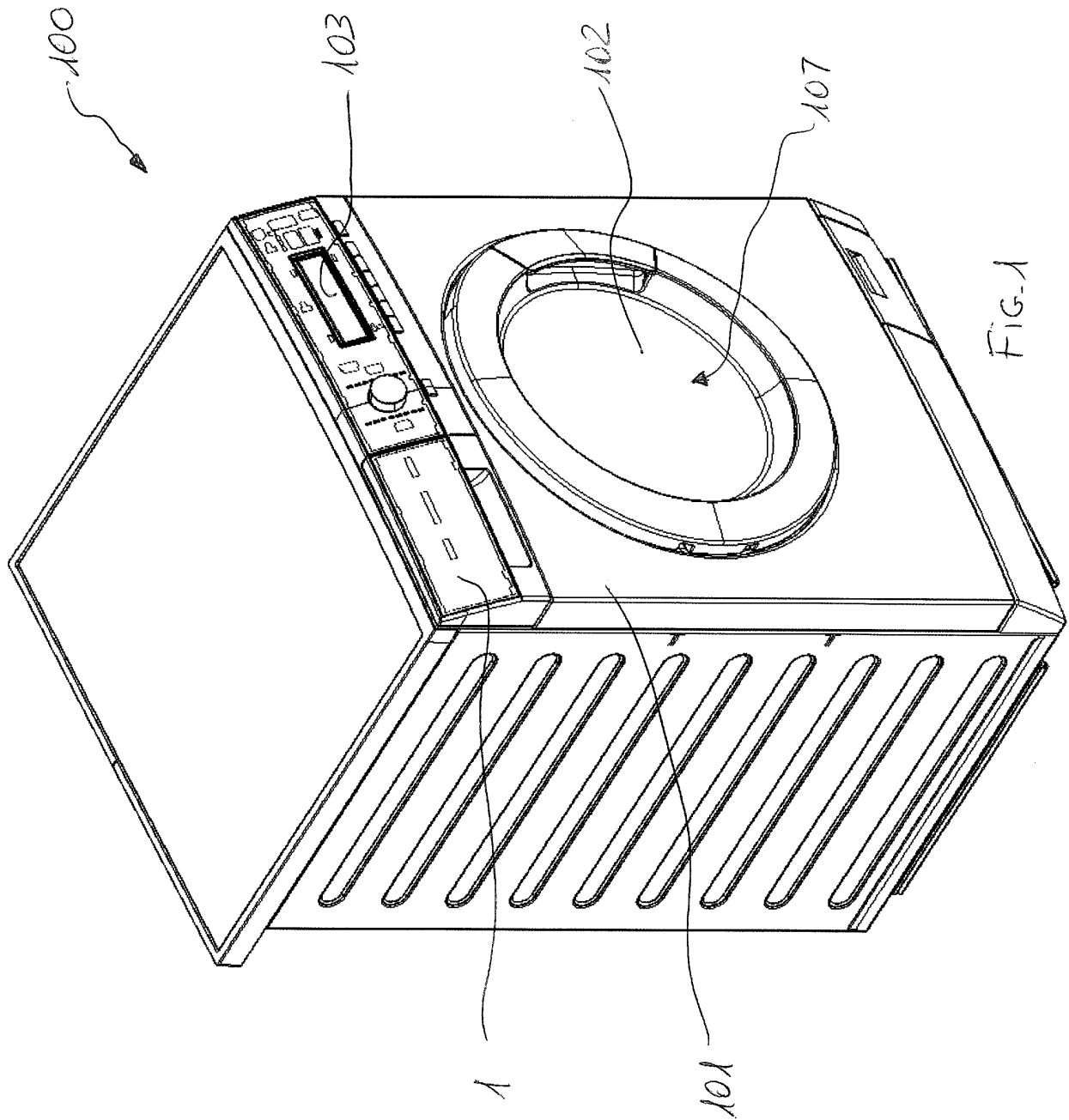
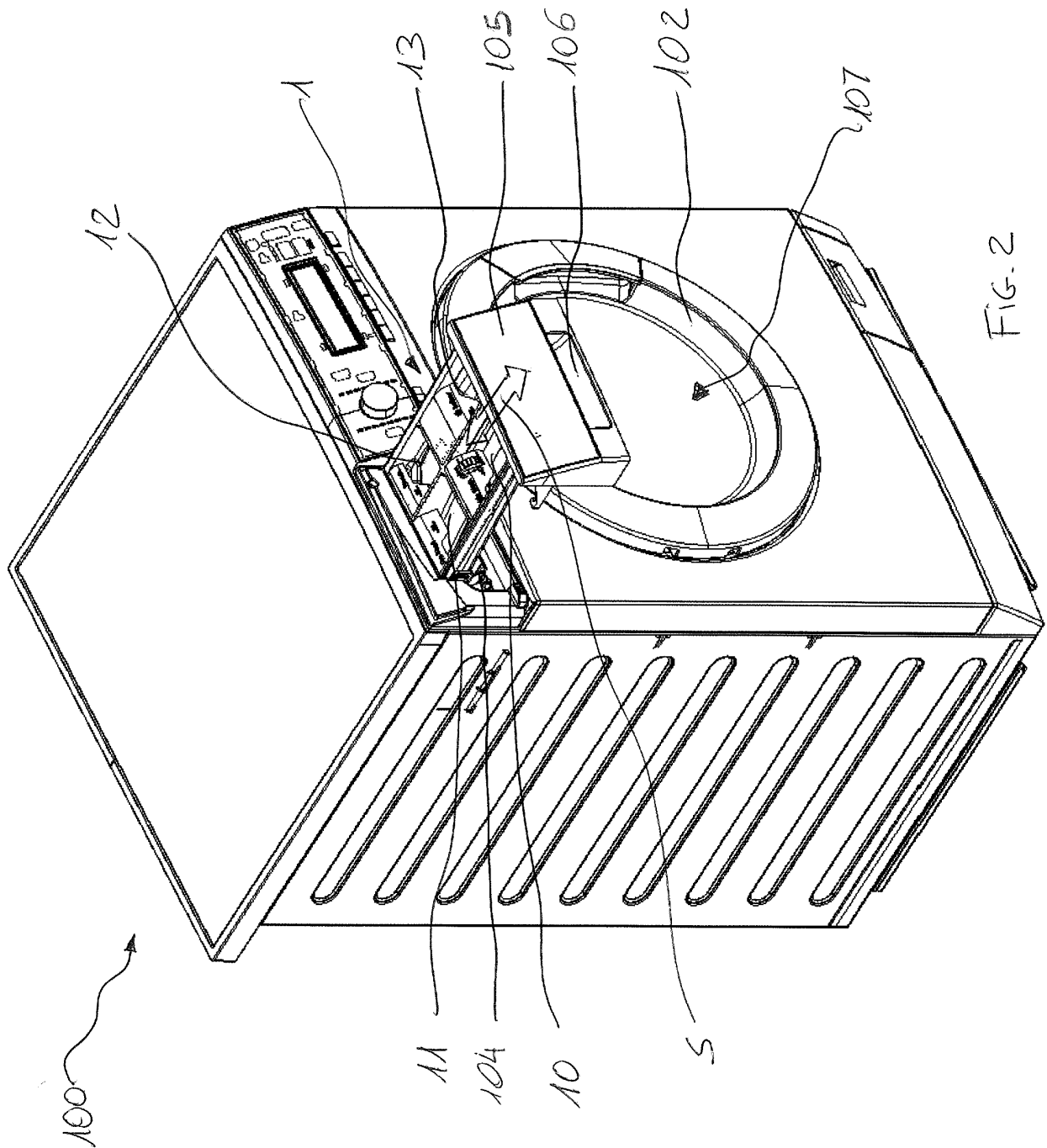


FIG. 1



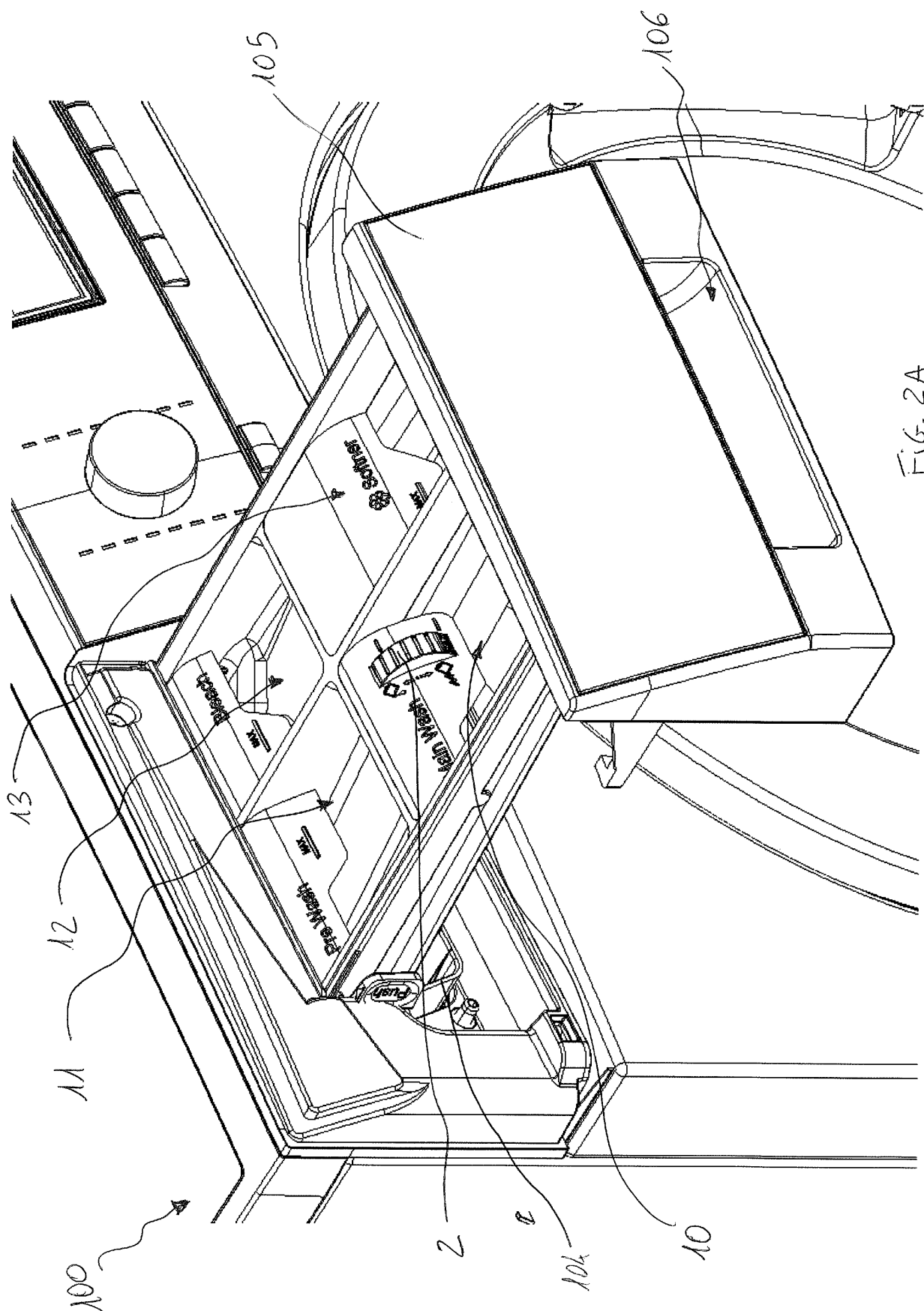


Fig. 2A

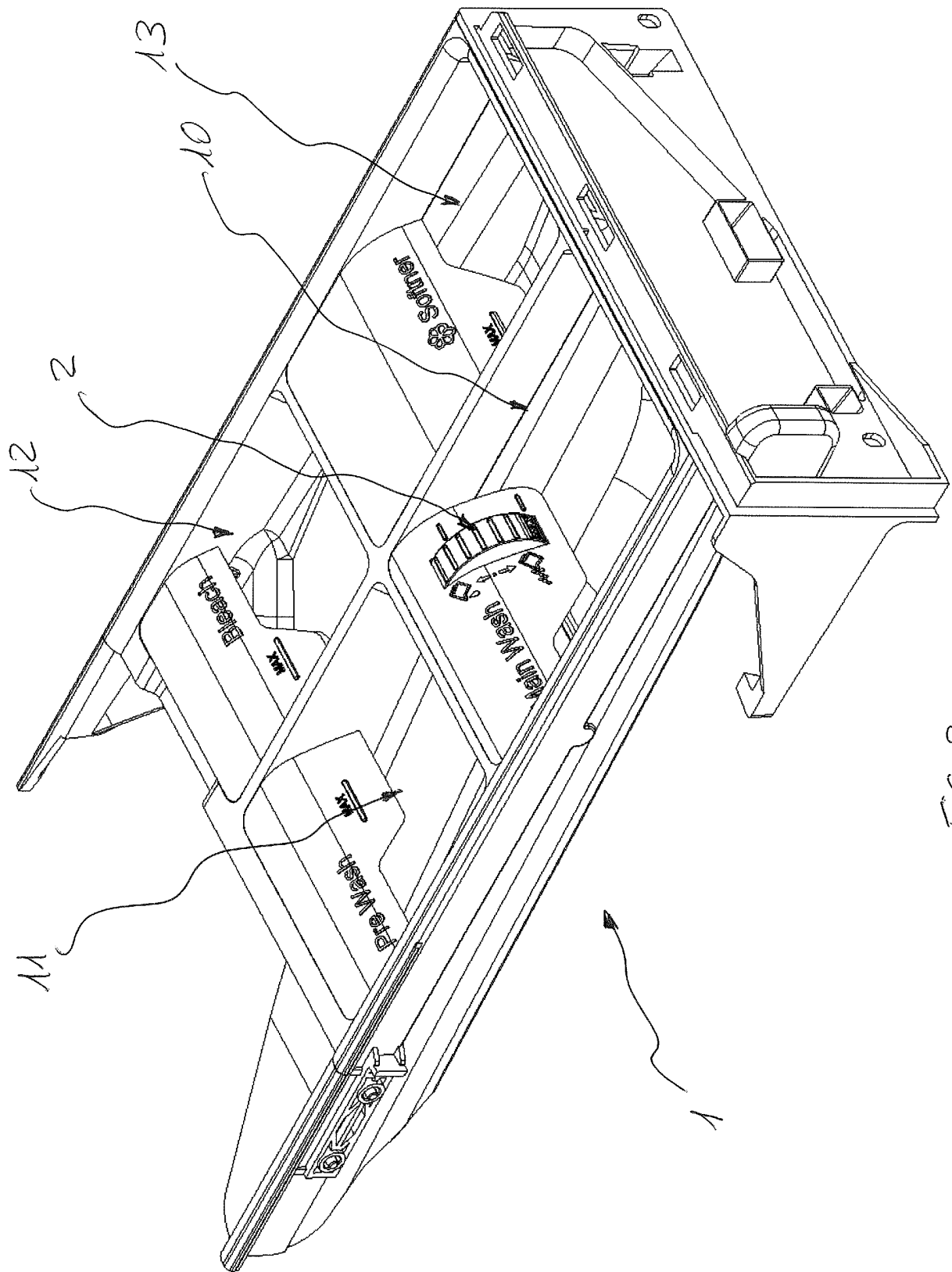
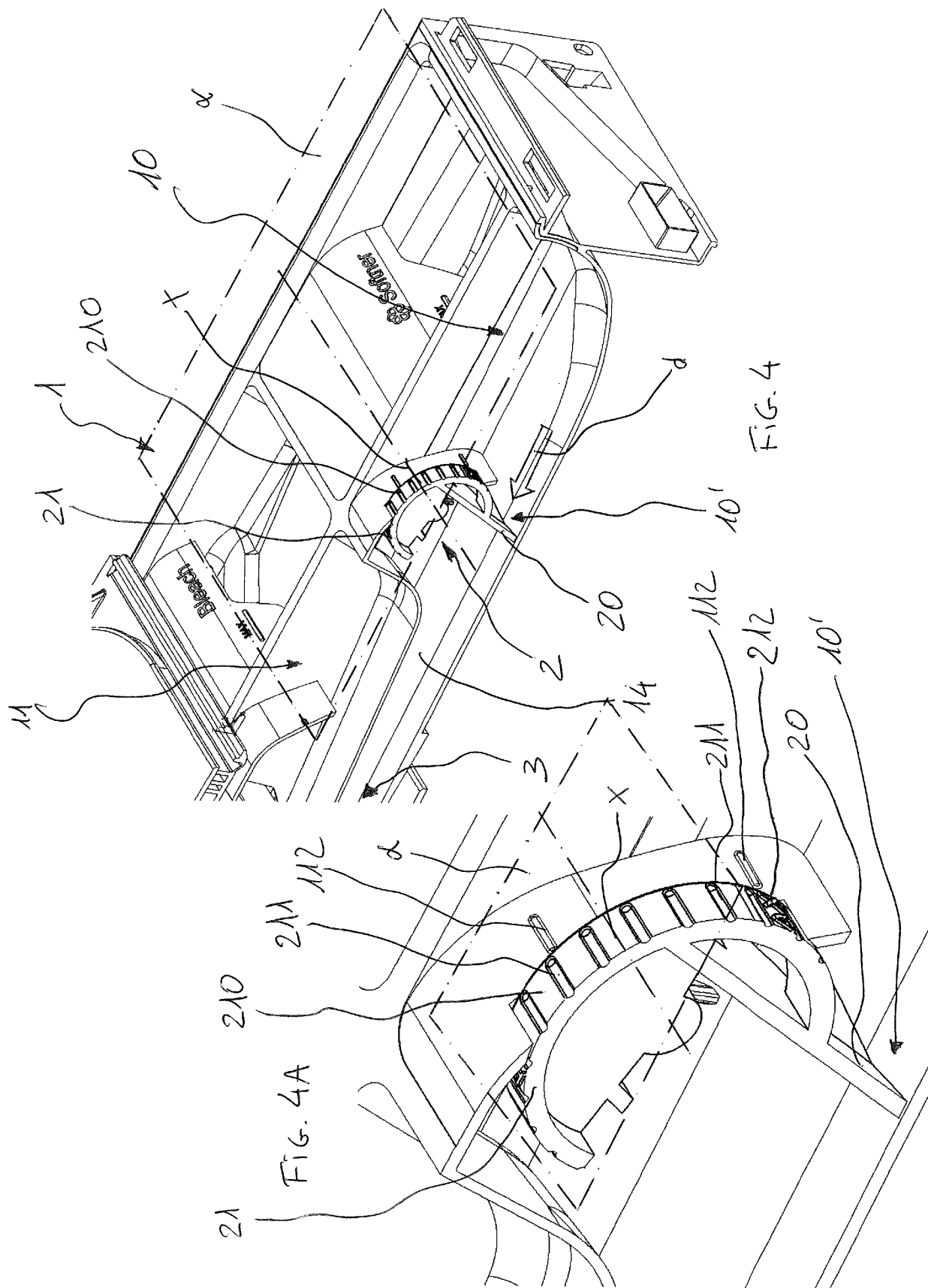
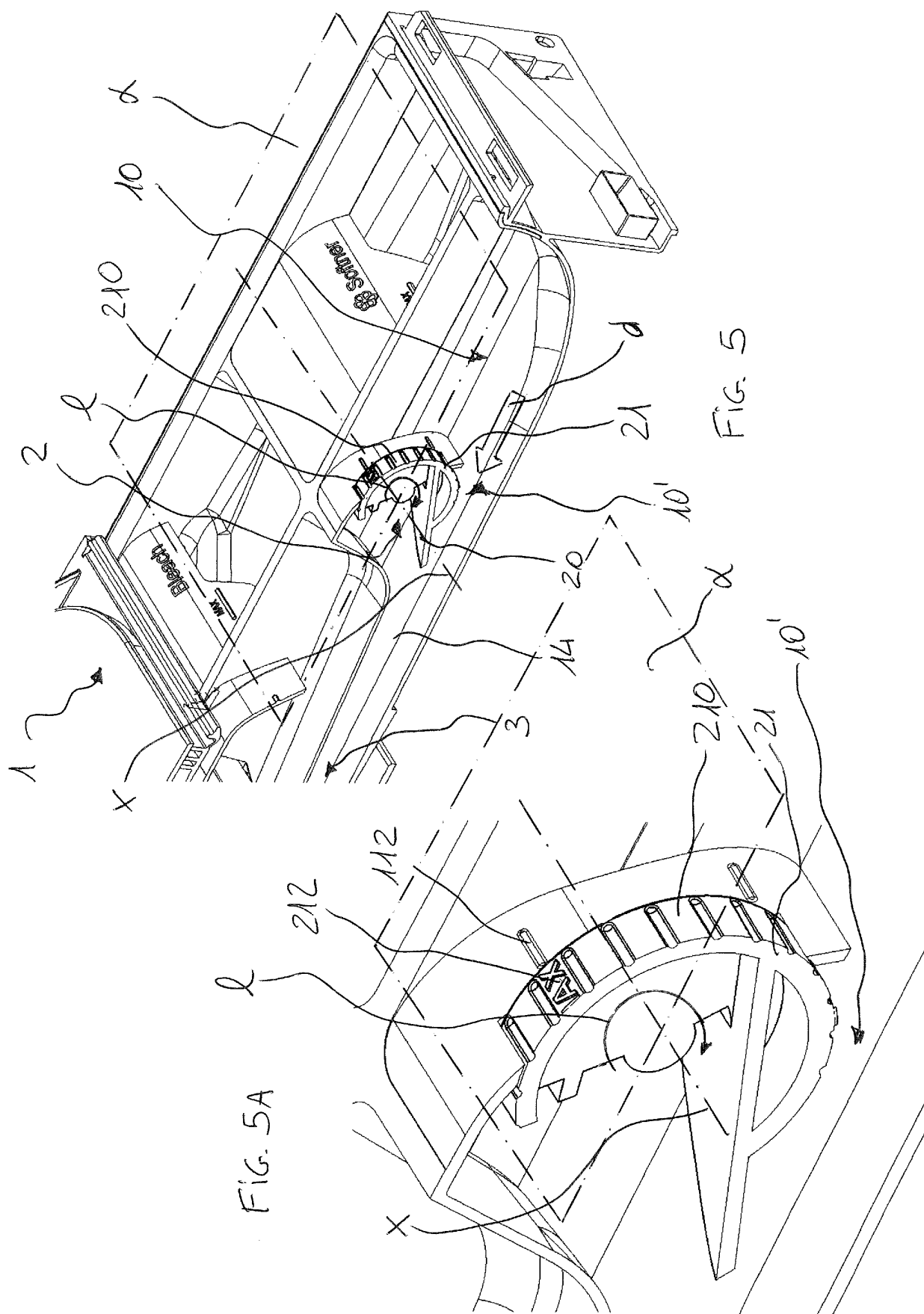


FIG. 3





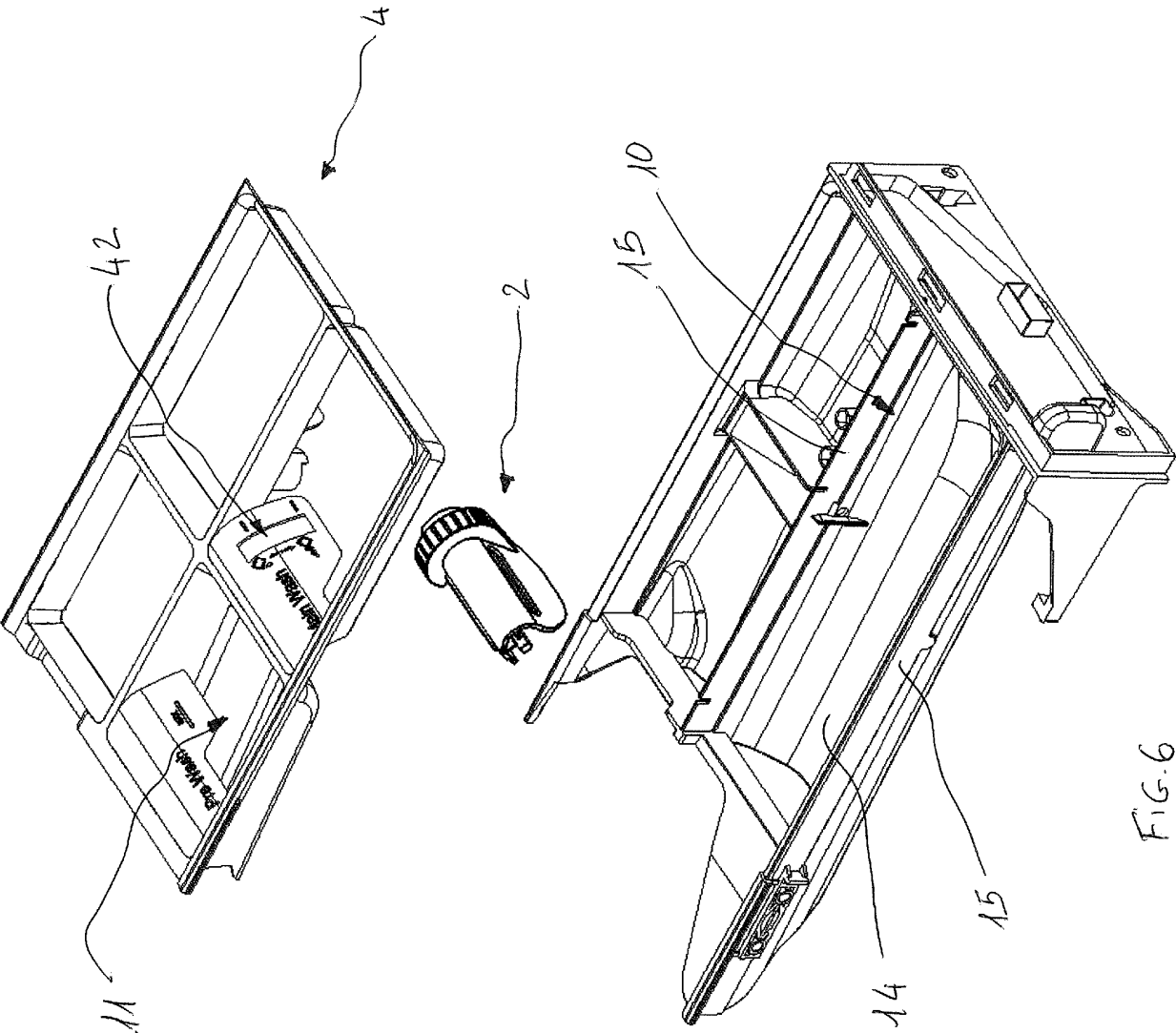
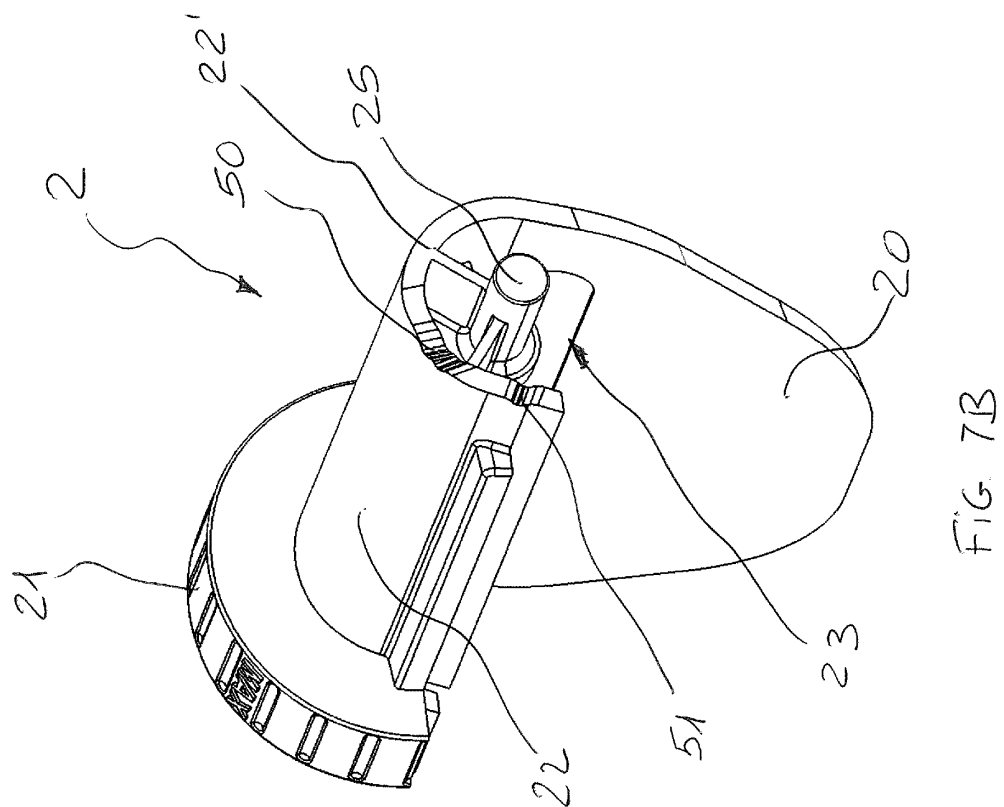
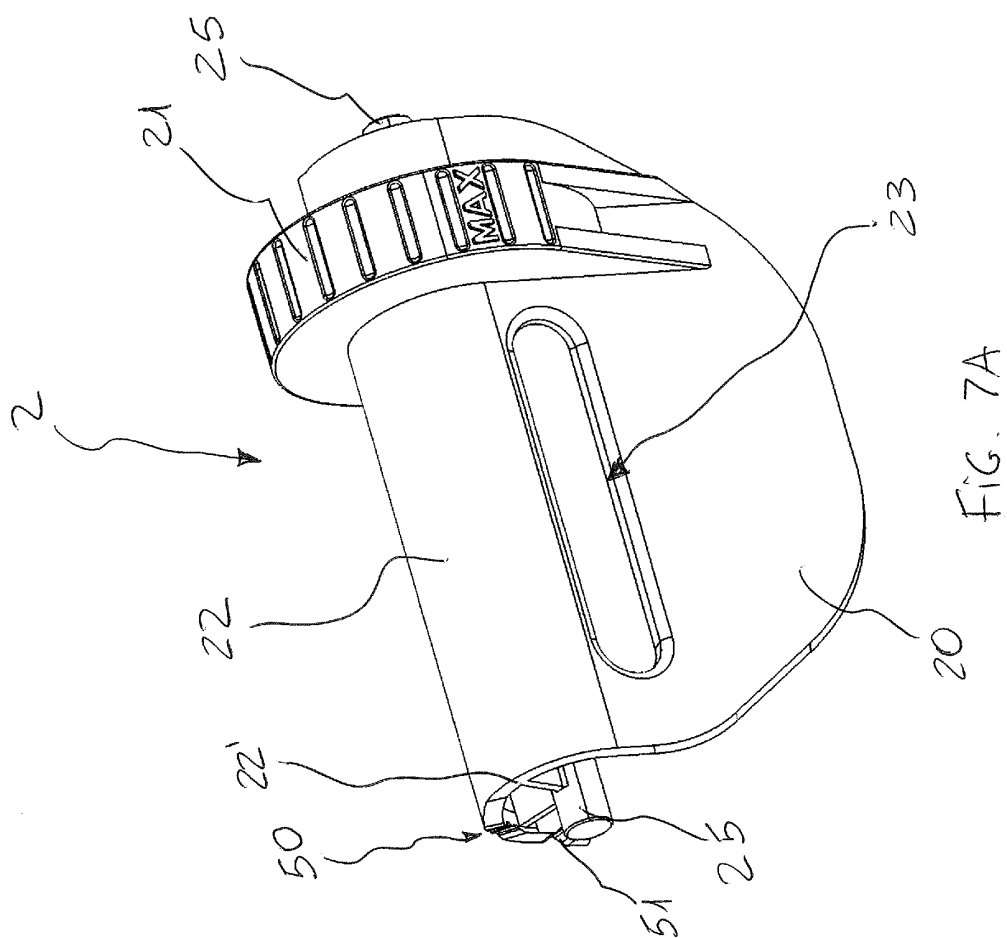
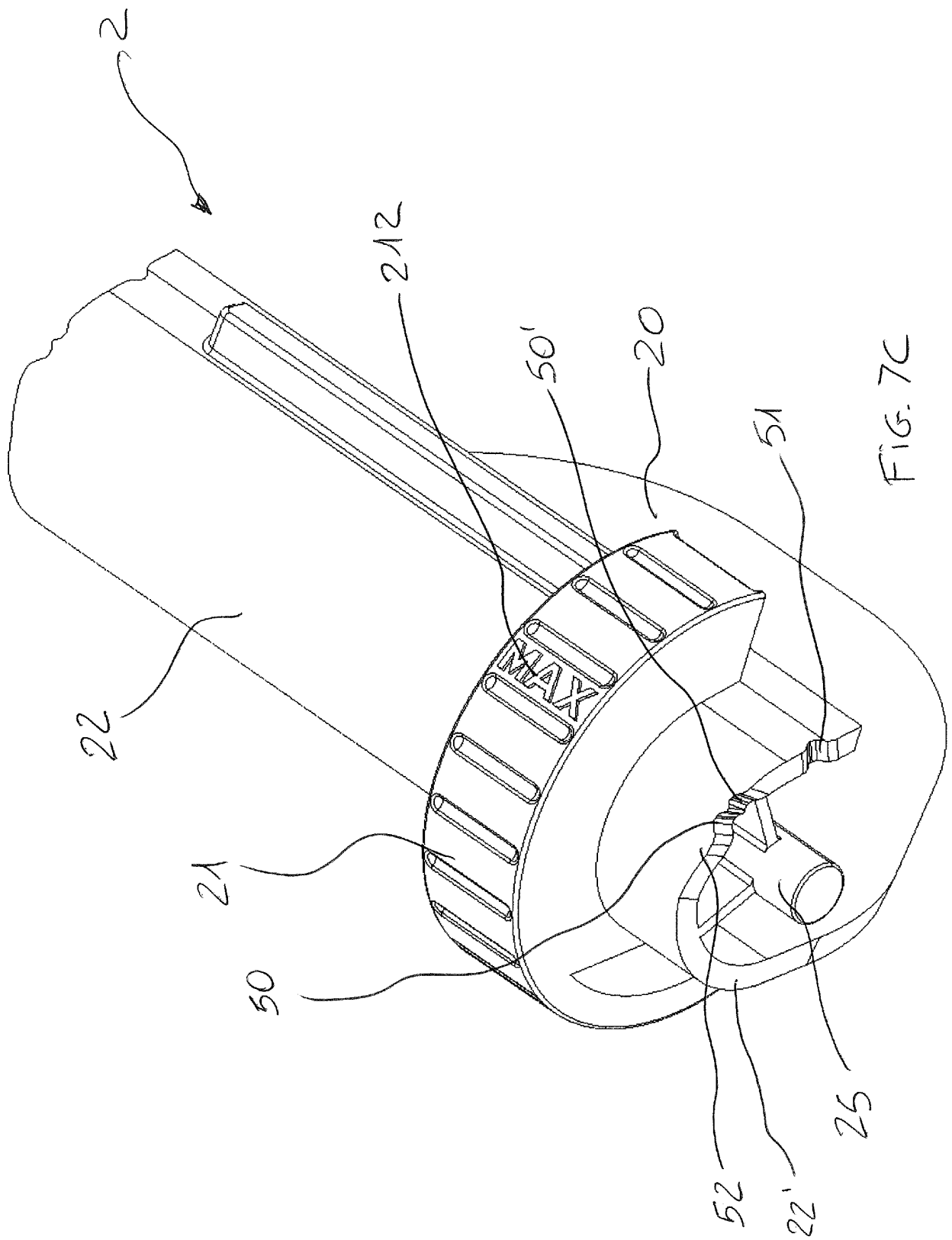


FIG. 6





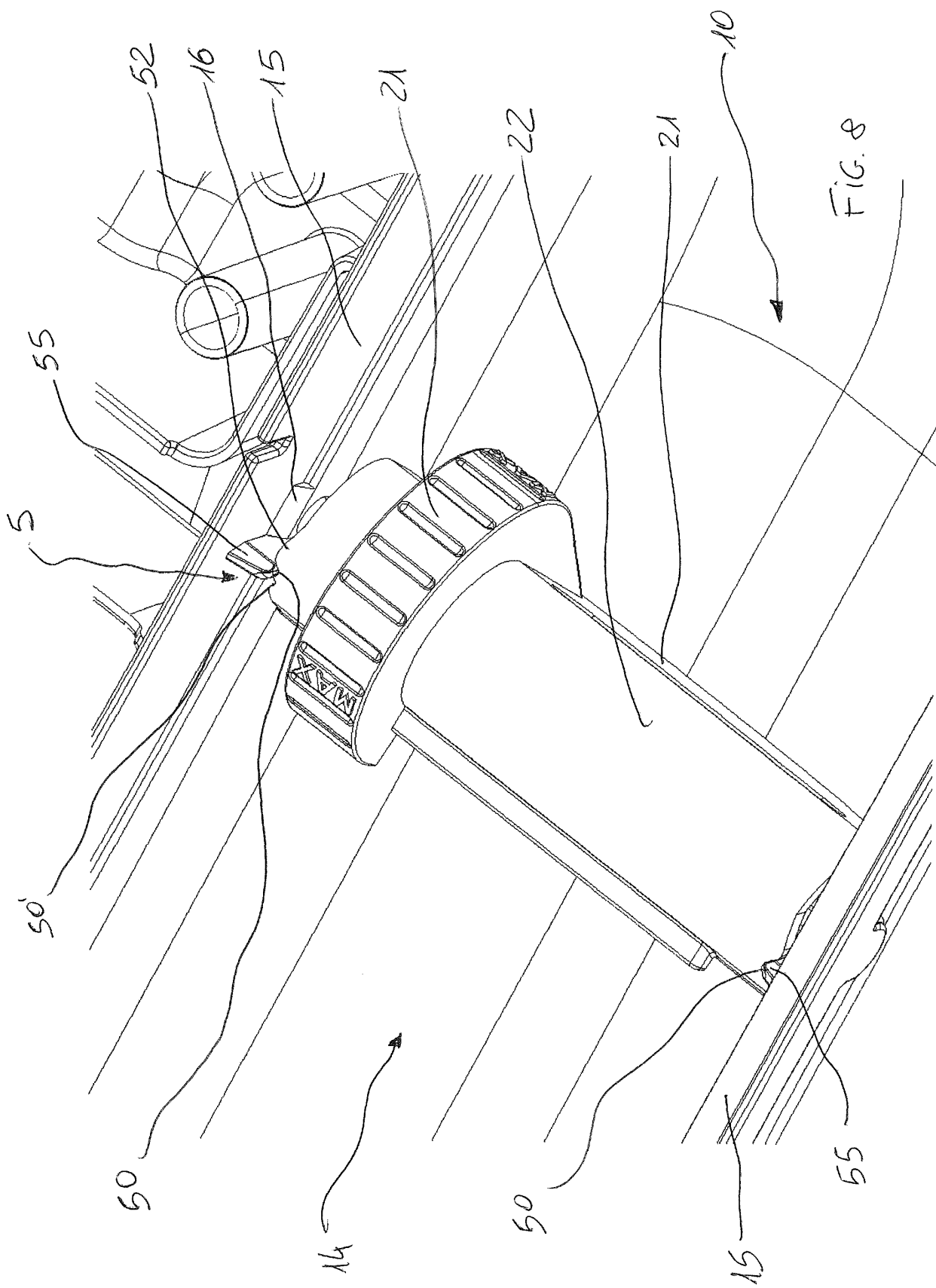


FIG. 8

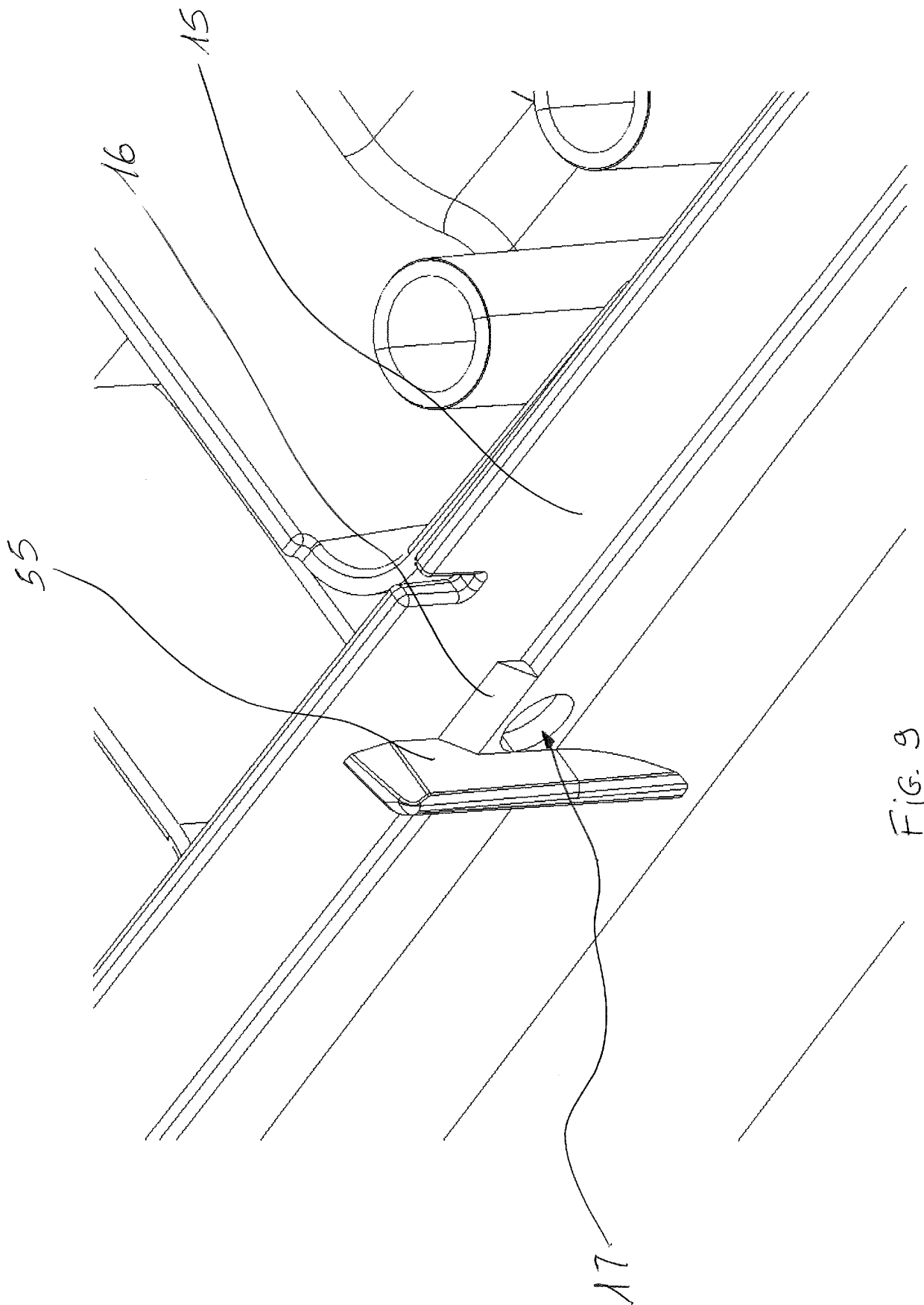


Fig. 9

REFERENCES CITED IN THE DESCRIPTION

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