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(54) **Laundry washing machine**

(57) The present invention relates to a laundry washing machine (1) comprising: a cabinet (2) containing a washing tub (3) in which a washing liquid may be loaded, wherein the cabinet (2) has a substantially parallelepiped shape and comprises a jacket (200), comprising a front portion (5), a rear portion (6) opposite the front portion (5), and two lateral portions (20a,20b), the cabinet (2) comprising a top portion (7) positioned at least partially above an upper edge (200a) of the jacket (200); a drum (4) rotatably accommodated in the washing tub (3) for containing laundry articles to be washed; a water supply circuit (10) to supply water into the washing tub (3); a

discharge system (11) for discharging waste washing liquid outside the laundry washing machine (1); a water connecting system for fluidly connecting said washing tub (3) to an additive distributing unit (12) external to the cabinet (2), the water connecting system comprising one or more pipes (21) for fluidly connecting the washing tub (3) to the additive distributing unit (12) and a support element (15,115) for connecting the one or more pipes (21) to the cabinet (2). The support element (15,115) is positioned at least partially above the upper edge (200a) of the jacket (200).

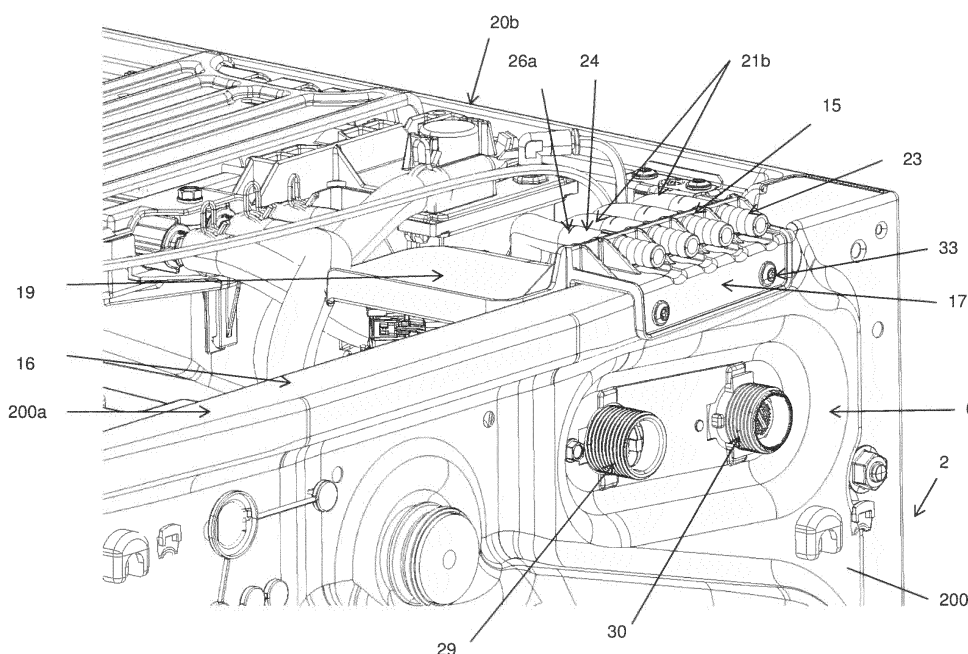


FIG. 8

Description

[0001] The present invention concerns the field of laundry washing machines.

[0002] In particular, the present invention refers to a laundry washing machine connected or connectable to an additive distributing unit positioned externally to the cabinet of the laundry washing machine.

BACKGROUND ART

[0003] Nowadays the use of laundry washing machines, both "simple" laundry washing machines (i.e. laundry washing machines which can only wash and rinse laundry) and laundry washing-drying machines (i.e. laundry washing machines which can also dry laundry), is widespread.

[0004] In the present description the term "laundry washing machine" will refer to both simple laundry washing machines and laundry washing-drying machines.

[0005] Laundry washing machines generally comprise a cabinet containing a washing tub which contains a rotatable perforated drum where the laundry is placed.

[0006] The cabinet comprises a jacket, comprising a front portion, a rear portion or rear wall opposite the front portion, and two lateral portions; the cabinet also comprises a top portion positioned at least partially above an upper edge of the jacket.

[0007] A loading/unloading opening, closable by a door, ensures access to the drum.

[0008] Laundry washing machines typically comprise a water inlet circuit and a products supply unit for the introduction of water and additives, i.e. washing/rinsing products (e.g. detergents, softeners, bleaching, etc.) into the washing tub.

[0009] Typical laundry washing machines comprise a "single dose" additive compartment, or drawer, adapted to be filled with detergent and other additives, such as for example softeners, before the beginning of each washing cycle. This operation has the disadvantage that it must be repeated by the user each time a washing cycle is to be performed.

[0010] To solve this problem, some known in the art laundry washing machines comprise an additive distributing unit, or tank, positioned externally to the cabinet of such laundry washing machines and adapted to be filled with an amount of additive(s) (e.g. detergents, softeners, bleaching, etc.) which is enough for a plurality of washing cycles; such an externally positioned tank is typically fluidly connected to the washing tub of the laundry washing machines, through connecting elements. Such an external tank is typically provided with one or more separate compartments, each of them being allowed to receive detergents and other liquid additives as needed to be supplied to the washing tub through such connecting elements.

[0011] This known solution allows the user to only periodically fill the external tank, rather than filling the inter-

nal single dose additive compartment before any washing cycle, as it is the case in the traditional laundry washing machines not provided with such external tank.

[0012] In this known solution the external tank is fluidly connected to the additive compartment which is, in turn, fluidly connected to the washing tub, by a plurality of connecting pipes in the upper region of the rear portion or rear wall of the jacket wherein corresponding passing through opening(s) are also present to allow the passage of these pipes.

[0013] This known solution has however the first important drawback that such openings in the rear wall of the jacket for the passage of the connecting pipes cause a weakening of this rear wall, which could be dangerous in particular since the cabinet is exposed to high mechanical vibrations, in particular during the spin phase of the washing cycles.

[0014] Another drawback of this known solution is that the zone of the rear wall of the jacket available for obtaining the opening(s) for the pipe(s) (i.e. the upper region of the rear wall) is very small, since in the upper region of the rear wall there are already present the connectors for the water mains external to the machine, which reduce the free space in which the opening(s) can be obtained. For this reason the number of connecting pipes must be limited, which limits the number of different additives that can be supplied from the external distributing unit.

[0015] Therefore an object of the invention is providing a laundry washing machine which can be easily connected to a distributing unit positioned externally to the cabinet of the machine, without the risk of weakening the jacket, and in particular its rear wall (or portion), of the cabinet.

[0016] It is another object of the invention to provide a laundry washing machine in which the number of different additives that can be supplied from an external distributing unit is not limited by the geometry of the machine.

[0017] Finally it is another object of the invention to assure a high aesthetic level to the laundry washing machine.

DISCLOSURE OF INVENTION

[0018] The applicant has found that by providing a laundry washing machine with a water connecting system which comprises one or more pipes for fluidly connecting the washing tub of the machine to an external additive distributing unit, and a support element for connecting the pipe(s) to the cabinet, wherein the support element is positioned at least partially above an upper edge of the jacket (comprising a front portion, a rear portion, and two lateral portions) of the cabinet facing the top portion of the cabinet, it is possible to easily connect the machine to the external additive distributing unit, without having to perforate, and therefore without weakening, the jacket, and in particular the rear wall of the cabinet.

[0019] Since in theory all upper edge of the jacket, and in particular of the rear portion is available for the posi-

tioning of the support element, the number of pipes, and as a consequence the number of different additives that can be taken into the cabinet from the external additive distributing unit, can be very high.

[0020] In a first aspect, in compliance with the above aims, according to the present invention there is provided a laundry washing machine as claimed in Claim 1 and preferably, though not necessarily, in any one of the dependent Claims.

[0021] Therefore, such a laundry washing machine comprises:

- a cabinet containing a washing tub in which a washing liquid may be loaded, wherein the cabinet has a substantially parallelepiped shape and comprises a jacket, comprising a front portion, a rear portion opposite the front portion, and two lateral portions, said cabinet comprising a top portion positioned at least partially above an upper edge of the jacket;
- a drum rotatably accommodated in the washing tub for containing laundry articles to be washed;
- a water supply circuit to supply water into said washing tub;
- a discharge system for discharging waste washing liquid outside the laundry washing machine,
- a water connecting system for fluidly connecting said washing tub to an additive distributing unit external to said cabinet, said water connecting system comprising one or more pipes for fluidly connecting said washing tub to said additive distributing unit and a support element for connecting said one or more pipes to said cabinet.

[0022] The support element is positioned at least partially above said upper edge of said jacket.

[0023] Preferably the support element is positioned at least partially between said upper edge of said jacket and said top portion of said cabinet.

[0024] Advantageously, the rear portion of said jacket comprises an upper edge facing at least partially said top portion, said support element being positioned at least partially above said upper edge of said rear portion of the cabinet.

[0025] Preferably, said top portion of the cabinet is positioned above said support element, so that the latter is positioned at least partially between said top portion and said upper edge of said rear portion.

[0026] Advantageously, said top portion comprises a recess wherein said support element is at least partially positioned.

[0027] Advantageously such a recess is positioned in the lower part of said top portion, so that when the top portion is positioned at least partially over the upper edge of the jacket, a cavity is formed between the upper edge

and the top portion, wherein the support element is at least partially positioned.

[0028] Furthermore and preferably, said external additive distributing unit is provided with one or more separate compartments.

[0029] Furthermore and preferably, each of said separate compartments of the additive distributing unit is provided with an inlet.

[0030] In this way, each of said separate compartments is allowed to be filled with detergents, softeners, bleaching and/or other washing/rinsing liquid additives (herein also generally called as "liquids") as needed to be supplied to the washing tub of the laundry washing machine.

[0031] Furthermore and preferably, each of said separate compartments is provided with a corresponding outlet, fluidly connected to a corresponding pipe of said one or more pipes.

[0032] In this way, said liquids are allowed to leave each of said compartments of the additive distributing unit and pass into said corresponding pipe, preferably through the action of at least one pump integrated into said external additive distributing unit.

[0033] Furthermore and preferably, at least two, preferably at least three, still more preferably four or more of said one or more pipes are present.

[0034] Furthermore and preferably, said at least two, three, four or more pipes are placed adjacent one another.

[0035] Preferably, the laundry washing machine comprises a single dose additive compartment able to receive additive single doses of washing/rinsing products.

[0036] It is underlined that "single dose" means that it can be filled with a dose of detergent and/or other additive which is enough for at most one washing cycle.

[0037] Advantageously said single dose additive compartment is positioned inside the cabinet, fluidly connected to said washing tub, and fluidly connected or connectable to said one or more pipes, so that the latter are fluidly connected or connectable to said washing tub via said single dose additive compartment, said single dose additive compartment being also connected or connectable to water mains external to said laundry washing machine.

[0038] In this way, within the single dose additive compartment, positioned inside said cabinet, the water provided by the external water mains may be mixed with the liquids provided to the single dose additive compartment from the external additive distributing unit through said one or more pipes.

[0039] Furthermore and preferably, said single dose additive compartment comprises a drawer housing and a movable drawer which is movable from a first position in which it is fitted inside the drawer housing to a second position in which the drawer is at least partially extracted from the drawer housing.

[0040] In such a way, while the laundry washing machine is not working, the movable drawer can be manually filled, when it is in such a second position at least partially

outside the drawer housing, with additive single doses of washing/rinsing products as needed for a subsequent single washing/ rinsing cycle.

[0041] Furthermore and preferably, said movable drawer is at least partially extractable from the front side of the drawer housing of the single dose additive compartment, said front side of the drawer housing being substantially on the front portion of the cabinet of the laundry washing machine.

[0042] Furthermore and preferably, said drawer housing of said single dose additive compartment comprises an at least partially hollow substantially vertical section which is spaced out from said movable drawer and which is able to receive said liquids from said one or more pipes and to direct them towards the washing tub.

[0043] In this way, the liquids exiting from the compartments of the external additive distributing unit and entering the cabinet through said one or more pipes are allowed to enter into such at least partially hollow section of the drawer housing of the single dose additive compartment and to reach the washing tub without passing through the movable drawer of the single dose additive compartment.

[0044] Furthermore and preferably, said at least partially hollow section of the drawer housing of said single dose additive compartment is fluidly connected to said washing tub through a drawer housing-to-tub connecting pipe and a bellow.

[0045] Furthermore and preferably, said one or more pipes are fluidly connected to said at least partially hollow section of the drawer housing of the single dose additive compartment through corresponding inlet openings formed in a lateral wall of said drawer housing.

[0046] Furthermore and preferably, said a lateral wall of said drawer housing wherein said inlet openings are formed is on the rear side of the drawer housing, opposed to said front side of the drawer housing from which said movable drawer is extractable from the drawer housing.

[0047] Furthermore and preferably, said movable drawer is subdivided into a number of separate washing/rinsing additive basin-shaped chambers, each of them being manually fillable with a corresponding washing/rinsing additive.

[0048] In this way, the separate washing/rinsing additive basin-shaped chambers are manually fillable with additives that may be, according to the needs requested by the next washing/rinsing cycle to be executed by the laundry washing machine of the present invention, the same or different with respect to the liquids provided by said one or more pipes from the external distributing unit to the washing tub.

[0049] Furthermore and preferably, said separate washing/rinsing additive basin-shaped chambers of the drawer are fluidly connected to said washing tub through at least a drawer-to-tub connecting pipe.

[0050] Furthermore and preferably, said drawer-to-tub connecting pipe is fluidly connected to said drawer housing-to-tub connecting pipe and/or to said bellow fluidly

connecting said drawer housing to the washing tub.

[0051] Furthermore and preferably, said support element comprises a fixation element for its fixation to said upper edge of the jacket.

5 **[0052]** Furthermore and preferably, said fixation element is fixed to the upper region of the rear portion of the jacket.

[0053] Furthermore and preferably, said support element comprises a cover positioned, in use, at least partially below said one or more pipes, and arranged in such a way to guide possible droplets of liquids coming from said one or more pipes in a safe region of said laundry washing machine. The cover avoids droplets of liquids possibly coming from said one or more pipes to reach regions of the laundry washing machine where electrical components or other elements subjected to easy deterioration or failure when contacted by said droplets of liquids may be present.

[0054] Furthermore and preferably, said cover is made in a single piece construction with the rest of said support element.

[0055] In this way, the construction of a support element made in a single piece also including the cover for such a support element avoids the need to use fixing elements for fixing the cover to the support element, with a consequent cost reduction.

[0056] In a first advantageous embodiment of the present invention, said support element comprises:

- 30 - one or more first connectors each of them being fluidly connected or connectable to a first end of respective one or more first pipe of said one or more pipes, whose second end is fluidly connected or connectable to said additive distributing unit,
- 35 - one or more second connectors, each one being fluidly connected, on one side, to a corresponding one of said one or more first connectors, and being also fluidly connected or connectable, on the other side, to a first end of respective one or more second pipes of said one or more pipes, whose second end is fluidly connected or connectable to said washing tub.

[0057] Preferably, each of said one or more first connectors and each of said one or more second connectors is or comprises a nozzle having a substantially cylindrical shape.

[0058] Preferably, said support element further comprises one or more passing through holes for allowing the insertion therein, from one side, of each of said one or more first connectors and, on the other side of the passing through hole, each of said one or more second connectors.

50 **[0059]** In this way, each of said one or more first connectors is fluidly connected to a corresponding one of said one or more second connectors.

[0060] Furthermore and preferably, each of said one or more second connectors is inwardly directed towards

the washing tub inside the cabinet, while each of said one or more first connectors is directed outwardly the cabinet. Preferably, said one or more first connectors are accessible from outside said cabinet.

[0061] In this way, it is easy for a user to have access to said one or more first connectors for their connection to said respective one or more first pipes.

[0062] Furthermore and preferably, the laundry washing machine of the present invention comprises one or more removable caps for the removable closure of said one or more first connectors when they are not connected to respective one or more first pipes.

[0063] In this way, dust or other filth elements are prevented from entering said one or more first connectors, and from here are prevented to enter inside the laundry washing machine, when said one or more first connectors are not connected to the external additive distributing unit.

[0064] Thus, in operation of the laundry washing machine of the first embodiment of the present invention, after that each of the separated compartments of the additive distributing unit has been filled with an amount of such liquids which is enough for a plurality of washing cycles, such liquids are pumped into the washing tub through a water connecting system mainly including, in order: the first pipes, the first connecting elements, the support element for connecting the first connecting elements to the second connecting elements, the second connecting elements, the second pipes, the inlet openings, the at least partially hollow section of the drawer housing of the single dose additive compartment, the drawer housing-to-tub connecting pipe and finally the washing tub.

[0065] In a second preferred embodiment the one or more pipes of the water connecting system comprise a first end fluidly connected or connectable to the washing tub, and a second end fluidly connected or connectable to the additive distributing unit; said support element comprises a retaining element for fixing at least a part of said one or more pipes to said jacket.

[0066] In this way, said one or more pipes are directly connected, on one side, to the washing tub and, on the other side, to the additive distributing unit.

[0067] Furthermore and preferably, at least two, preferably at least three, still more preferably four or more of said one or more pipes are present.

[0068] Furthermore and preferably, said at least two, three, four or more pipes are placed adjacent one each other.

[0069] Furthermore and preferably, said support element comprises one or more seats onto each of them a corresponding one of said one or more pipes can be positioned.

[0070] Furthermore and preferably, said one or more seats have a substantially curved shape matching the substantially curved shape of the corresponding pipes.

[0071] In this way, each pipe is allowed to be positioned in a better way onto the corresponding seat.

[0072] Furthermore and preferably, said one or more seats are made of a single piece.

[0073] Advantageously, using a single piece including said one or more seats avoids the need to use separate fixing elements for fixing each of said one or more seats to the upper edge of the rear portion of the cabinet, with a consequent cost reduction.

[0074] Furthermore and preferably, said seats are fixed to the upper edge of the rear portion of the cabinet through at least one conventional fixing element, such as screw, nut, or bolt. More preferably, the seats are fixed to the upper edge of the rear portion of the cabinet through at least one conventional protruding fixing element.

[0075] Furthermore and preferably, said retaining element comprises a base portion, fixed or fixable to said upper edge of said rear portion of the cabinet, and a retaining portion fixable to said base portion.

[0076] Furthermore and preferably, when said retaining portion is fixed onto said base portion, said retaining element covers at least a portion of said one or more pipes onto said upper edge of said rear portion of the cabinet.

[0077] In this way, at least a portion of each of said one or more pipes is fixed to the cabinet by said retaining element.

[0078] Furthermore and preferably, said retaining portion of the retaining element is pivotable at a maximum of substantially 180 degrees around a hinge element positioned onto the upper edge of the jacket of the cabinet, preferably on the upper edge of its rear portion.

[0079] Furthermore and preferably, said hinge element and said base portion are positioned in a such a way that all the portions of each of said one or more pipes positioned onto the upper edge of the jacket are disposed in the space between said hinge element and said base portion.

[0080] In this way, all the portions of each of said one or more pipes are disposed adjacent to said hinge element on a first side of the hinge element towards a first side of said base portion; in addition, there are neither further pipes disposed adjacent to the hinge element on the second side of said hinge element, opposed to said first side of said hinge element, nor further pipes disposed adjacent to said base portion on the second side of said base portion, opposed to said first side of said base portion.

[0081] Furthermore and preferably, said retaining portion is allowed to move from a rest position, in which it lies onto the upper edge of the jacket without covering any portion of the pipes, to a covering position, in which it covers at least a portion of all said one or more pipes placed onto the upper edge of the jacket.

[0082] In this way, at least a portion of all said one or more pipes placed onto the upper edge of the jacket are covered and fixed thereto by the retaining element when it is in the closed position.

[0083] Furthermore and preferably, when the retaining portion of the retaining element is in said rest position,

its lower portion is substantially flat in such a way to lie onto the preferably flat upper edge of the jacket, preferably in to the upper edge of its rear portion, while its upper portion presents projections and/or grooves.

[0084] Furthermore and preferably, said base portion of the retaining element is or comprises a blocking member, such as a protruding element or a cavity element, adapted to cooperate with, respectively, said corresponding grooves or projection elements of the retaining portion.

[0085] In this way, at least one of said projections and/or grooves (of the upper portion of the retaining portion when it is in said rest position) cooperate, respectively, with said protruding element or cavity element of the base portion of the retaining element. A snap-fit blockage occurs between the projections/grooves of the retaining portion and the corresponding cavity/protruding element of the base portion of the retaining element.

[0086] In this way, said retaining portion is allowed to be firmly fixed to said base portion of the retaining element; thus, when said retaining portion is in said closed position, such a fixation of the retaining portion to the base portion causes the retaining element to block the pipes onto the upper edge of the jacket, preferably onto the upper edge of its rear portion. In addition, the retaining element in said closed position further acts as a protective element for the underneath pipes.

[0087] Furthermore and preferably, one of said grooves in the upper portion of the retaining portion (when it is in said rest position) is able to properly match with said at least one protruding fixing element for fixing said seat for the pipes to the upper edge of the jacket, preferably to the upper edge of its rear portion.

[0088] In this way, the proper match between said groove of the retaining portion and the protruding fixing element for fixing said seat prevent a not proper closure of the retaining portion onto the base portion for block the underneath pipes.

[0089] Furthermore and preferably, said retaining portion is removably fixable to said base portion.

[0090] In this way, being said retaining portion removable, the removal of said one or more pipes from said support element is easy allowed, when needed.

[0091] Furthermore and preferably, said removal of the retaining portion from the base portion is allowed by disengaging said grooves or projection elements of the retaining portion from said corresponding protruding element or a cavity element of said base portion.

[0092] In a further advantageous embodiment of the present invention, said one or more pipes are connected to the washing tub bypassing the single dose additive compartment. Furthermore and preferably, said one or more pipes are connected to the washing tub through a bellow.

[0093] In this way, in operation, once the liquids flowing in said one or more pipes have reached the lateral wall of the single dose additive compartment where said corresponding inlet openings are formed, they do not pass

through said corresponding inlet openings to enter into the at least partially hollow section of the drawer housing of the single dose additive compartment (as it was the case of the first and of the second embodiments described above), but, on the contrary, they flow along such a lateral wall of the single dose additive compartment and enter into the washing tub directly through a bellow.

[0094] In such a further advantageous embodiment of the present invention, the streams of cold and/or warm/hot water possibly coming from the water main will mix with the liquids coming from the external additive distributing unit directly in the washing tub.

[0095] In a still further advantageous embodiment of the present invention, said single dose additive compartment is provided with at least one connecting channel fluidly connecting said one or more pipes with said separate washing/rinsing additive basin-shaped chambers of said movable drawer.

[0096] In this way, such liquids flowing from each separate compartments of the external additive distributing unit may be provided to said separate washing/rinsing additive basin-shaped chambers, in order to be possibly mixed therein with the washing/rinsing additives manually provided to said chambers.

[0097] Therefore, in such a still further advantageous embodiment of the present invention, in operation, after that each of the separated compartments of the additive distributing unit has been filled with an amount of such liquids which is enough for a plurality of washing cycles, such liquids are pumped into the washing tub through a water connecting system mainly including, in order: the pipes, the support element, the inlet openings, the connecting channel to fluidly connect the pipes to the movable drawer, the movable drawer, the drawer-to-tub connecting pipe and finally the washing tub.

BRIEF DESCRIPTION OF THE DRAWINGS

[0098] Further characteristics and advantages of the present invention will be highlighted in greater detail in the following detailed description. Non-limiting embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

- Figure 1 is a perspective view of a laundry washing machine of the present invention;
- Figure 2 is a lateral schematic view of the internal of the laundry washing machine of Figure 1;
- Figure 3a is a perspective view from below of the top portion of the cabinet of Figure 1 laundry washing machine;
- Figure 3b is an enlargement of Figure 3a;
- Figure 4 is a perspective view of Figure 1 laundry

washing machine wherein the top portion of the cabinet has been applied to the jacket of the cabinet, showing the recess where the support element is to be partially positioned;

- Figure 5 is a perspective view of Figure 4 laundry washing machine wherein the support element has been positioned into the recess;
- Figure 6 is a perspective view of a laundry washing machine according to the first embodiment of the present invention wherein the top portion and one of the lateral portions of the cabinet have been removed and wherein the support element is visible;
- Figure 7 is an enlarged detail of Figure 6;
- Figure 8 is another perspective view of Figure 6 laundry washing machine;
- Figure 9 is a top plan view of a laundry washing machine according to the first embodiment of the present invention wherein the top portion and the rear portion of the cabinet have been removed and wherein an external additive distributing unit connected to the laundry washing machine is also schematically illustrated;
- Figure 10 is an enlarged detail of Figure 9;
- Figure 11 is an enlarged detail of Figure 10;
- Figure 12 is a perspective view of the Figure 9 laundry washing machine wherein the top portion and the rear portion of the cabinet have been removed and wherein the flow of the liquids from the second connectors to the washing tub is indicated by arrows;
- Figure 13 is a perspective view of a laundry washing machine according to a further embodiment of the present invention wherein the top portion of the cabinet and the rear portion of the jacket have been removed and wherein the retaining element for fixing at least a part of the pipes to the jacket is visible in the rest position not covering that part of the pipes;
- Figure 14 is a perspective view of Figure 13 laundry washing machine wherein the retaining element is visible in the closed position covering that part of the pipes;
- Figure 15 is a perspective view some parts of the laundry washing machine of Figure 13;
- Figure 16 is a perspective view of the Figure 13 laundry washing machine wherein the top portion of the cabinet has been removed and wherein the flow of the liquids from the retaining element of the support

element to the washing tub is indicated by arrows;

- Figure 17 is a perspective view of the Figure 13 laundry washing machine wherein the top portion of the cabinet has been removed and wherein the movable drawer is visible in the second position extracted from the drawer housing.

DETAILED DESCRIPTION OF THE INVENTION

[0099] In the present description the term "laundry washing machine" will refer to both simple laundry washing machines and laundry washing-drying machines (i.e. laundry washing machines which can also dry laundry).

[0100] With reference to Figures 1 to 12, a first embodiment of a laundry washing machine 1 of the present invention is illustrated; it comprises an external casing or cabinet 2 structured for resting on the floor, containing a washing tub 3 in which a washing liquid may be loaded.

[0101] The washing tub 3 contains a rotatable washing drum 4, rotatably accommodated in the washing tub 3, where the laundry to be treated can be loaded. The drum 4 is advantageously rotated by an electric motor, not illustrated, which preferably transmits the rotating motion to the shaft of the drum 4, advantageously by means of a belt/pulley system. In a different embodiment of the invention, the motor can be directly fixed to the shaft of the drum 4.

[0102] The laundry washing machine 1 is provided with a loading/unloading opening 8, closable by a door 9, which allows access to the drum 4.

[0103] The laundry washing machine 1 is further provided with a water supply circuit 10 to supply water into the washing tub 3 and with a discharge system 11 for discharging waste washing liquid outside the laundry washing machine 1 (Figure 2).

[0104] The water supply circuit 10 is arranged in the upper part of the laundry washing machine 1 and is suited to supply water into the tub 3. The water supply circuit 10 of a laundry washing machine is well known in the art, and therefore it will not be described in detail.

[0105] The laundry washing machine 1 further comprises a water connecting system for fluidly connecting the washing tub 3 to an additive distributing unit 12 external to the cabinet 2. The water connecting system comprises connecting pipes 21 for fluidly connecting the washing tub 3 to such an additive distributing unit 12 and a support element 15 for connecting the connecting pipes 21 to the cabinet 2 (Figures 9 to 11). In the embodiments illustrated in Figures 3 to 12, four connecting pipes 21 placed adjacent one another are shown.

[0106] The cabinet 2 has a substantially parallelepiped shape and comprises a jacket 200 comprising a front portion 5, a rear portion 6 opposite the front portion 5, and two opposite lateral portions 20a, 20b; the cabinet 2 also comprises a top portion 7 at least partially positioned above an upper edge 200a of the jacket 200; in the advantageous example shown in attached Figures, the rear

portion 6 comprises an upper edge 16 facing the top portion 7 (Figures 3a, 3b, 4 and 5). Furthermore, the support element 15 is positioned at least partially above the upper edge 200a of the jacket 200, and, with reference to the advantageous embodiment of attached figures, partially above the upper edge 16 of the rear portion 6 of the cabinet 2 (Figures 4 to 12). In a different advantageous embodiment, not illustrated, the support element 15 can be positioned at least partially above an upper edge, not illustrated, of one of the two opposite lateral portions 20a, 20b.

[0107] In this way, it is possible to easily connect the laundry washing machine 1 to the external additive distributing unit 12, without having to perforate, and therefore without furthermore weakening, the jacket 200, and in particular the rear portion 6 of the latter.

[0108] Advantageously, since theoretically all the upper edge 200a of the jacket 200 of the cabinet 2 is available for the positioning of the support element 15, the number of pipes 21, and as a consequence the number of different additives that can be taken into the cabinet 2 from the external additive distributing unit 12, can be very high (in the Figures 3 to 12 four adjacent connecting pipes 21 are shown). Thus, for example, detergents, softeners, bleaching, and other liquid additives as needed may be supplied to the washing tub 3 through such connecting pipes 21.

[0109] In the advantageous embodiment of Figures 4 and 5 the top portion 7 of the cabinet 2 is positioned above the support element 15, so that the latter is positioned at least partially between the top portion 7 and the upper edge 16 of the rear portion 6.

[0110] The top portion 7 is also fixed to the upper region of the rear portion 6 of the cabinet 2 through a couple of protruding elements 31 that respectively protrude downward (Figures 3a and 3b) from each corner 7a, 7b of the top portion 7 facing the rear portion 6 thereof. Such protruding elements 31 of the top portion 7 are fixed to the rear portion 6 preferably through conventional fixing elements (not shown), such as screws, nuts, or bolts.

[0111] Furthermore, the top portion 7 comprises a recess 13 (Figures 3a and 3b) positioned in the lower portion along its peripheral edge 32; once the top portion 7 is positioned over the rear portion 6, such a recess 13 forms a corresponding cavity 13 (Figure 4) between the top portion 7 and the upper edge 16 of the rear portion 6 of the cabinet 2.

[0112] The support element 15 is positioned at least partially above the upper edge 16 of the rear portion 6 of the cabinet 2 in such a way to be at least partially positioned within such a recess/cavity 13 (Figure 5).

[0113] The support element 15 preferably comprises a fixation element 17 for its fixation to the upper edge 16 of the rear portion 6 of the cabinet 2. The fixation element 17 is also preferably fixed to the upper region of the rear portion 6 of the cabinet 2 through conventional fixing elements 33, such as screws.

[0114] Furthermore, the support element 15 advanta-

geously further comprises a cover 19 positioned, in use, at least partially below the pipes 21, and arranged in such a way to guide possible droplets of liquid coming from the pipes 21 in a safe region of the laundry washing machine 1. The cover 19 is preferably made in a single piece construction with the rest of the support element 15.

[0115] As shown for example in the advantageous embodiment of Figures 6 to 8, the support element 15 may further comprise a series of first connectors 23 and of second connectors 24; in Figures 6 to 8 four first connectors 23 and four corresponding second connectors 24 are shown. Each of the first connectors 23 and of the second connectors 24 is or comprises a nozzle having a substantially cylindrical shape. The support element 15 further comprises passing through holes 25 for allowing the insertion therein of each of the terminal ends of the first and second connectors 23, 24. Thus, each of the second connectors 24 is fluidly connected to the corresponding first connectors 23 through such passing through holes 25.

[0116] With particular reference to Figures 9 to 11, the first embodiment of the laundry washing machine 1 of the present invention is shown in a similar way as described above with reference to Figures 6 to 8, with the difference that in Figures 9 to 11 the external additive distributing unit 12 connected to the laundry washing machine 1 of the present invention is also shown.

[0117] With particular reference to Figures 6 to 12, each of the four pipes 21, fluidly connecting the external additive distributing unit 12 to the washing tub 3, is subdivided in two portions, respectively indicated as first pipes 21a and second pipes 21b.

[0118] In particular (Figures 10 and 11), the four first pipes 21b are externally positioned with respect to the cabinet 2 and are fluidly connected, on one side, to the external additive distributing unit 12, through a first end 27a of each of the first pipes 21a, and are fluidly connected, on the other side, to the four first connectors 23, through a second end 27b of each of the first pipes 21a, opposed to the first end 27a. Furthermore, in the second portion thereof, the four second pipes 21b are shown in such a way that each of the four second connectors 24 is also fluidly connected to a first end 26a of a respective second pipe 21b, whose second end 26b, opposed to the first end 26a, is connected to the washing tub 3, inside the cabinet 2.

[0119] In this way, each of the second connectors 24 is inwardly directed towards the washing tub 3 inside the cabinet 2, while each of the first connectors 24 is directed outwardly the cabinet 2.

[0120] Thus, each of the first connectors 23 is accessible from outside the cabinet 2, for their connection to a respective first pipe 21a.

[0121] In such a first embodiment of the support element 15 of the laundry washing machine 1 of the present invention, each of the first connectors 23 is provided with a removable cap (not shown in the Figures) for the removable closure of each of the first connectors 23 when

they are not connected to the respective first pipes 21a.

[0122] Such an additive distributing unit 12 is provided with one or more separate compartments 28, each of them being allowed to receive detergents, softeners, bleaching and/or other washing/rinsing liquid additives (herein also generally called as "liquids") as needed to be supplied to the tub 3 of the laundry washing machine 1 through such first pipes 21a, first and second connecting elements 23,24, second pipes 21b. Each separate compartment 28 of the additive distributing unit 12 is provided with an inlet 28a, for allowing each compartment 28 to be filled with such liquids. Furthermore, each separate compartment 28 is provided with a corresponding outlet 28b, fluidly connected to the second end 27b of such first pipes 21a, for allowing such liquids to leave the compartment 28 and pass into the first pipes 21a through the action of pumps (not shown in the Figures) integrated into the external additive distributing unit 12.

[0123] The laundry washing machine 1 further advantageously comprises a single dose additive compartment 14, positioned inside the cabinet 2 (Figures 6, 9 and 12). The single dose additive compartment 14 preferably comprises a drawer housing 49 and a movable drawer 50 which is preferably movable from a first position in which it is fitted inside the drawer housing 49 and a second position in which the movable drawer 50 is at least partially extractable from the drawer housing 49 in such a way to be at least partially outside it.

[0124] The drawer housing 49 of the single dose additive compartment 14 is fluidly connected, on one side, to the washing tub 3 through a drawer housing-to-tub connecting pipe 41 and a bellow 34 and, on the other side, to each of the second end 26b of the second pipes 21b through corresponding inlet openings 35 formed in the lateral wall 36 (Figure 9) of the drawer housing 49 of the single dose additive compartment 14. The single dose additive compartment 14 further advantageously comprises an at least partially hollow vertical section 52 which is spaced out from the movable drawer 50 and which is able to receive the liquids from the pipes 21b through the inlet openings 35 and to direct them towards the washing tub 3.

[0125] In this way, each of the second pipes 21b is fluidly connected to the washing tub 3 via the drawer housing 49 of the single dose additive compartment 14.

[0126] Thus, in operation, after that each of the separated compartments 28 of the additive distributing unit 12 has been filled with an amount of such liquids which is enough for a plurality of washing cycles, such liquids are pumped into the washing tub 3 through a water connecting system mainly including, in order: the first pipes 21a, the first connecting elements 23, the support element 15 (for connecting the first connecting elements 23 to the second connecting elements 24), the second connecting elements 24, the second pipes 21b, the inlet openings 35, the at least partially hollow vertical section 52 of the drawer housing 49 of the single dose additive compartment 14, the drawer housing-to-tub connecting

pipe 41, the bellow 34, and finally the washing tub 3, the travelling direction of the liquids being partially indicated by the arrows in Figures 7, 10, 11 and 12.

[0127] The laundry washing machine 1 of the present invention further comprises inlet connectors 29, 30 for fluidly connecting the water mains (not shown in the Figures) to the single dose additive compartment 14. In particular, the inlet connector 30 allows warm/hot water provided by the water mains to be supplied to the drawer housing 49 through the warm/hot water connecting pipe 37. A valve 38 adjusts the warm/hot water supplying to the drawer housing 49; the valve 38 is a typical electrovalve activated by a solenoid. Such a solenoid valve is protected by a protecting means 39 placed over it.

[0128] Furthermore, the inlet connector 29 allows cold water provided by the water mains to be supplied to the drawer housing 49 through one of some cold water connecting pipes 40. In the embodiments illustrated in the enclosed Figures 6 to 12, there are three cold water connecting pipes 40 whose flow rates are adjusted by valves (not shown as they are positioned below the second connectors 24), preferably solenoid valves, opportunely controlled by an electronic control device (also not shown), adapted to control the operations of the laundry washing machine 1. Such valves preferably have one input and two outputs in such a way through them it is possible to mix two streams of cold water to obtain three different fluid paths, one for each of the cold water connecting pipes 40. In this way it is possible to supply the drawer housing of the single dose additive compartment 14 with a different stream of cold water.

[0129] Thus, the drawer housing of the single dose additive compartment 14, in addition to be fluidly connected to the external additive distributing unit 12 through such first and second pipes 21a,21b as illustrated above, is thus also connected or connectable to the water mains through such inlet connectors 29 and 30 and, respectively, the connecting pipes 40 and 37. In this way, the liquids coming from the external additive distributing unit 12 are directly mixed in the drawer housing of the single dose additive compartment 14 with the streams of cold and/or warm/hot water coming from the water main, before entering the washing tub 3.

[0130] Thus, by the present invention, the user is allowed to only periodically fill the separate compartments 28 of the external additive distributing unit 12, rather than filling the internal single dose additive compartment 14 before any washing cycle, as it is the case in the traditional laundry washing machines not provided with such external additive distributing unit. Furthermore, through the support element 15, the laundry washing machine 1 may be easily connected to the additive distributing unit 12a distributing unit positioned externally to the cabinet 2 of the laundry washing machine 1, without the risk of weakening the rear wall 6 (or at least a portion of it) of the cabinet 2. In addition, four different additives, one for each of the four first pipes 21a and of the corresponding second pipes 21b, may be supplied to the washing tub

3 from the external distributing unit 12, still assuring a high aesthetic level to the laundry washing machine 1.

[0131] Another advantage of the present invention is that the movable drawer 50 can be used only for manual loading of liquids or for loading of washing powders; in addition, a dosing means for loading the proper amounts of liquids detergent typically present in the movable drawer 50 is not anymore needed and thus it may be removed.

[0132] Figures 13 to 16 show a second embodiment of the present invention; in this second embodiment, four pipes 21 placed adjacent one another are shown, as it was also the case in the first embodiment described above. Each of the four pipes 21 of the water connecting system comprises a first end 26b fluidly connected or connectable to the washing tub 3 and a second end 27b, opposed to the first end 26b, connected or connectable to the additive distributing unit (not shown in Figures 13 to 16 for simplicity, but being exactly equal to the additive distributing unit 12 shown in Figures 10 and 11 with reference to the first embodiment of the present invention). Thus, in this second embodiment of the present invention, the pipes 21 are directly connected, on one side, to the washing tub 3 and, on the other side, to the additive distributing unit, even if, in other embodiments of the present invention, additional fluidly connecting elements may be respectively provided between the pipes 21 and the washing tub 3 and/or between the pipes 21 and the additive distributing unit.

[0133] Furthermore, in this second embodiment of the present invention the support element 115 comprises a retaining element 18 for fixing at least a part of the pipes 21 to the upper edge 16 of the rear portion 6 of the cabinet 2.

[0134] The support element 115 comprises one or more seats 42 where the pipes 21 can be positioned, each seat 42 having a substantially curved shape matching the substantially curved shape of the corresponding pipes 21 for allowing a better positioning of each pipe 21 onto the corresponding seat 42. Each seat 42 is fixed to the upper edge 16 of the rear portion 6 of the cabinet 2 through conventional fixing elements 43, such as screws, nuts, or bolts.

[0135] The retaining element 18 comprises a base portion 18a and a retaining portion 18b. The base portion 18a is fixed or fixable to the upper edge 16 of the rear portion 6 of the cabinet 2 and the retaining portion 18b of the retaining element 18 is pivotable at a maximum of substantially 180 degrees around a hinge element 44.

[0136] Such a hinge element 44 and such a base portion 18a are positioned in a such a way that all the portions 21c of each of the four pipes 21 positioned adjacent one each other onto the upper edge 16 of the rear portion 6 of the cabinet 2 are disposed in the space between the hinge element 44 and the base portion 18a. In other words, all such portions 21c of each of the four pipes 21 are disposed adjacent to the hinge element 44 on a first side 44a of the hinge element 44 towards a first side 47a of said base portion 18a; in addition, there are neither

further portions 21c of each of the four pipes 21 disposed adjacent to the hinge element 44 on the second side 44b of said hinge element 44, opposed to said first side 44a of said hinge element 44, nor further portions 21c of each of the four pipes 21 disposed adjacent to said base portion 18a on the second side 47b of said base portion 18a, opposed to said first side 47a of said base portion 18a.

[0137] The retaining portion 18b of the retaining element 18 is pivotable at a maximum of substantially 180 degrees around the hinge element 44 in such a way that the retaining portion 18b may pass from a rest position, in which it lies onto the upper edge 16 of the rear portion 6 of the cabinet 2 without covering any portion 21c of the four pipes 21 placed thereon (Figure 13), to a covering position, in which it covers such portions 21c of the four pipes 21 placed onto the upper edge 16 of the rear portion 6 of the cabinet 2 (Figure 14).

[0138] When the retaining portion 18b of the retaining element 18 is in the rest position (Figure 13), its upper portion presents projections and/or grooves 45, while at least part of its lower portion (not visible in Figure 13) is substantially flat in such a way to lie onto the flat upper edge 16 of the rear portion 6 of the cabinet 2. Vice versa, when the retaining portion 18b of the retaining element 18 is in the closed position (Figure 14), it covers the portion 21c of the four pipes 21 placed onto the upper edge 16 of the rear portion 6 of the cabinet 2. Furthermore, at least one of the projections and/or grooves 45 shown in the upper portion of the retaining portion 18b in Figure 13 (not visible in Figure 14, being the retaining portion 18b rotated of substantially 180 degrees) cooperates with corresponding cavity element or protruding element of the base portion 18a to allow the retaining portion 18b to be removably fixed to the base portion 18a. A typical fit snap blockage occurs between the projections/grooves 45 of the retaining portion 18b and the corresponding cavity/protruding element of the base portion 18a when the retaining portion 18b is pressed by the user onto the base portion 18a. Thus, the retaining portion 18b of the retaining element 18 is fixed onto the base portion 18a.

[0139] Such a fixation of the retaining portion 18b to the base portion 18a causes the retaining element 18 to block the portion 21c of the four pipes 21 onto the flat upper edge 16 of the rear portion 6 of the cabinet 2. In addition, the retaining element 18 in the closed position further acts as a protective element for the underneath pipes 21.

[0140] In addition, the groove 46 shown in the upper portion of the retaining portion 18b in Figure 13 is able to properly match with the above disclosed protruding fixing element 43 for fixing the seat 42 for the pipes 21 to the upper edge 16 of the rear portion 6 of the cabinet 2 in such a way not to prevent the proper closure of the retaining portion 18b onto the base portion 18a to block the pipes 21.

[0141] The support element 115 is further provided with a sort of an extension 48 of the retaining portion 18b having an arched profile which protrudes outwardly from

the upper edge 16 of the rear portion 6 of the cabinet 2. Such an extension 48 of the retaining portion 18b is useful as a further covering for both the portions 21c of the pipes 21 positioned on the upper edge 16 of the rear portion 6 of the cabinet 2 and for that portions of the pipes 21 positioned in the upper part of the rear portion 6b of the cabinet 2, in close proximity to such portion 21c onto the upper edge 16 of the rear portion 6b of the cabinet 2.

[0142] The retaining portion 18b is removably fixable to the base portion 18a, so as to allow the removal of one or more pipes 21 from the support element, when needed. Such a removal of the retaining portion 18b from the base portion 18a is allowed by exerting a force by pulling upwards said retaining portion 18b of the retaining element 18 in such a way the projections and/or grooves 45 of the retaining portion 18b are disengaged from the corresponding cavity element or protruding element of the base portion 18a.

[0143] Figure 17 shows a perspective view of the second embodiment of the laundry washing machine 1, wherein the movable drawer 50 of the single dose additive compartment 14 is visible in the second position extracted from the drawer housing 49, the characteristic of such movable drawer 50 being also applicable to the laundry washing machine 1 as disclosed above with reference to the first embodiment of the present invention. Such a movable drawer 50 is subdivided into some separate washing/rinsing additive basin-shaped chambers 51, each of them being manually fillable with a corresponding washing/rinsing additive.

[0144] Thus, in operation, in the second embodiment of the present invention, after that each of the separated compartments of the additive distributing unit has been filled with an amount of such liquids which is enough for a plurality of washing cycles, such liquids are pumped into the washing tub 3 through a water connecting system mainly including, as shown in Figures 14 to 17 (the top portion, the rear portion and the lateral portions of the cabinet 2 have been removed for simplicity), in order: the pipes 21, the support element 115 for fixing the portions 21c of the pipes 21 onto the upper edge portion 16 of the rear portion 6 of the cabinet 2, the inlet openings 35, the at least partially hollow vertical section 52 of the drawer housing 49 of the single dose additive compartment 14, the drawer housing-to-tub connecting pipe 41, the bellow 34, and finally the washing tub 3.

[0145] Furthermore, also in the second embodiment of the present invention, the laundry washing machine 1 of the present invention further comprises inlet connectors 29, 30 for fluidly connecting the water mains to the drawer housing 49 of the single dose additive compartment 14, according to the same conditions and means already disclosed with reference to the first embodiment of the present invention.

[0146] In a further advantageous embodiment of the present invention (not shown in the Figures), the one or more pipes may be connected to the washing tub by-passing the single dose additive compartment.

[0147] In such a further advantageous embodiment, in operation, once the liquids flowing in said one or more pipes have reached a lateral wall of the single dose additive compartment, they do not pass through said corresponding inlet openings to enter into the drawer housing of the single dose additive compartment (as it was the case of the first and of the second embodiments described above), but, on the contrary, they flow externally along such a lateral wall of the single dose additive compartment and enter into the washing tub directly through a bellow.

[0148] In such a further advantageous embodiment of the present invention, the streams of cold and/or warm/hot water possibly coming from the water main will mix with the liquids coming from the external additive distributing unit directly in the washing tub.

[0149] In a still further advantageous embodiment of the present invention (not shown in the Figures), the single dose additive compartment is provided with at least one connecting channel fluidly connecting the pipes with the separate washing/rinsing additive basin-shaped chambers of the movable drawer.

[0150] In such a still further advantageous embodiment, such liquids flowing from each separate compartments of the external additive distributing unit may be provided to the separate washing/rinsing additive basin-shaped chambers of the movable drawer, in order to be possibly mixed therein with the washing/rinsing additives manually provided to said chambers.

[0151] Therefore, in such a still further advantageous embodiment of the present invention, in operation, after that each of the separated compartments of the additive distributing unit has been filled with an amount of such liquids which is enough for a plurality of washing cycles, such liquids are pumped into the washing tub through a water connecting system mainly including, in order: the pipes, the support element, the inlet openings, the connecting channel, the movable drawer of the single dose additive compartment, the drawer-to-tub connecting pipe and finally the washing tub.

[0152] While the present invention has been described with reference to the particular embodiments shown in the figures, it should be noted that the present invention is not limited to the specific embodiments illustrated and described herein; on the contrary, further variants of the embodiments described herein fall within the scope of the present invention, which is defined in the claims.

Claims

1. Laundry washing machine (1) comprising:

- a cabinet (2) containing a washing tub (3) in which a washing liquid may be loaded, wherein the cabinet (2) has a substantially parallelepiped shape and comprises a jacket (200), comprising a front portion (5), a rear portion (6) opposite the

- front portion (5), and two lateral portions (20a,20b), said cabinet (2) comprising a top portion (7) positioned at least partially above an upper edge (200a) of said jacket (200);
- a drum (4) rotatably accommodated in the washing tub (3) for containing laundry articles to be washed;
 - a water supply circuit (10) to supply water into said washing tub (3);
 - a discharge system (11) for discharging waste washing liquid outside the laundry washing machine (1);
 - a water connecting system for fluidly connecting said washing tub (3) to an additive distributing unit (12) external to said cabinet (2), said water connecting system comprising one or more pipes (21) for fluidly connecting said washing tub (3) to said additive distributing unit (12) and a support element (15,115) for connecting said one or more pipes (21) to said cabinet (2), **characterized in that** said support element (15,115) is positioned at least partially above said upper edge (200a) of said jacket (200).
2. Laundry washing machine (1) according to claim 1, wherein said support element (15,115) is positioned at least partially between said upper edge (200a) of said jacket (200) and said top portion (7) of said cabinet (2).
 3. Laundry washing machine (1) according to claim 1 or 2, wherein said rear portion (6) of said jacket (200) comprises an upper edge (16) facing at least partially said top portion (7), said support element (15,115) being positioned at least partially above said upper edge (16) of said rear portion (6) of the cabinet (2).
 4. Laundry washing machine (1) according to claim 1, wherein said top portion (7) of the cabinet (2) is positioned above said support element (15,115), so that the latter is positioned at least partially between said top portion (7) and said upper edge (16) of said rear portion (6).
 5. Laundry washing machine (1) according to one or more of the previous claims, wherein said top portion (7) comprises a recess (13) wherein said support element (15,115) is at least partially positioned.
 6. Laundry washing machine (1) according to one or more of the previous claims, comprising a single dose additive compartment (14) able to receive single additive doses of washing/rinsing products, said single dose additive compartment (14) being positioned inside said cabinet (2), fluidly connected to said washing tub (3), and fluidly connected or connectable to said one or more pipes (21), so that the latter are fluidly connected or connectable to said washing tub (3) via said single dose additive compartment (14), said single dose additive compartment (14) being also connected or connectable to water mains external to said laundry washing machine (1).
 7. Laundry washing machine (1) according to one or more of the previous claims, wherein said support element (15,115) comprises a fixation element (17) for its fixation to said upper edge (200a) of said jacket (200).
 8. Laundry washing machine (1) according to one or more of the previous claims, wherein said support element (15,115) comprises a cover (19) positioned, in use, at least partially below said one or more pipes (21), and arranged in such a way to guide possible droplets of liquid coming from said one or more pipes (21) in a safe region of said laundry washing machine (1).
 9. Laundry washing machine (1) according to one claim 8, wherein said cover (19) is made in a single piece construction with the rest of said support element (15,115).
 10. Laundry washing machine (1) according to one or more of the previous claims, wherein said support element (15) comprises:
 - one or more first connectors (23) each of them being fluidly connected or connectable to a first end (27a) of respective one or more first pipe (21a) of said one or more pipes (21), whose second end (27b) is fluidly connected or connectable to said additive distributing unit (12),
 - one or more second connectors (24), each one being fluidly connected, on one side, to a corresponding one of said one or more first connectors (23), and being also fluidly connected or connectable, on the other side, to a first end (26a) of respective one or more second pipes (21b) of said one or more pipes (21), whose second end (26b) is fluidly connected or connectable to said washing tub (3).
 11. Laundry washing machine (1) according to claim 10, wherein said one or more first connectors (23) are accessible from outside said cabinet (2) for their connection to said respective one or more first pipes (21a).
 12. Laundry washing machine (1) according to claim 10 or 11, comprising one or more removable caps (27) for the removable closure of said one or more first connectors (23) when they are not connected to said respective one or more first pipes (21a).

13. Laundry washing machine (1) according to one or more of the previous claims 1 to 9, wherein said one or more pipes (21) of said water connecting system comprise a first end (26b) fluidly connected or connectable to said washing tub (3) and a second end (27b) fluidly connected or connectable to said additive distributing unit (12), wherein said support element (115) comprises a retaining element (18) for fixing at least a part of said one or more pipes (21) to said jacket (200). 5 10
14. Laundry washing machine (1) according to claim 13, wherein said support element (115) comprises one or more seats (42) into each of them a corresponding one of said one or more pipes (21) can be positioned. 15
15. Laundry washing machine (1) according to claim 13 or 14, wherein said retaining element (18) comprises a base portion (18a), fixed or fixable to said upper edge (200a) of said jacket (200), and a retaining portion (18b) fixable to said base portion (18a), in such a way that at least a portion of said one or more pipes (21) is fixed to the cabinet (2) by said support element (115). 20 25

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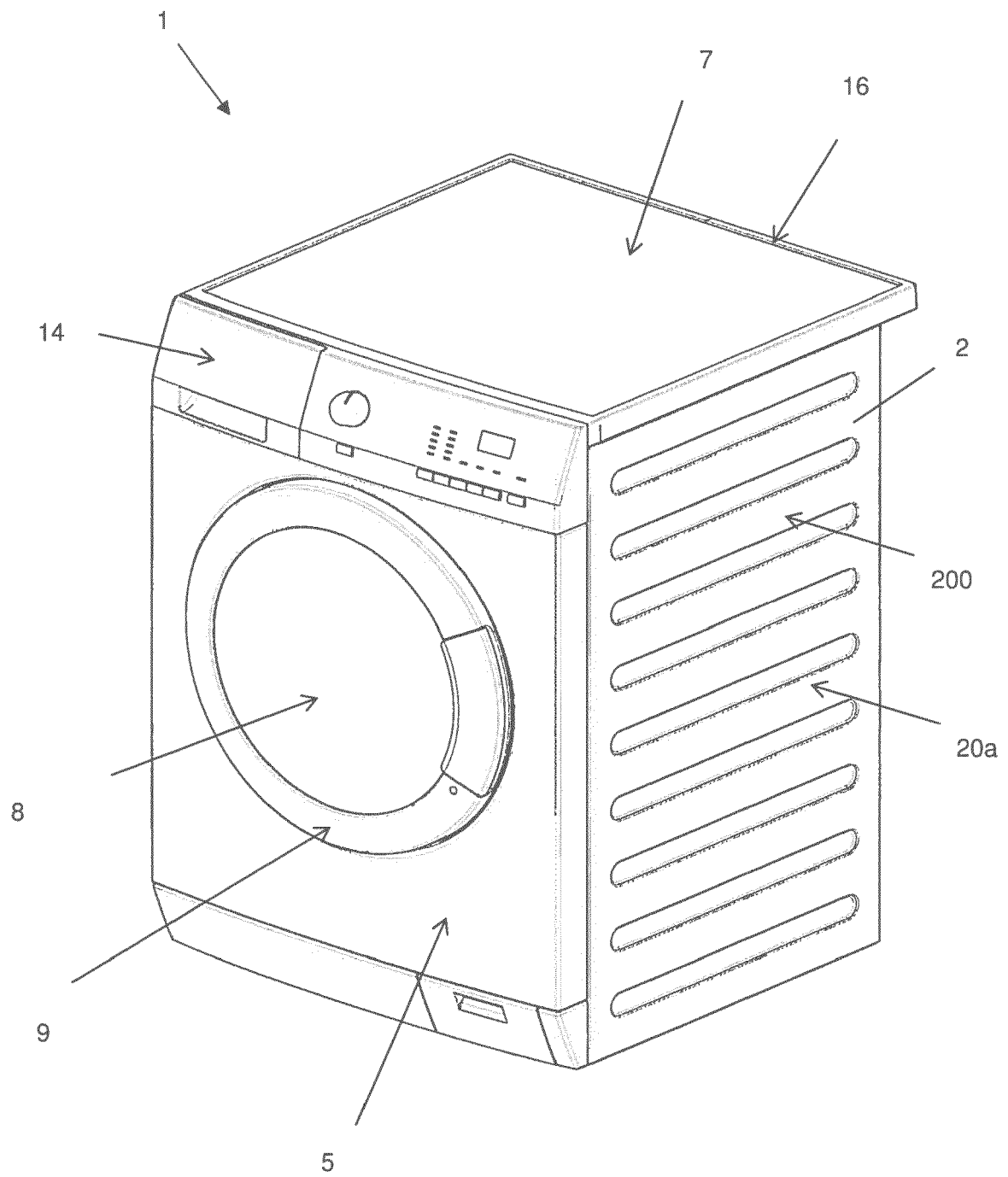


FIG. 1

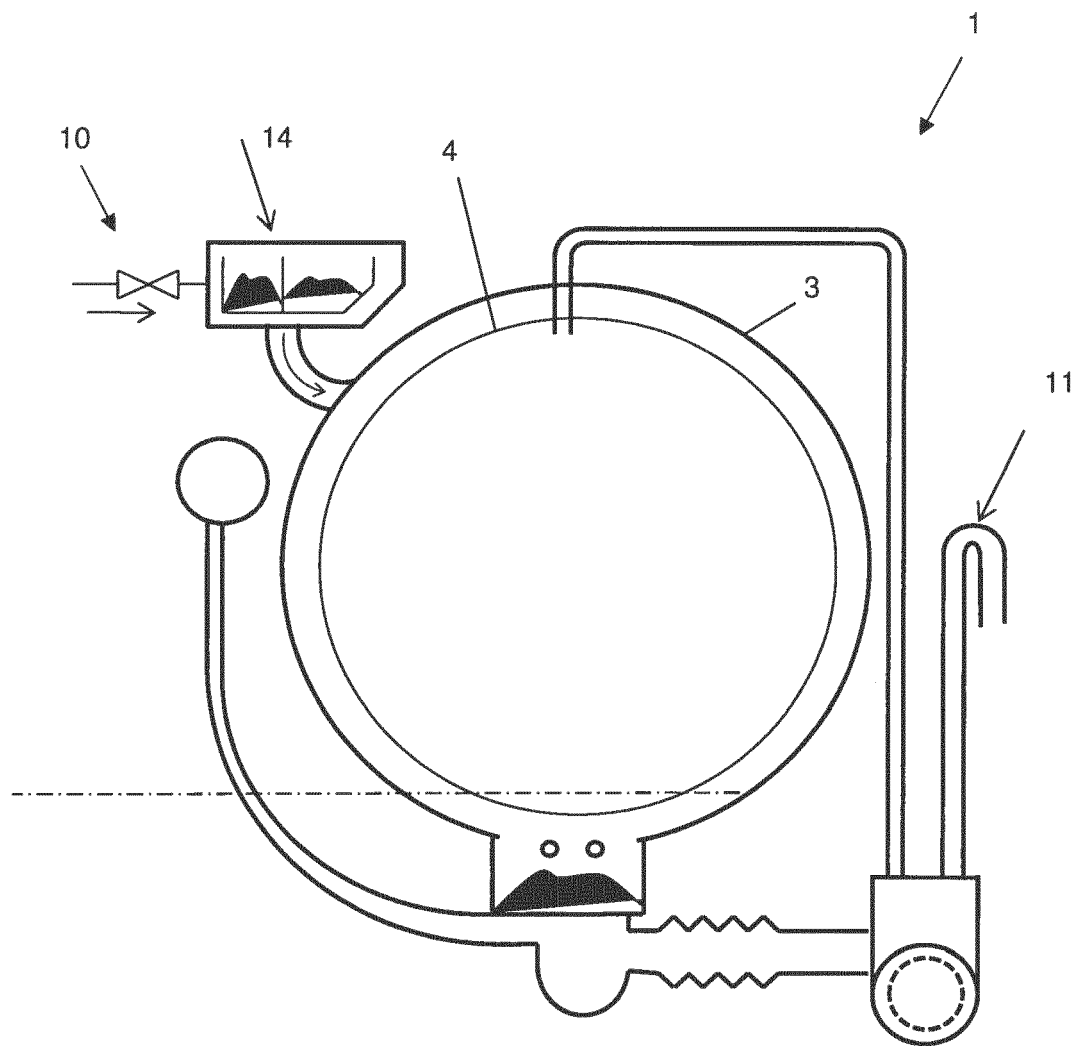


FIG. 2

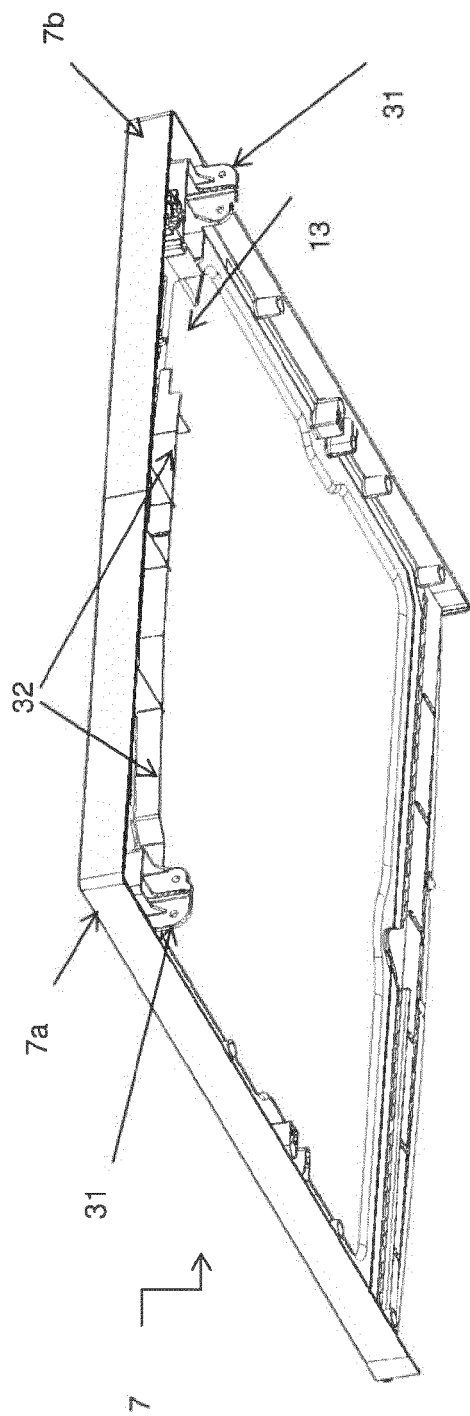


FIG. 3a

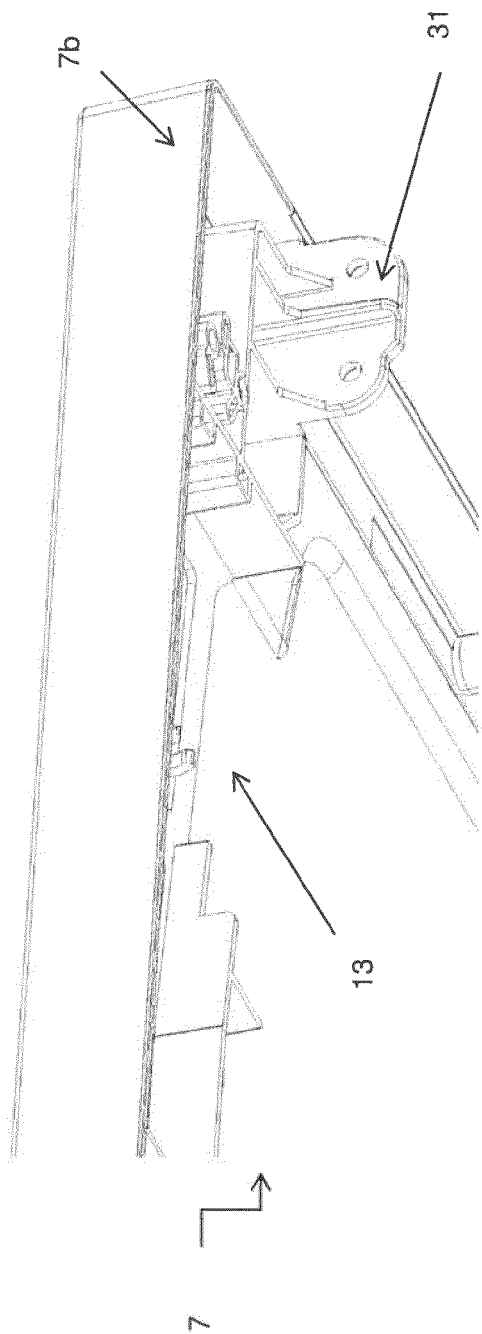


FIG. 3b

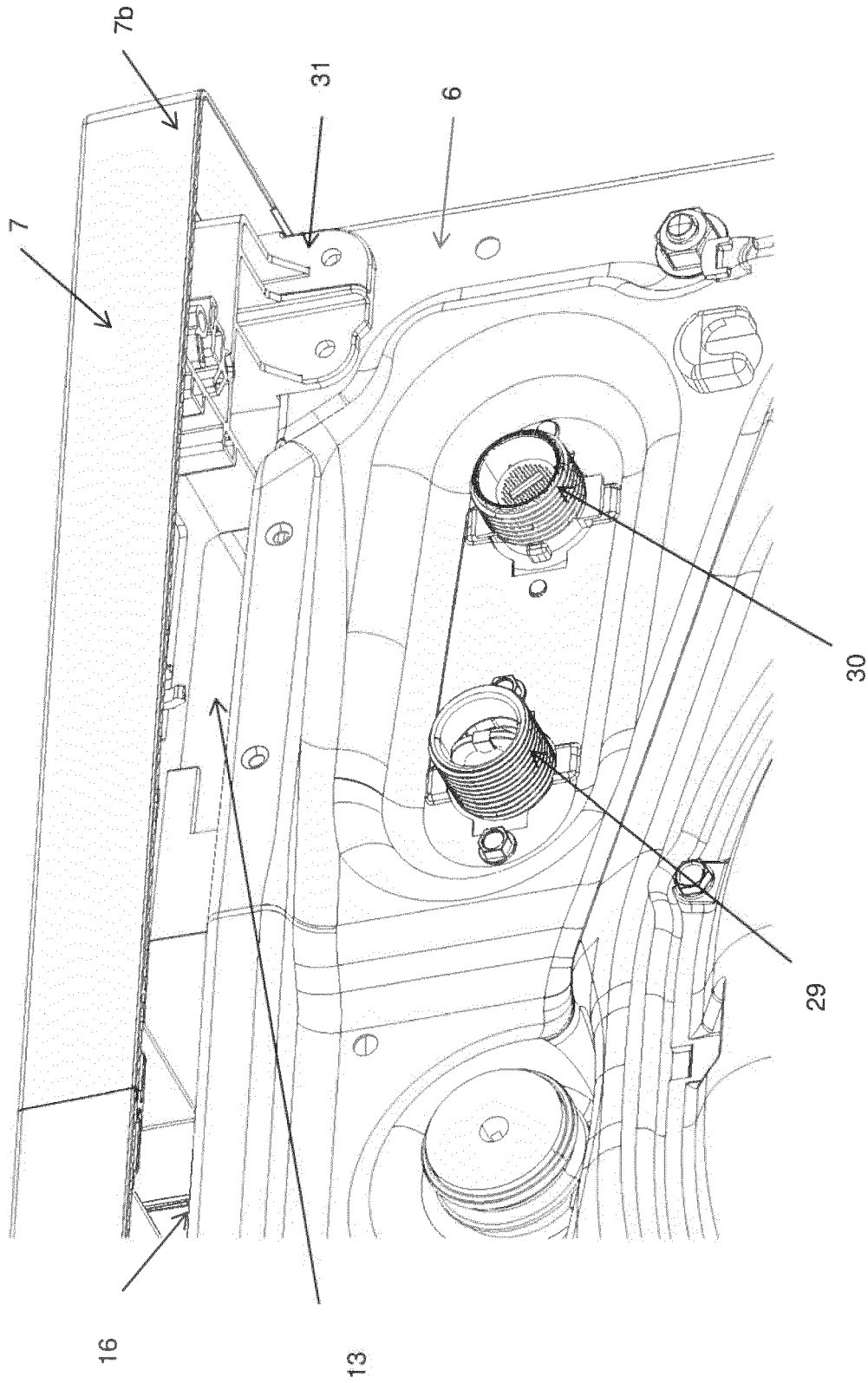


FIG. 4

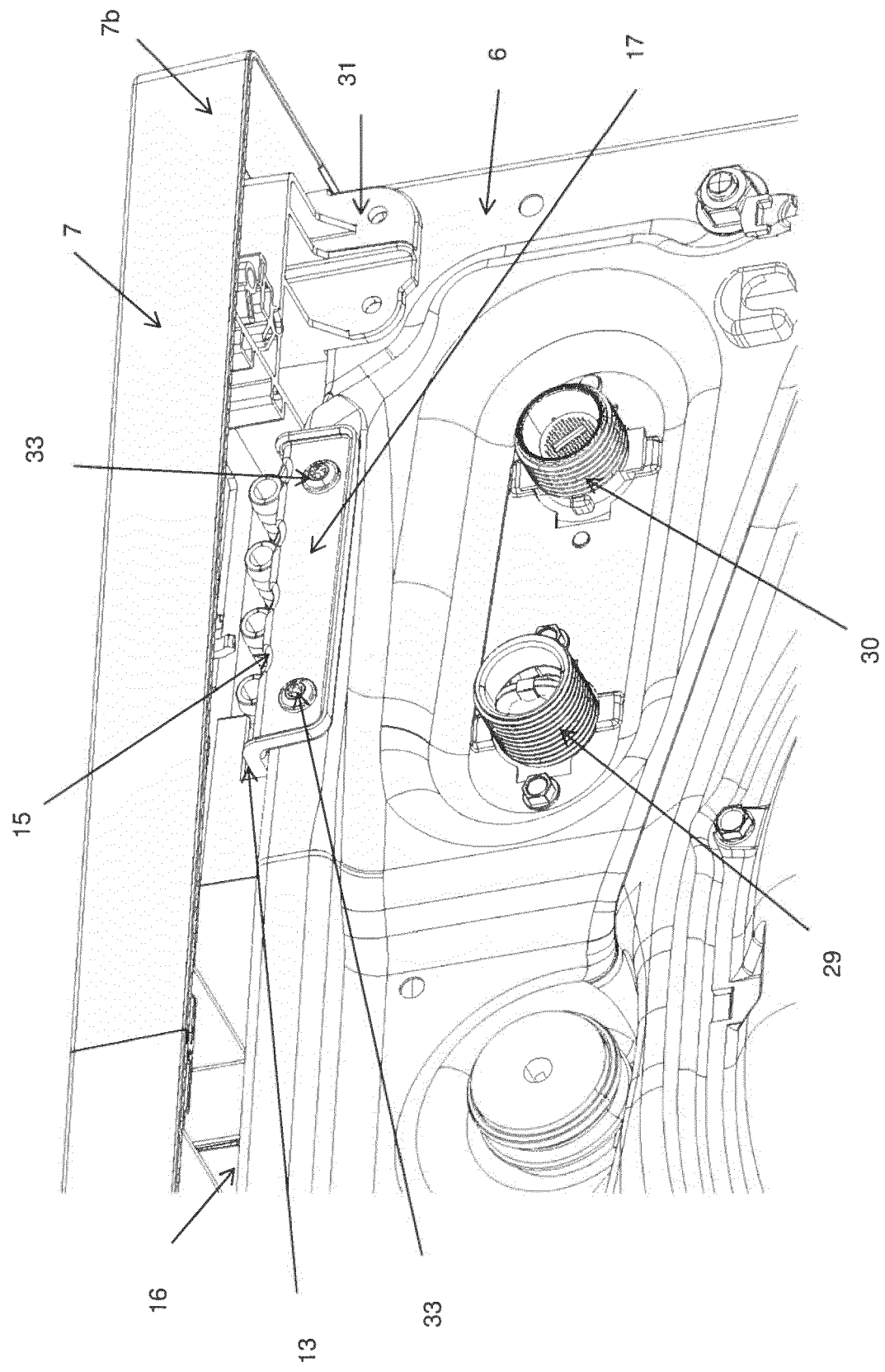


FIG. 5

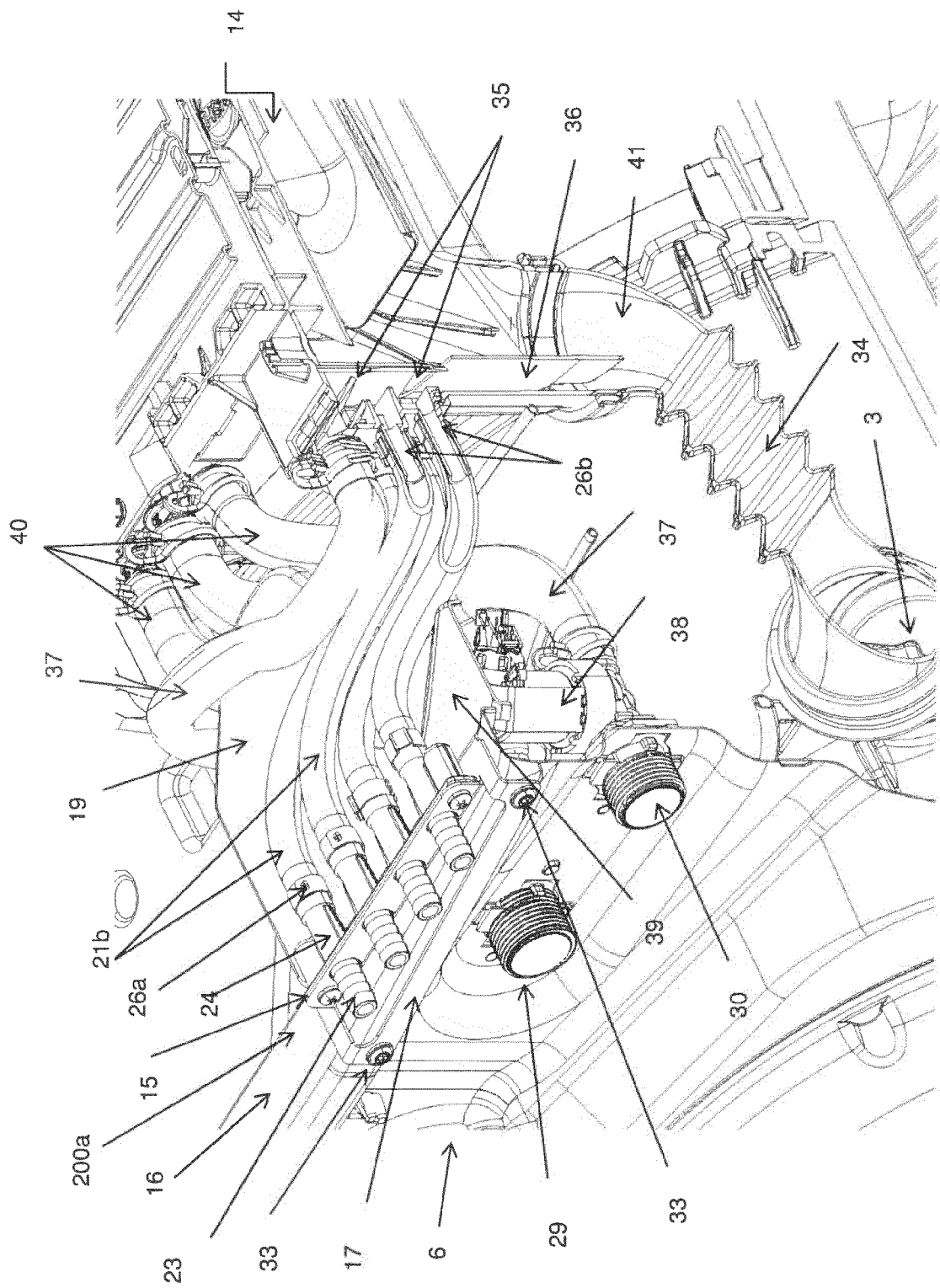


FIG. 6

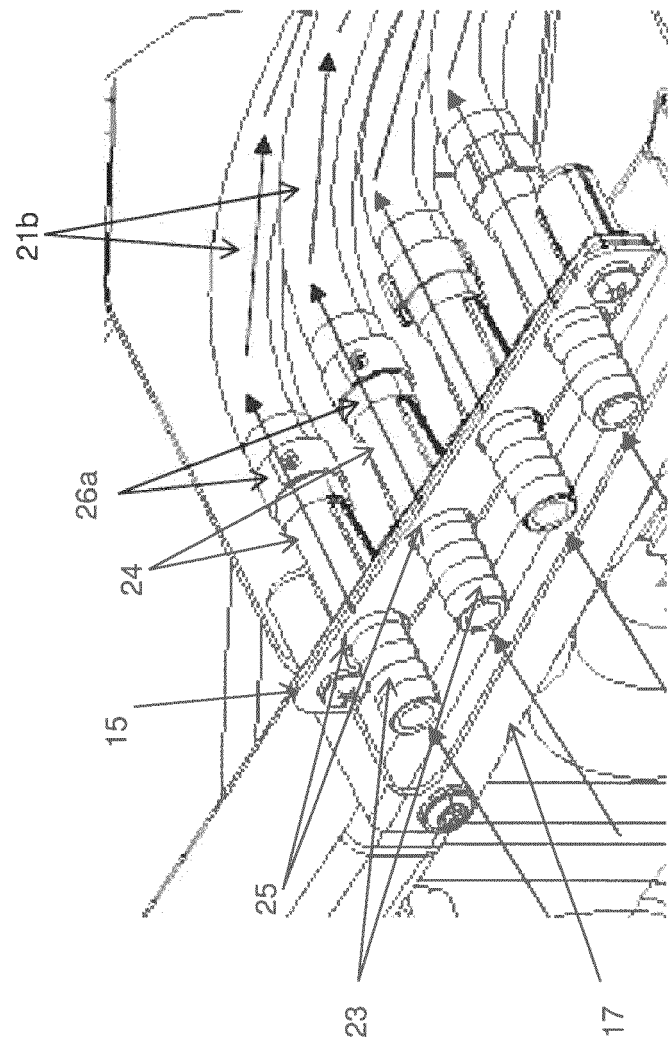
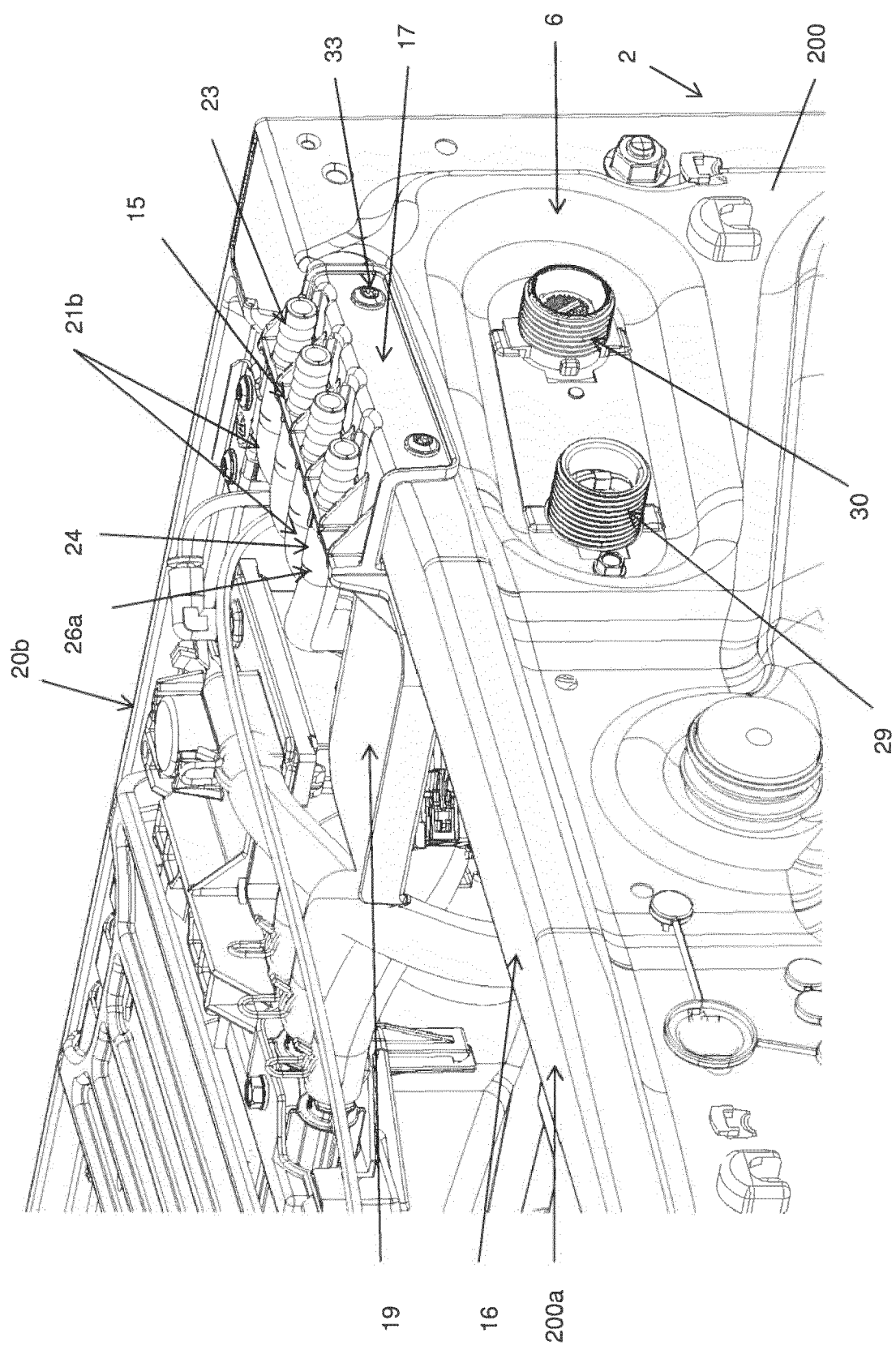


FIG. 7



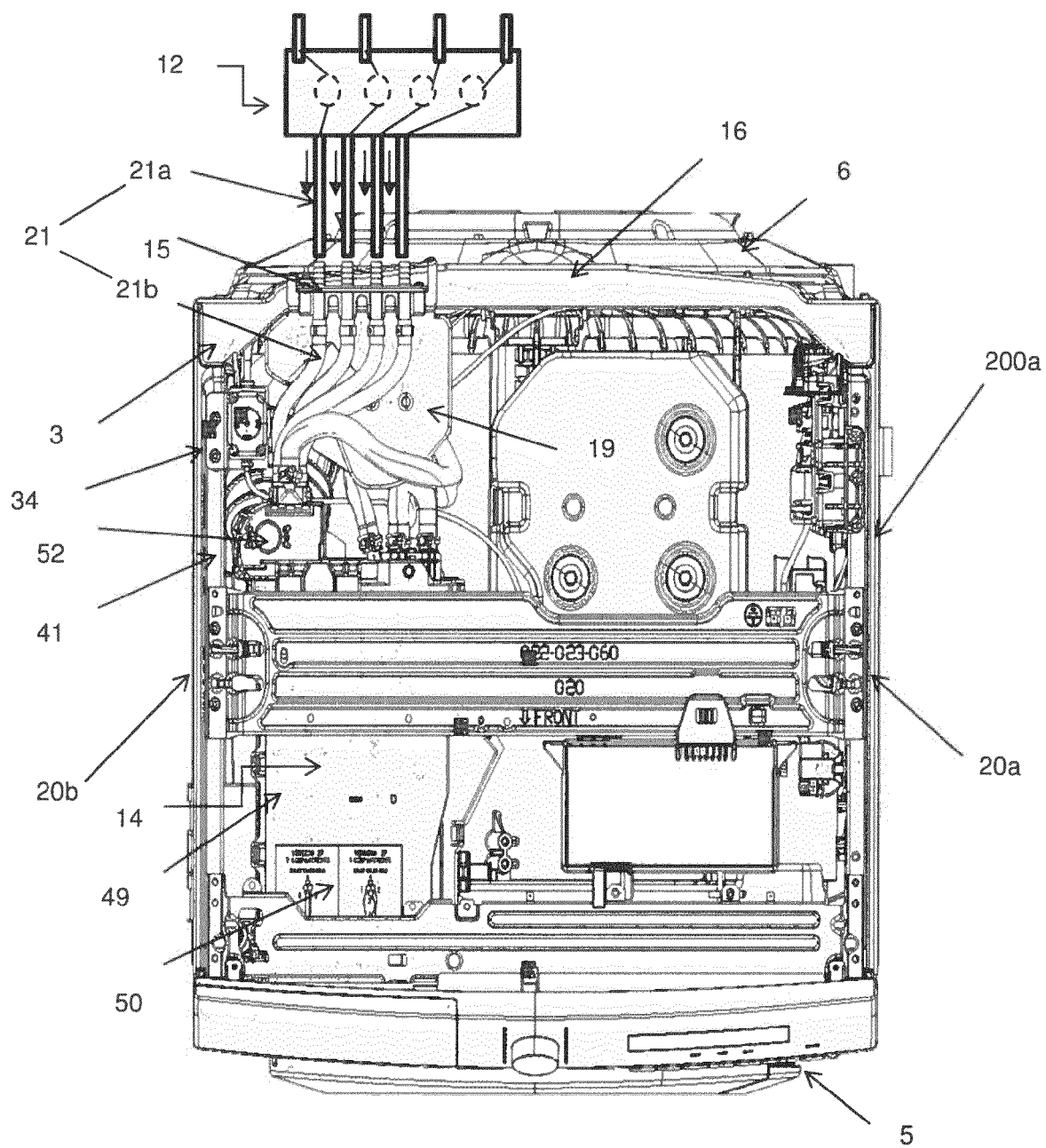


FIG. 9

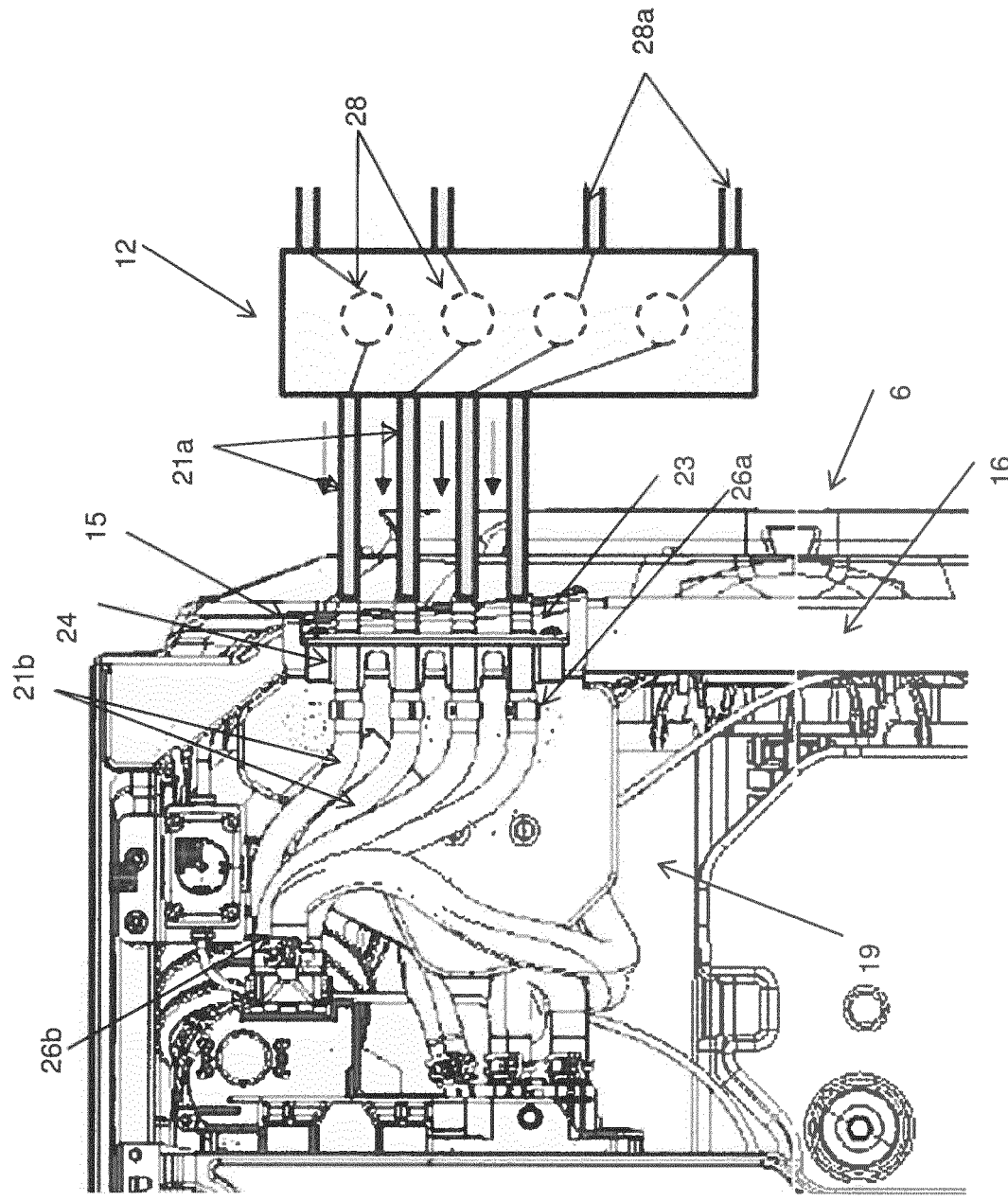


FIG. 10

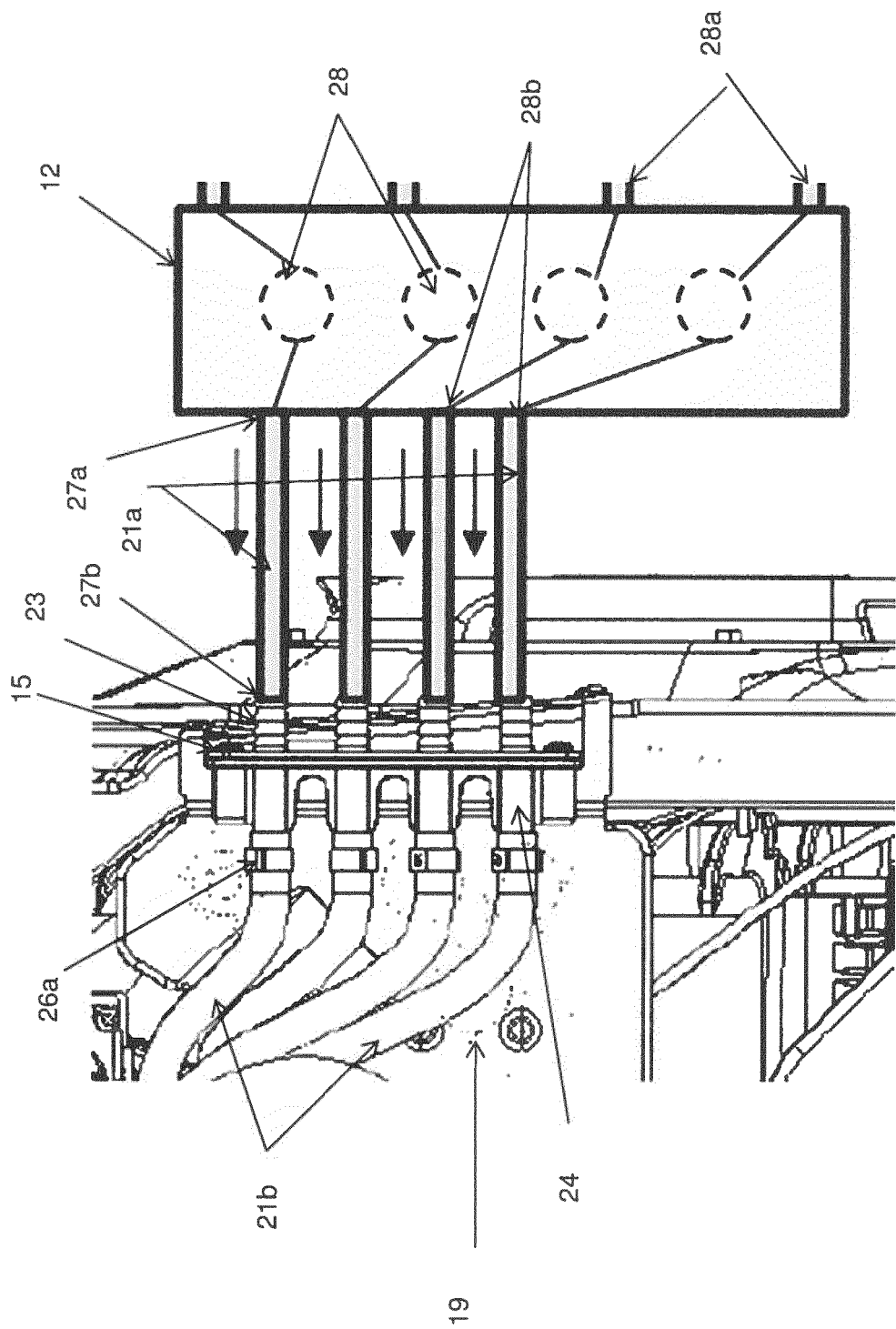


FIG. 11

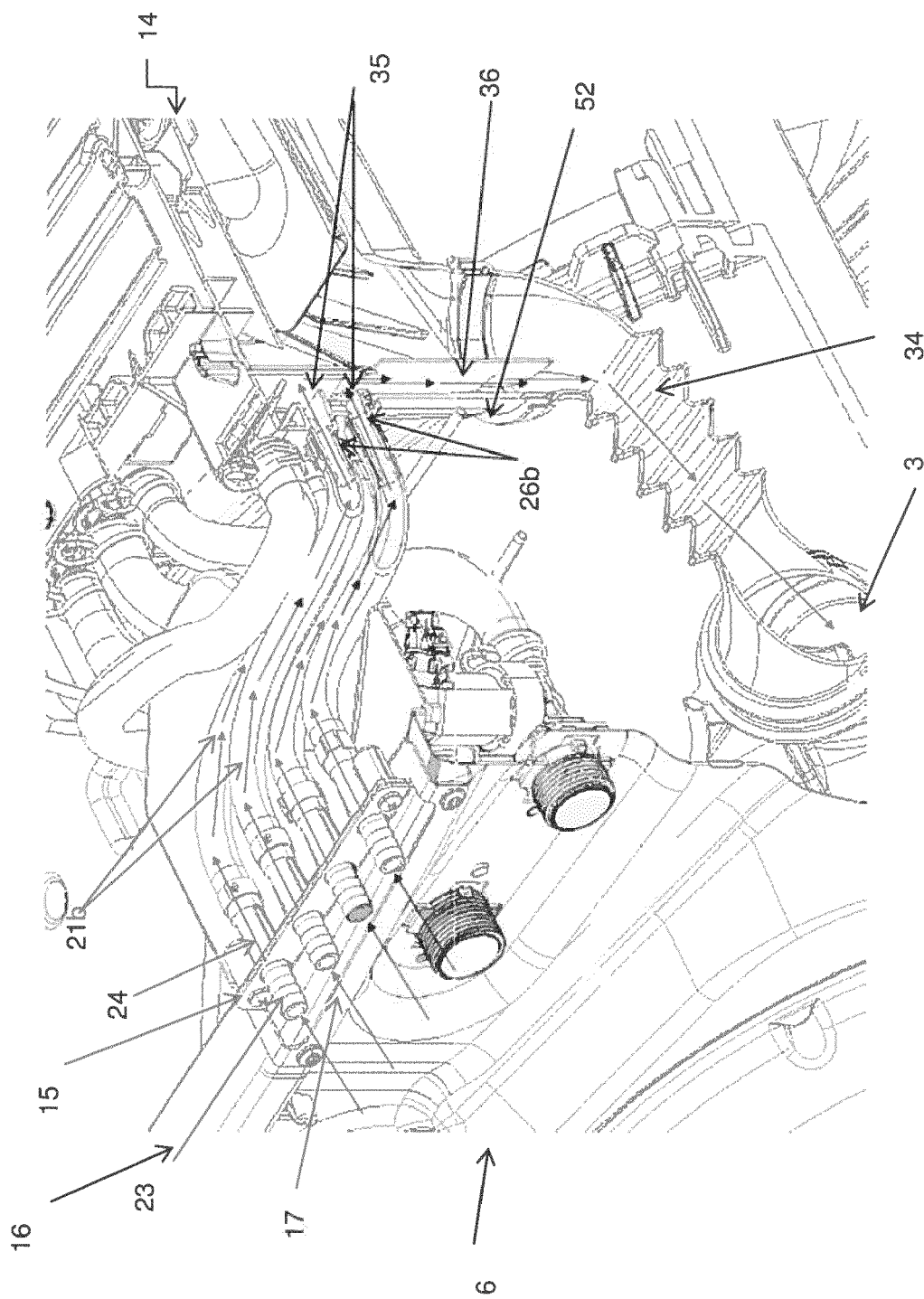


FIG. 12

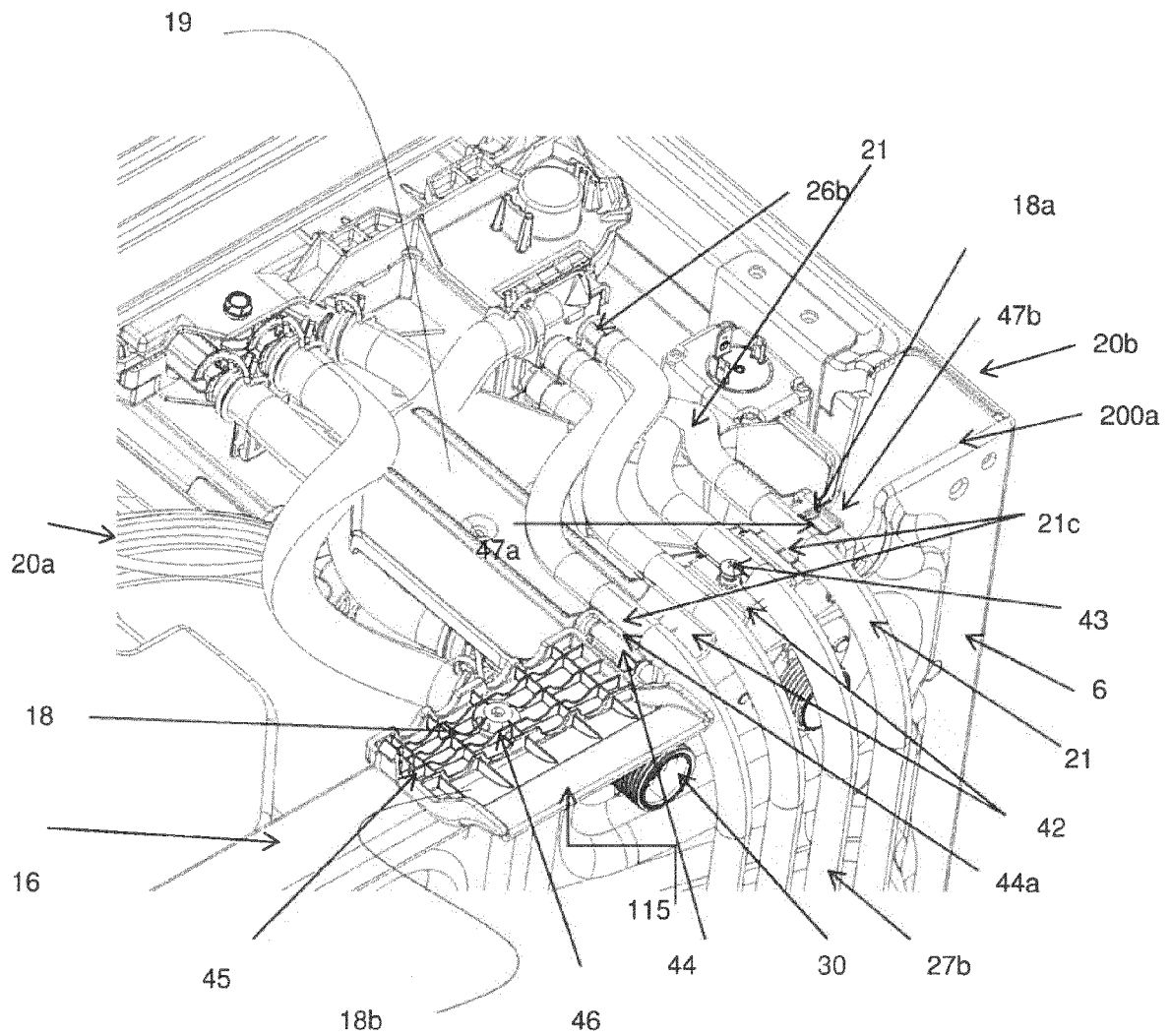


FIG. 13

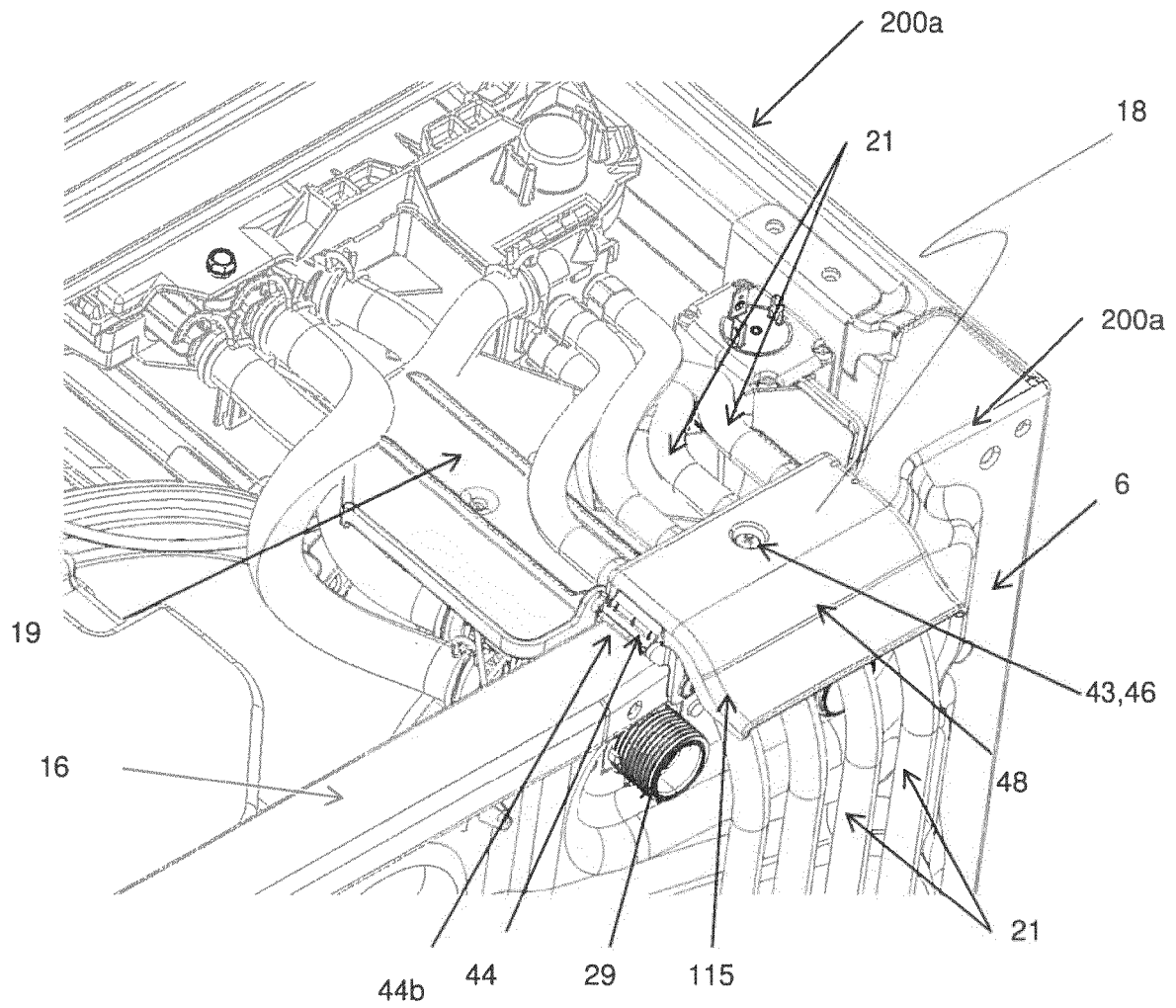


FIG. 14

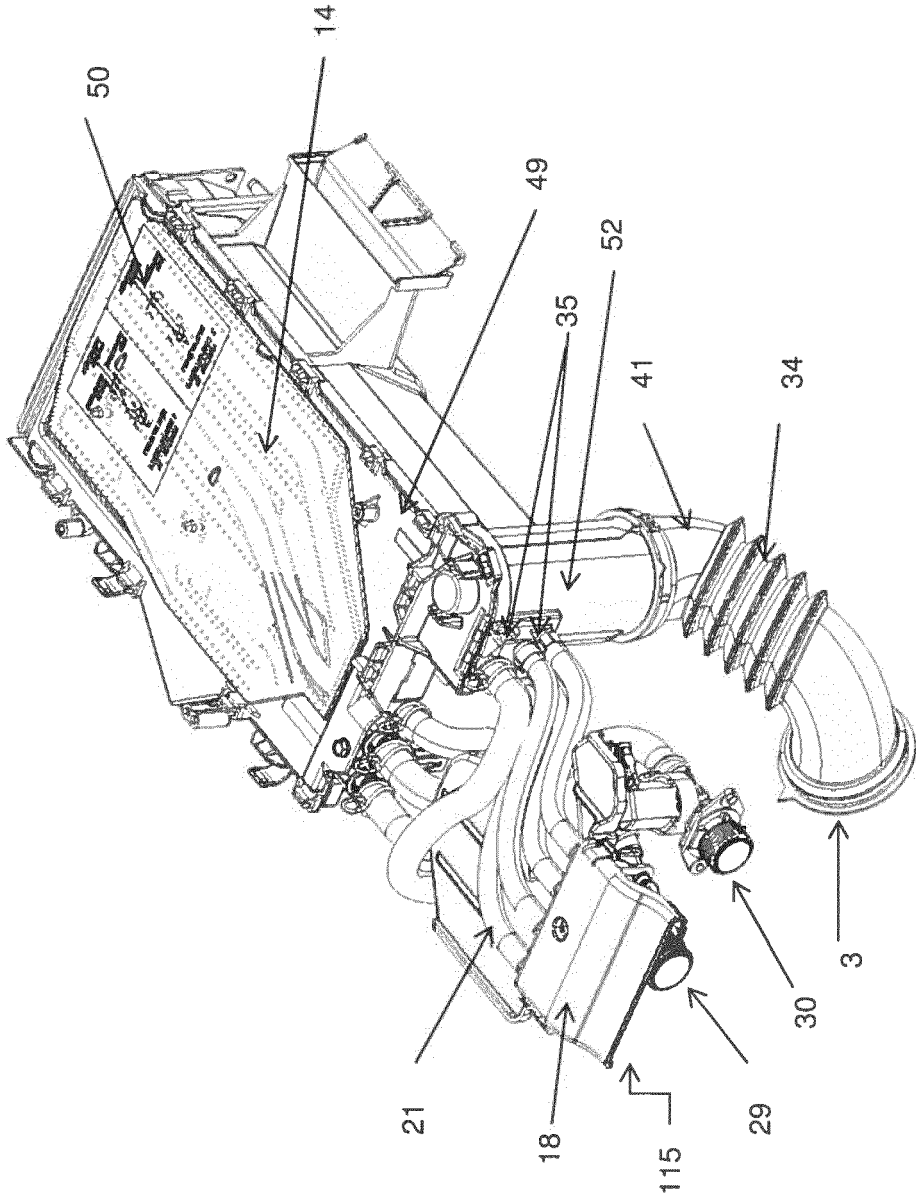


FIG. 15

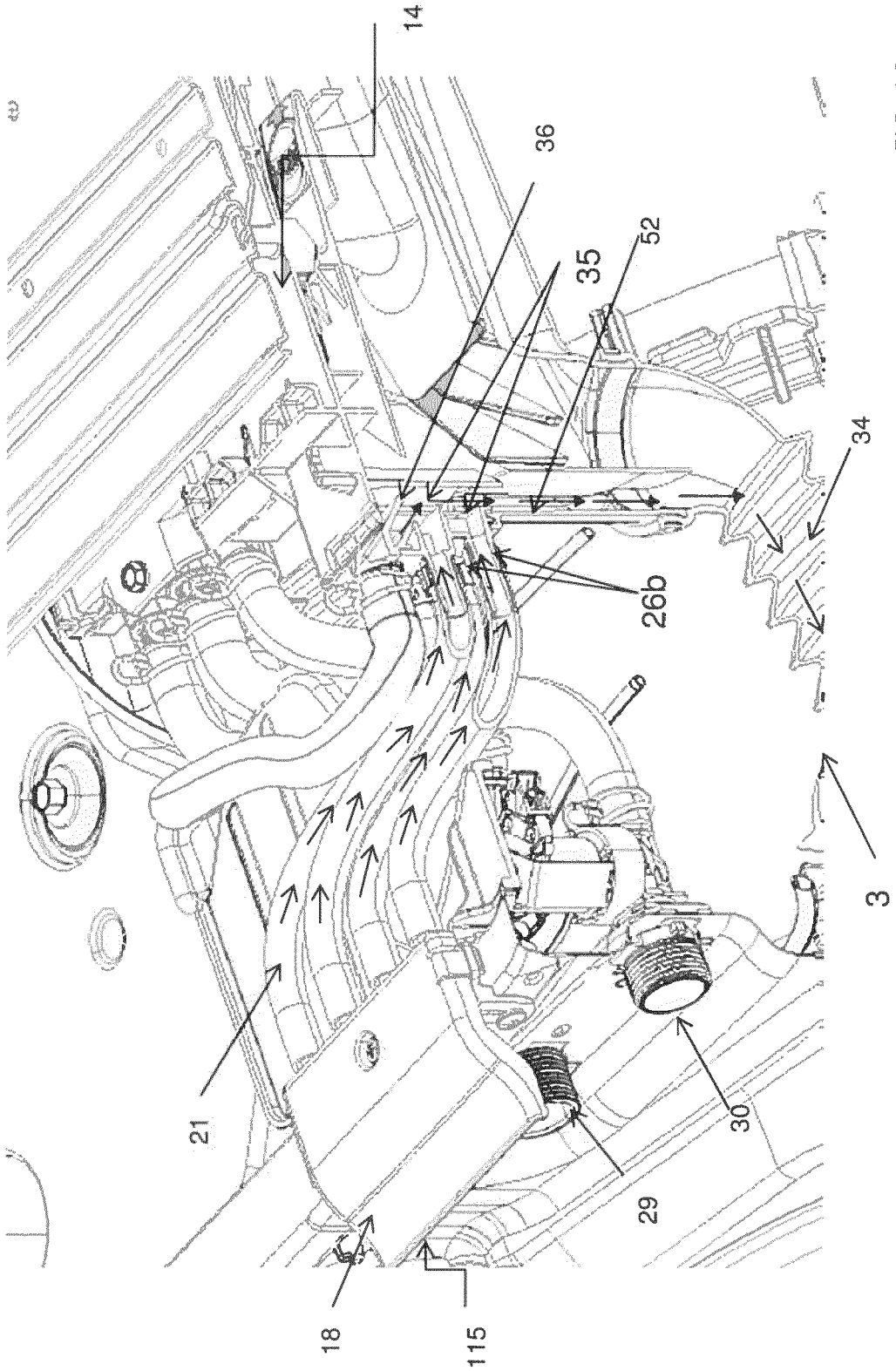


FIG. 16

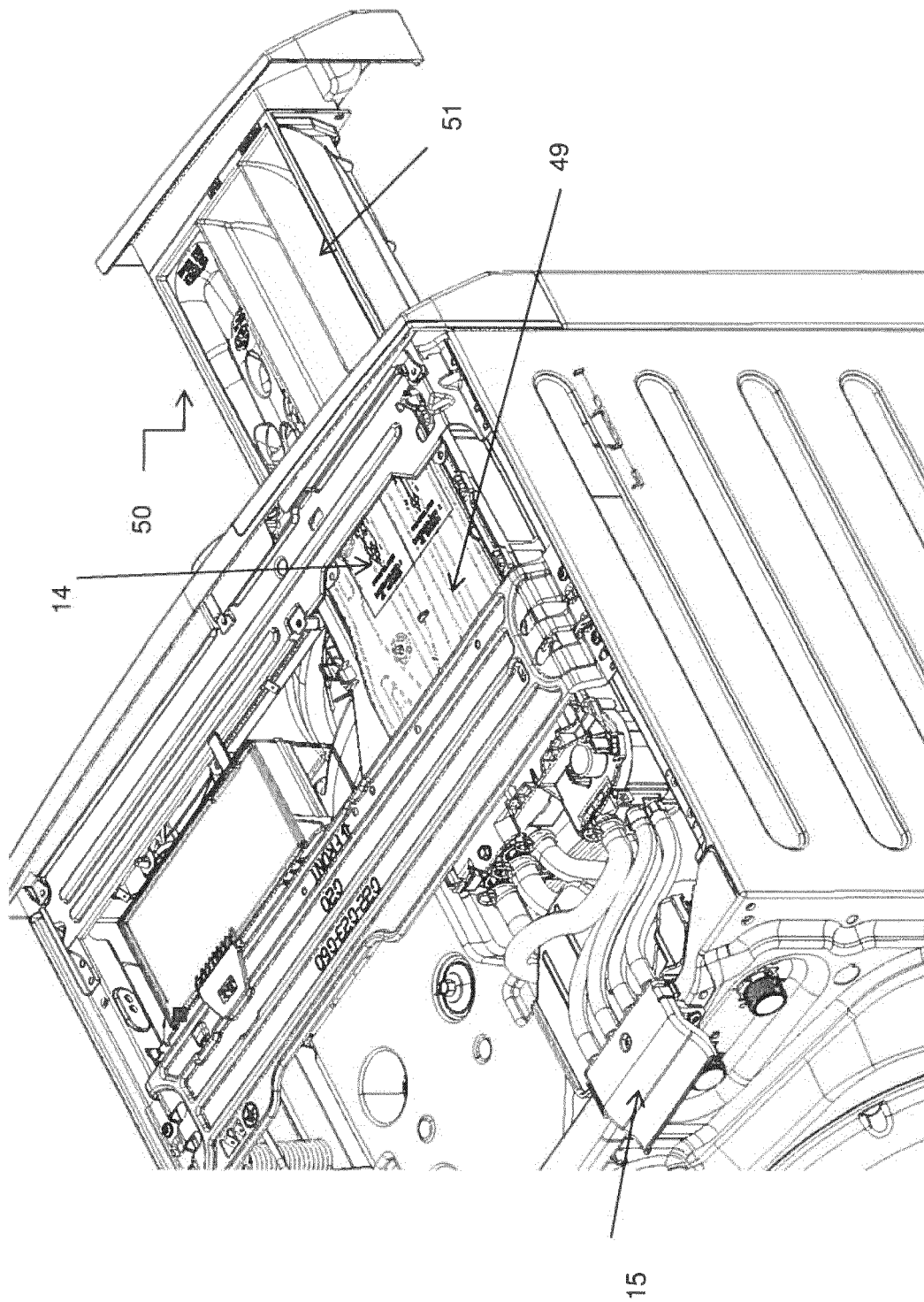


FIG. 17



EUROPEAN SEARCH REPORT

Application Number
EP 14 18 4704

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 2 196 574 A1 (LG ELECTRONICS INC [KR]) 16 June 2010 (2010-06-16) * paragraph [0033] - paragraph [0049]; figures 3, 4 * * paragraph [0056] - paragraph [0061]; figures 5, 6 *	1,3,6,7, 13-15	INV. D06F39/02
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A	EP 2 719 815 A1 (LG ELECTRONICS INC [KR]) 16 April 2014 (2014-04-16) * paragraph [0025] - paragraph [0040]; figures 1-3 *	1-15	
A	WO 2014/037123 A1 (ELECTROLUX LAUNDRY SYSTEMS SWEDEN AB [SE]) 13 March 2014 (2014-03-13) * page 7, line 8 - page 9, line 24; figures 2-4 *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			D06F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 29 October 2014	Examiner Sabatucci, Arianna
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 14 18 4704

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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