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(54) **Device for housing washing agents in a washing machine with built-in air break**

(57) A device for housing detergent agents and/or other agents which can be used in washing articles, more particularly articles of laundry, in the washing tub of a washing machine. Said device being of the type comprising a body (20) of the device and housing means for one or more washing agents wherefrom each washing agent is selectively removed by means of a corresponding flow of water in order to be transported to the tub of the washing machine. The device also comprises a conduit (77) for feeding a flow of liquid to said washing tub, which conduit has an opening (82) for release of the water and is shaped such as to define an air break. This air break conduit being formed directly in the body (20) of said device.

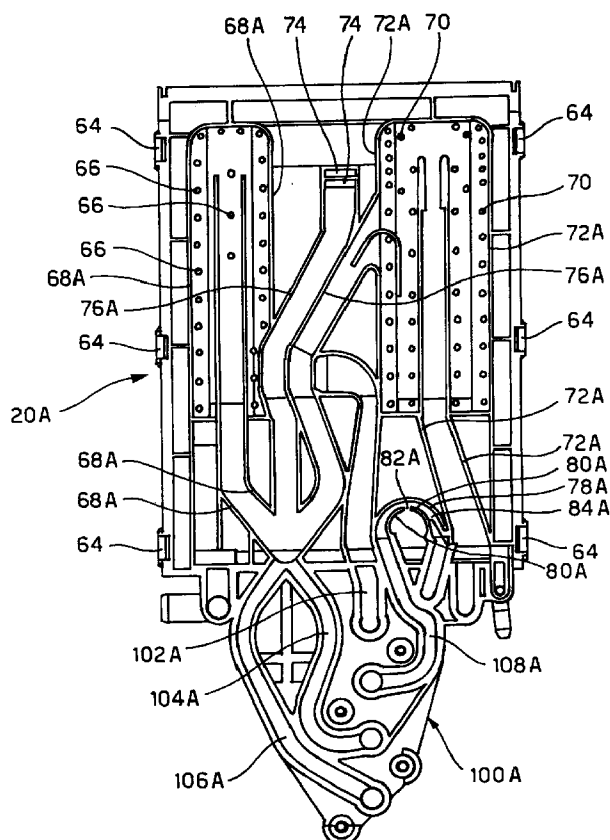


FIG. 7 A

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Description

[0001] The present invention relates to a device for housing detergent agents and/or other agents which can be used in washing articles, more particularly articles of laundry, to be fed selectively into the washing tub of a washing machine.

[0002] This kind of device for housing detergents, usually known as "drawers" in the field, generally comprises a body of the device which defines one or more compartments for containing a respective washing agent, and corresponding perforated conduits, which are provided above said compartments for conveying and allowing to fall therein corresponding flows of water in order to allow removal from each compartment of the washing agent housed therein to feed it towards the washing tub.

[0003] The transfer, by the aforementioned drawer, of the flows of water filled with detergent substances and the like to the washing tub of the washing machine is performed via a union formed in the back of the body of the drawer, where all the flows of water entering said drawer are conveyed by falling.

[0004] In washing machines of the known type and more particularly in washing machines of the "washer-dryer" type, that is to say of the type wherein drying of the garments is performed directly in the washing tub at the end of this washing operation, it is necessary to add to said washing tub, on the occasion of said drying, a limited flow of water intended to be dispersed appropriately over the garments in order to encourage their proper drying.

[0005] In a usual manner, this flow of water to be used in drying is controlled by means of an appropriate solenoid valve and is conveyed, passing through an air break, to a sprayer part which sprays said water evenly over the laundry in the tub of the machine.

[0006] In a known manner, the aforementioned air break is none other than a safety device which allows the water supply system to be safeguarded against pollution of drinking water caused by the possible return to the same system of water used in these washing machines, which water, being filled with detergents and other substances removed from the articles being washed, could, due to malfunctioning and excessive pressures created in the washing drum of the machine, be dispersed in the drinking water of the water supply system, soiling it and polluting it.

[0007] According to a known configuration, said air break of the conventional type consists of a small plastic block defining a short tubular section with an arched configuration placed on a vertical plane and having on the lower side an opening for the falling into the tub of the possible return flow towards the water supply system.

[0008] Said air break device in the water conduit intended for wetting during the phase of drying is made in the form of a single part, separated from said drawer

for housing the detergents, which is attached to said drawer by means of an axially perforated pin which is inserted in a corresponding hole in a wall of the same drawer.

5 [0009] Said pin for attachment of the air break, in addition to providing the support for the same air break, allows passage of the water, in output from the lower opening of the air break, towards the back of the drawer for consequent discharge in the tub via the aforementioned union already used by the flows for removing the detergents.

10 [0010] An air break device made in this way is formed from two shaped parts in a plastic material, produced by moulding, which are welded to match each other, forming said conduit defining said air break.

15 [0011] In order to obtain the aforementioned air break device and more particularly its aforementioned shape, fitted with said hollow pin for simultaneous attachment and discharge of water to said detergent drawer, special moulds must be made having a configuration which is complex and expensive to produce.

20 [0012] Moreover due to the fact that the hole in said drawer, suitable for receiving said pin for connection of the air break, is provided at the time of moulding of the body of the drawer in the rear vertical wall of the same, use is required, for the production of a body of the drawer made in this way, of a mould which, in addition to the normal components of shaping which extend in a substantially parallel direction to the walls to be made of said body of the drawer, has an appropriate segment which is mobile, perpendicularly to said rear wall of the drawer, which allows the aforementioned hole for attachment of the air break device to be made.

25 [0013] Thus for this type of drawer a moulding device has to be used having mobile parts and which is therefore definitely complex and high in cost.

30 [0014] Moreover, for the connection of said air break to the feed solenoid valve and the sprayer in the tub, as things stand at present two separate pipes in a flexible material have to be used, whose ends must be inserted by pushing by the operator onto special nozzles of the air break device and, respectively, onto that of the solenoid valve and that of the sprayer, and as many as four clips also have to be used and which must be tightened around said hoses, at the ends of attachment of the latter, in order to ensure a firm and hermetic coupling of the hoses for conveying to said nozzles of the devices to be connected.

35 [0015] The present invention, as disclosed in claim 1 attached hereto, is aimed at overcoming at least some of the aforementioned disadvantages and problems present in the prior art.

40 [0016] The dependent claims refer to special and advantageous embodiments of the present invention.

45 [0017] More particularly, due to the fact of forming said air break directly in the body of the drawer, it is possible to avoid the need to provide separate moulding devices for the body of the drawer and for the air break respec-

tively.

[0018] The complex moulds for forming said shape of the air break are thus eliminated and also for making the drawer it is possible to use a moulding device of simpler manufacture, without mobile parts for forming the previous hole for perpendicular connection to the rear wall.

[0019] The forming of the air break built directly into the drawer of the washing agents also avoids the need for forming a special weld between the two moulded parts defining the air break, the latter being in fact incorporated in welds which would have to be made in any case for forming said body of the drawer.

[0020] In this way considerable simplification and reduction in the costs of production of said air break are achieved.

[0021] The need for the operator in charge of assembling the washing machine to engage said air break device with the body of the drawer is also avoided, with a consequent saving in times of assembly of the machine and relevant costs.

[0022] Moreover it is no longer necessary to provide areas of storage, transport and accounts for managing the air break devices to be mounted on the washing machines.

[0023] Further features and advantages of the present invention will in any case be made clearer on reading the following description, relating to a preferred embodiment of the invention, to be read with reference to the accompanying drawings, in which:

Figure 1 is a schematic perspective view of a washing machine;

Figure 2 is a side view, partially sectioned, of the washing agent container device, according to a preferred embodiment of the present invention, coupled with relative valve means;

Figure 3 is a front view of the washing agent container device according to the preferred embodiment of the present invention, again coupled with relative valve means;

Figure 4 is a view from above of only the washing agent container device according to the preferred embodiment of the present invention;

Figure 5 is a side view of the rear side of only the washing agent container device according to the preferred embodiment of the present invention;

Figure 6 is a view of the rear side of only the washing agent container device according to the preferred embodiment of the present invention;

Figures 7A and 7B are respectively a view from above and from below of the components which are made to face each other and are welded to define

the upper part of the body of the washing agent container device according to the preferred embodiment of the present invention;

Figure 8 is a detail relating to only the air break of Figure 7A;

Figure 9 is a sectioned view relating to only the air break, which is taken along line 9-9 of Figure 4.

[0024] Figure 1 shows a washing machine 10 for domestic use of a wholly common type. It comprises a front opening 11 fitted with a closure door 12 for loading laundry inside the laundry container drum or washing tub of the machine, and a device or drawer 13 for the selective sending of detergent agents and/or other agents which can be used in washing laundry articles to the washing tub of the machine.

[0025] The washing machine also comprises a timer 14 for setting a programmed washing cycle, a knob 15 for controlling the washing temperature and any other control push-buttons 16.

[0026] For the selective supply of detergents or other additives to the washing tub of a washing machine, suitable valve means (not shown in Figure 1) send selectively, under the control of the timer 14, a respective flow of water to each of the compartments of the detergent container drawer to remove detergents or additives contained in these compartments and transport them into contact with the laundry in the washing tub.

[0027] As is clear with reference to Figures 2 and 3, the device for housing the washing agents or drawer comprises a body of the device, denoted overall by reference numeral 20, which is composed of a fixed part 22, to be connected rigidly to the frame of the washing machine, and a mobile part 24 which can be extracted outside of the washing machine as shown in Figure 1, for the deposit of various washing agents, such as detergents, bleach and fabric conditioner, in respective housing means in the form of compartments or basins or the like.

[0028] More particularly, as shown by Figure 1, the drawer shown here comprises two end compartments 26 and 28 respectively for housing the quantity of pre-wash and washing detergent and the compartments 30 and 32 for housing the quantity of bleach and fabric conditioner respectively.

[0029] It must nevertheless be understood henceforth that the teachings of the present invention are not to be considered in any way limited to this type of washing agent container drawer and could very well be applied also in other types of devices for housing these washing agents, also of the type not using in any way mobile extractable parts, as also the fact that these teachings can be used in washing agent container devices which can be fitted to other types of washing machines intended to work on articles of any kind, different from those mentioned hitherto.

[0030] In the present embodiment the fixed part 22 of the body of the drawer comprises a lower part 31 in the form of a substantially prismatic container housing the mobile washing agent container part, which is open on one side for inserting and extracting said mobile part 24.

[0031] The relative movement of the mobile part 24 in relation to the fixed part is achieved thanks to the guide 34 of the fixed part and respectively the surface 36 of the mobile part designed to slide on this guide 34 of the fixed part, shown by a dotted line in Figure 2.

[0032] Said lower part of said fixed part 22 defines therefore an internal chamber 38 for holding the flows of water passing into said device for housing the washing agents, which discharges them directly into the washing tub of the washing machine via the lower union 40.

[0033] In this Figure 2 and in Figure 3 it is also shown how, to the body of the device for housing the washing agents, and in particular to the fixed part of the latter, a valve device 42 is also directly attached, suitable for sending, in a selective manner under the control of the timer and washing programme of the machine, a predefined flow of water to each of the compartments of the drawer for removing and transporting to the washing tub the detergent or other washing agent contained therein.

[0034] As shown in Figure 2, the valve device adopted here comprises, in addition to a manifold conduit or element 44 at one of whose ends a pipe or conduit 206 is attached by threaded coupling 46 for feeding water of the water supply system, a first, a second and a third valve respectively 48, 50 and 52, whereof the Figure clearly illustrates the lower part wherein the electrical winding is housed for actuating the respective gate valve.

[0035] In order not to overload said Figure 2 excessively, it shows, sectioned, only the valve element 52; the other two valve elements 48 and 50 are in any case wholly similar structurally and functionally to this valve element 52.

[0036] The valve element 52 of the valve means therefore comprises, in a known manner, a membrane gate valve 54 shown in a backward position in Figure 2, which can be actuated to close the aperture 56 of passage of the flow, to allow the passage of water from the manifold 44 towards a corresponding compartment of the device for housing the washing agents, as shown by the arrows F in Figure 2.

[0037] The gate valve 52 has a circular central hole formed at the upper end 60 with axial passages 62 of a magnetic rod 58 driven to move by said electrical actuation winding 63, and is also attached externally to the internal surface of the chamber of the valve element.

[0038] As shown in Figure 2, the external containing framework 202 of the machine has at the rear an access 204 for allowing a connection of the conduit or pipe 206, for feeding external mains water into the machine, to said valve means of the assembly.

[0039] Referring also to the subsequent Figures 4, 5 and 6, it can be seen how, in an advantageous manner,

the device for housing the detergents has a portion with a substantially flattened configuration 100 suitable for supporting said valve means 42 which feed the flows of water to said device for housing the washing agents.

[0040] Said portion 100 is made in one single part with the body of the device for housing the detergent agents and extends from the rear side which is opposite the one wherefrom the mobile part 24 of the drawer is extracted.

[0041] Said portion 100 therefore defines means for supporting the valve means which extend from said body of said drawer of the washing agents, which are shaped such as to position the inlet of the flow of water to said valve means at said access 204 for the external conduit of the mains water provided in said external covering framework for allowing easy connection of said external conduit 206 for the external mains water to said inlet of the valve means.

[0042] As shown in Figure 4, in the portion 100 conduits 102, 104, 106 and 108 are formed in relief in relation to a support surface 109, whereof the conduits 102, 104, 106 are for conveying the flows of water towards said means for housing the washing agents, that is to say respectively towards the bleach compartment, towards the prewash compartment and towards the washing compartment, while said conduit 108 conveys a flow of water towards an air break device which will be described in greater detail hereinbelow.

[0043] As shown in Figure 5, the support portion 100 has nozzles 110, 112, 114, 116 extending below from the support surface 109, provided to receive by insertion a corresponding emission nozzle of the valve means 42.

[0044] Advantageously means are also provided for attaching the valve means 42 directly to said support portion 100.

[0045] Said means for directly attaching the valve means to said support portion 100 comprise holes 118 for inserting appropriate attachment screws, only one of the latter, denoted by reference numeral 119, being shown in Figure 2. Said holes 118 have an axis parallel to the axis of the feed nozzles 114, 112, 116 and connection to the valve means. This enables performing of the connection between valve means and support portion by acting in one single direction of coupling and does not therefore require the operator to move the part in order to connect and attach the valves to the device.

[0046] Said means of attachment between valve means and support portion also comprise a bracket 120 extending downwards for supporting said valve means and having a shaped end 122 defining a housing suitable for holding a correspondingly shaped part of the valve means.

[0047] As shown, said bracket 120 for supporting said valve means is made in one part with the end portion 123 at the free end of the support portion 100.

[0048] On the same portion 100 for supporting the valve means, means are also provided for attaching the

washing agent container device to the frame of the washing machine, which are here in the form of holes 124 for the insertion of corresponding attachment screws (not shown) which can be screwed in the same direction of insertion of the screws for attachment of the valve means 42 to the support portion 100. Other means of attachment to the framework comprise holes, only one denoted by 125 being shown in Figure 2, for suitable attachment screws, which are positioned on opposite sides of the lower part 31 of the fixed body of the detergent container device.

[0049] Said portion 100 for support and conveying extends from the upper edge of the body of the device substantially parallel to the upper portion of covering of the latter.

[0050] In said support portion 100 a nozzle 126 is also formed, extending below and intended for attachment of a hose.

[0051] The conduit having the function of air break sends the flow of wetting water towards the washing tub of the machine through this very nozzle 126. More particularly said feed nozzles 110, 112, 114, 116, formed in the support and conveying portion, are aligned one with the other and the line of alignment of said feed nozzles formed in the support and conveying portion is oriented perpendicularly to the side of the body of the device wherefrom said support and conveying portion extends.

[0052] According to a further advantageous feature, said manifold 44 has a longitudinal axis L, which axis is oriented parallel to the longitudinal axis along which the mobile part of the drawer is extracted in order to extend at the access opening 204 provided in the wall 202 of the external framework of the machine opposite the one 202' of extraction of said mobile part of the drawer.

[0053] The fixed part 22 of the body of the device for housing detergents comprises, in addition to the lower component defining the collection chamber 38, an upper covering component 39 which is attached to the lower part 31 by means of snap hooking tabs 64 on the two sides of the upper component, coupling in an attachment action with corresponding surfaces provided on the lateral edge of the lower component of the body of the device.

[0054] In turn the upper component 39 of the body of the detergent container device is formed by two parts 20A and 20B, shown in the subsequent Figures 7A, 7B, which match each other and are made integral by welding, generally performed with a hot blade.

[0055] The rear support portion 100 forms part of this upper portion and is therefore also formed by two parts, 100A and 100B respectively, belonging to the components 20A of Figure 7A and 20B of Figure 7B respectively, which have respective conduit portions 108A and 108B for defining the conduit for conveying the flow towards the air break, and conduit portions 102A, 104A, 106A on the component 7A and 102B, 104B and 106B on the component 7B for defining the conduits for feeding flows of water to the compartments of the washing

agents.

[0056] In the upper component 20 of the body of the device parts for distributing the flows of removal water to the various compartments housing the washing agents are also formed in a known manner.

[0057] Said distribution parts comprise, as illustrated in Figure 7A which shows the underlying part of the upper component, a first plurality of holes 66 designed to allow to fall, in a distributed manner, into said compartment for the prewash, a flow of liquid conveyed via a conduit defined by the shaped walls 68A and 68B respectively of Figures 7A and 7B.

[0058] Said distribution parts also comprise, as shown in Figure 7A, a second plurality of holes 70 designed to allow to fall, in a distributed manner, into said washing compartment, a flow of liquid conveyed via a conduit defined by the walls 72A and 72B of the two parts of Figures 7A and 7B respectively.

[0059] The aforementioned distribution parts comprise finally, as shown in Figure 7A, a pair of openings 74 designed to allow to fall, in a distributed manner, into said compartment for the fabric conditioner, a flow of liquid conveyed via a conduit defined by the walls 76A and 76B of the two parts of Figures 7A and 7B respectively.

[0060] Referring again to the aforementioned Figures 7A and 7B and also to the enlarged details of Figures 8 and 9, it can be seen how the aforementioned air break conduit, denoted overall by reference numeral 77, for feeding a flow of liquid for wetting the laundry during drying in said washing tub, in addition to being shaped such as to define a real air break, is provided with an opening for the falling of the water of a possible flow of return towards the mains. As shown, said air break conduit 77 is advantageously formed directly in the body of said washing agent container device.

[0061] The embodiment of an air break shown here allows avoidance of the need to form a separate air break device, with a saving in the costs of production and assembly for attachment of the same to the body of the drawer and for the connection of hoses in rubber for conveying the water and relative clamping clips, as already referred previously.

[0062] Said conduit 77 defining the air break has an arched shape and is in particular made by means of special walls and respectively on the part 7A and 7B of the upper component of the body of the drawer.

[0063] More particularly this is the wall 78 A on the part 7A made to match during welding the wall 78B on the part 7B to define the external side 78 of the arched air break conduit and of the wall 80A made to match during welding the wall 80B to define the internal or concave side 80 of the air break conduit.

[0064] In the walls 80A and 80B respective cavities 82A, 82B are also formed in a median position in relation to the respective walls and corresponding one to the other during joining of the components 20A and 20B, which are suitable for defining said opening for release of the water from the air break which we will

subsequently denote overall by reference numeral 82.

[0065] The horizontal portions 84A and 84B of the part 7A and of the part 7B also define the back side and covering side of the air break respectively.

[0066] It must nevertheless be understood that other configurations can also be used for said air break.

[0067] According to the embodiment shown here, said conduit defining the air break 77 lies on a horizontal plane, with said opening for the release of water 82 which lies in turn on a vertical plane.

[0068] This horizontal arrangement of the air break is undoubtedly advantageous in relation to the need to minimise or totally remove the leakage of water being fed via the air break.

[0069] Indeed it is well known that, although the function of the air break is that of allowing to fall through its opening for release or leakage inside the washing machine that dirty water which would tend to escape in an inappropriate manner towards the water supply system, polluting it, it is not possible to obtain, during normal feeding wherein the flow of water passing through the air break is albeit projected with a high pressure and in any case definitely higher than that with which any dirty water returning to the mains is projected, total elimination of any leakage or seepage through the opening 82 for release from the air break.

[0070] In traditional air break devices, which are arranged vertically with the internal wall pierced by the air break in a lower position compared to the external wall of the same, the force of gravity is partly responsible for these leaks of water during normal feeding, the latter tending to push part of the flow towards the release opening formed in the lower wall of the air break.

[0071] With the present air break, wherein the release opening is situated on the internal side which in this case is on a vertical plane, the force of gravity no longer pushes the flow of water towards the release opening, but instead towards the back side 84A formed by the part 7A of the air break conduit. Thanks to the present embodiment it is therefore possible to reduce and even eliminate completely the leaks in relation to the air break devices arranged vertically of the art known hitherto.

[0072] Referring in particular to Figures 8 and 9, it is then possible to see further how said opening for the release of the water 82 of the air break communicates with a passage 86, formed in said body of said device, which conveys the water leaks from the air break to said washing tub of the washing machine.

[0073] The passage 86 for conveying water in output from said air break extends substantially vertically and is bordered on a front side by a vertical wall 89 and on the opposite side by the internal side of the air break conduit 80 which extends below with an arched portion 88 and ends below with a hole 90 for transfer to the chamber 38 for collecting the flows of water in output from said device and from the latter to the washing tub of the machine.

[0074] In Figure 8 the arrows A indicate the flow of water running normally along the air break conduit; from the figure it can be seen that, in normal conditions, the flow of water A coming from the valve element 52 (not shown in Figure 8) passes between the walls 80 and 78 of the air break and is accelerated at the leakage hole 82, thanks to the narrowing of the passage between said walls, and then flows out of the hole 126 of the lower nozzle 126 to be conveyed, via an appropriate hose (not shown) to be connected to said nozzle 126, towards the sprayer in the tub for wetting the laundry during drying.

[0075] It should also be observed that, in relation to the preferred embodiment shown here, the aforementioned valve element 52 admits a flow of liquid from the mains towards a short conduit suitable for defining an air break, while the other valve elements 50 and 48 are used, if actuated individually, to send a flow of water towards the compartment containing the quantity of detergent for the prewash and towards the one containing the quantity of detergent for actual washing and, if actuated together, to send the flow of liquid towards the fabric conditioner compartment.

[0076] In this version of the valve-detergent drawer assembly valves are not provided for sending water towards the bleach compartment which is therefore intended to be left unused and the relevant conduits blocked. Obviously nothing precludes the fact that this function of the bleach can also be activated, as also the fact that other valve elements can be excluded.

[0077] According to the preferred embodiment shown here, the flow of liquid passing through said air break is sent directly into the tub at the end of washing to allow wetting of the laundry during the operation of drying in the washing machine at the end of the washing phase. Nevertheless it is wholly clear that said air break could also be used for conveying flows of water also intended for other purposes.

[0078] It must obviously be understood that what has been written and shown with reference to the preferred embodiment of the present invention has been given purely by way of a non-limiting example of the principle claimed.

Claims

1. A device for housing detergent agents and/or other agents which can be used in the washing of articles, in particular articles of laundry, in the washing tub of a washing machine; said device being of the type comprising a body of the device and housing means for one or more washing agents from which each washing agent is selectively removed by means of a corresponding flow of water to be transported to the washing tub of the washing machine; the device being characterised in that a conduit (77) for feeding a flow of liquid to said washing tub, which is provided with an opening (82) for leakage

of the water and is shaped such as to define an air break for the flow of water which runs through it, is formed in the body (20) of said device.

2. A device according to claim 1, characterised in that said opening (82) for leakage of the water from the air break communicates, via a conveying passage (86), with said washing tub of the washing machine, said conveying passage (86) being formed in said body (20) of said device.

3. A device according to any one of the previous claims, characterised in that said conduit (77) defining the air break lies on a horizontal plane and in that said opening (82) for water leakage lies on a vertical plane.

4. A device according to any one of the previous claims from 2 to 3, characterised in that said body (20) of the device has a lower portion defining a chamber (38) for collecting the flows of water in output from said device which discharges directly into the tub for washing of the articles; and in that said conveying passage (86) of the air break discharges into said lower collection chamber (38).

5. A device according to any one of the previous claims, characterised in that means for supporting the valve means (42) extend from said body (20) of said drawer of the washing agents, said means for supporting the valve means (42) being shaped such as to position the inlet of the flow of water to said valve means (42) at an access (204) for the external conduit (206) of the mains water provided in the external covering framework (202) of the machine to allow easy connection to an external conduit (206) for feeding mains water to said inlet of the valve means (42).

6. A device according to claim 5, characterised in that said support means comprise an elongated portion (100) for supporting the valve means (42) for feeding one or more flows of water to said device for housing the washing agents, and in that one or more conduits (102, 104, 106, 108) for conveying the flows of water towards said means for housing the washing agents and/or said conduit (77) defining the air break are formed in said portion (100) for supporting the valve means (42).

7. A device according to claim 6, characterised in that said one or more conveying conduits (102, 104, 106, 108) have a respective feed nozzle (110, 112, 114, 116) directly connected to a corresponding emission nozzle of the valve means (42).

8. A device according to any one of the previous claims from 5 to 7, characterised in that means are

provided for directly attaching the valve means (42) to said support means.

9. A device according to claim 8, characterised in that said means for directly attaching the valve means (42) to said support portion (100) comprise one or more holes (118) for inserting attachment screws (119), said holes (118) having an axis parallel to the axis of the nozzles (110, 112, 114, 116) for feeding and connection to the valve means (42).

10. A device according to any one of the previous claims from 8 to 9, characterised in that said attachment means comprise a bracket (120) extending transversely to the support portion (100) for supporting said valve means and having a shaped end (122) defining a housing suitable for holding a correspondingly shaped part of the valve means (42).

11. A device according to claim 10, characterised in that said bracket (120) for supporting said valve means (42) is formed near the free end of the support portion (100).

12. A device according to any one of the previous claims from 6 to 11, characterised in that means for attaching the device to the washing machine are provided on said portion (100) for supporting the valve means (42).

13. A device according to any one of claims 5 to 12, characterised in that means for attachment to said support framework are provided on the body (20) of the drawer.

14. A device according to any one of claims 6 to 13, characterised in that said support and conveying portion (100) has a substantially flattened configuration.

15. A device according to any one of claims 6 to 14, characterised in that said conveying conduits (102, 104, 106, 108) of the support portion (100) lie substantially on the same plane.

16. A device according to any one of claims 6 to 15, characterised in that said support and conveying portion (100) extends from the upper edge of the body (20) of the device substantially parallel to the upper covering portion of the latter.

17. A device according to any one of the previous claims, characterised in that a nozzle (126) for release from said air break conduit towards the washing tub is made in said support portion (100).

18. A device according to any one of the previous claims, characterised in that said feed nozzles

(110, 112, 114, 116) formed in the support and conveying portion (100) and said nozzle (126) for release from said air break conduit towards the washing tub are formed on the lower side of the latter.

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19. A device according to any one of the previous claims, characterised in that said valve means (42) comprise a substantially cylindrical collecting chamber (44), having at one end an opening for feeding of the water coming from the external source, said collecting chamber (44) having a longitudinal axis oriented parallel to the longitudinal axis of the washing agent container device to extend at an access opening (204) provided in the wall (202) of the external framework of the machine opposite the one (202') of extraction of said mobile part of the drawer. 10 15
20. A device according to claim 7 or 19, characterised in that said feed nozzles (110, 112, 114, 116) formed in the support and conveying portion (100) are aligned one with the other. 20
21. A device according to claim 20, characterised in that the line of alignment of said feed nozzles (110, 112, 114, 116) formed in the support and conveying portion (100) is oriented perpendicularly to the side of the body (20) of the device wherefrom said support and conveying portion (100) extends. 25 30
22. A device according to any one of the previous claims, characterised in that said support and conveying portion (100) and the body (20) of the device for housing the detergent agents are made in one single part. 35
23. A device according to any one of the previous claims, characterised in that said air break conduit (77) has an arched shape and in that said hole (82) is formed on the concave side of the air break conduit (77). 40
24. A device according to any one of the previous claims, characterised in that said body (20) of the device has a substantially flat upper covering part (20B) and a substantially flat part (20A) having openings for the transfer of flows of water coming from the valve means (42) to respective means for housing the washing agents and in that said conduit (77) defining the air break and said support portion (100) defining one or more conveying conduits (102, 104, 106, 108) are formed by the reciprocal coupling between said parts for covering (20B) and for transfer (20A) of the removal flows. 45 50 55

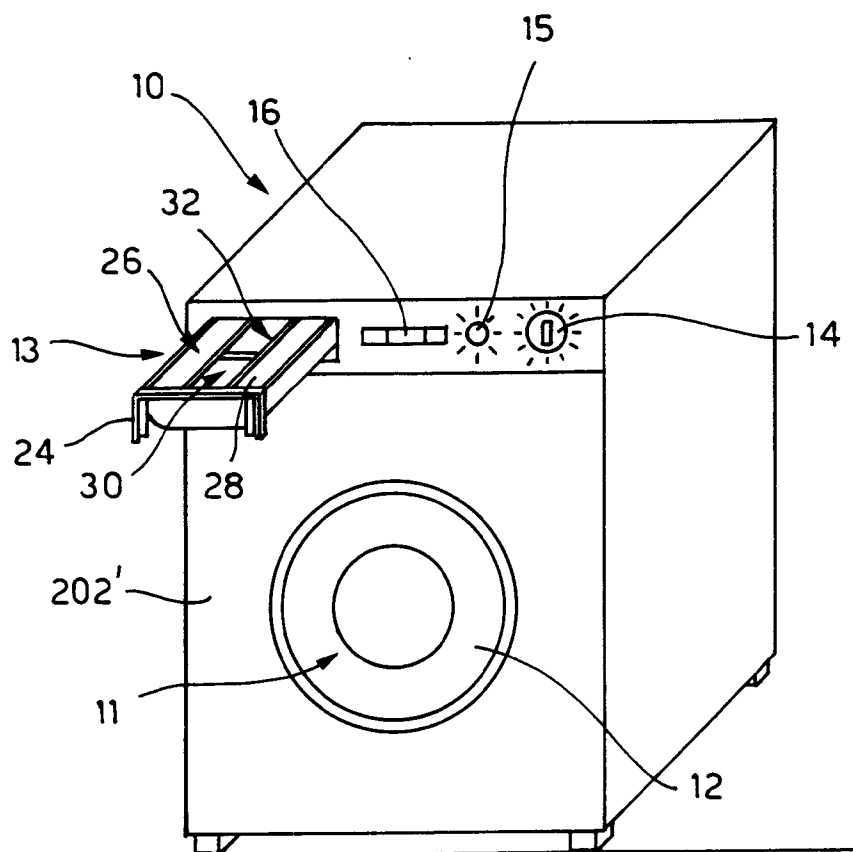
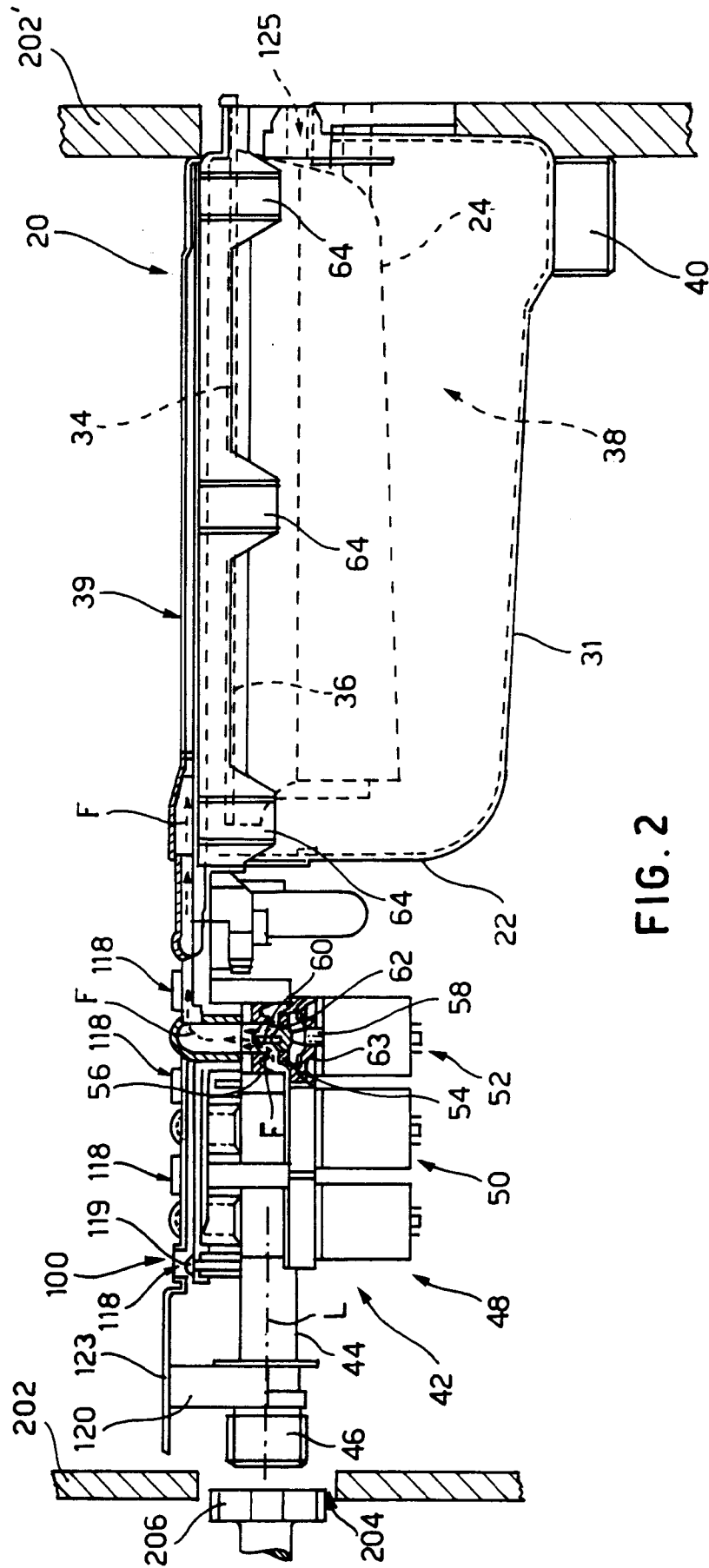


FIG. 1



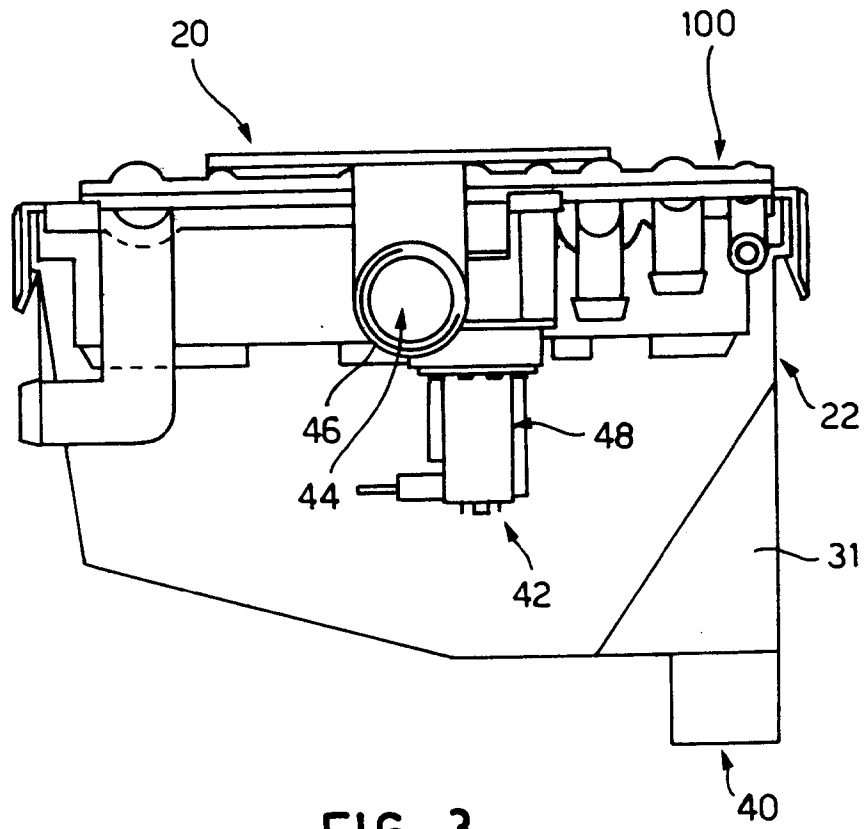


FIG. 3

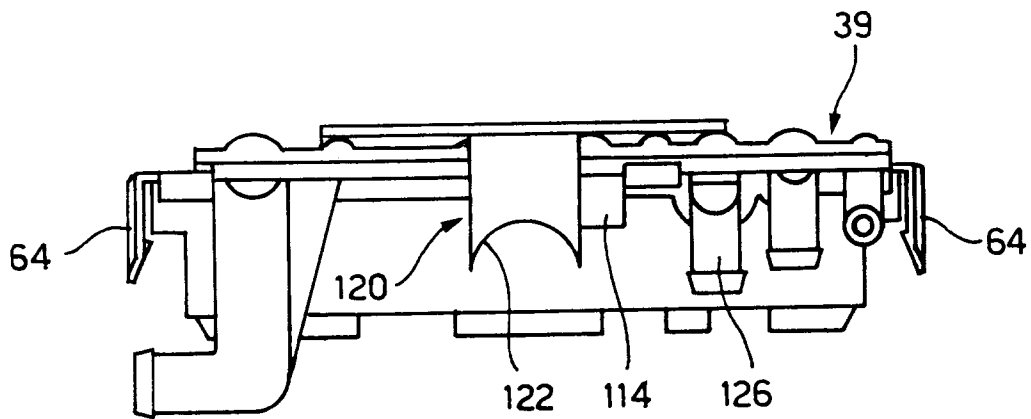


FIG. 6

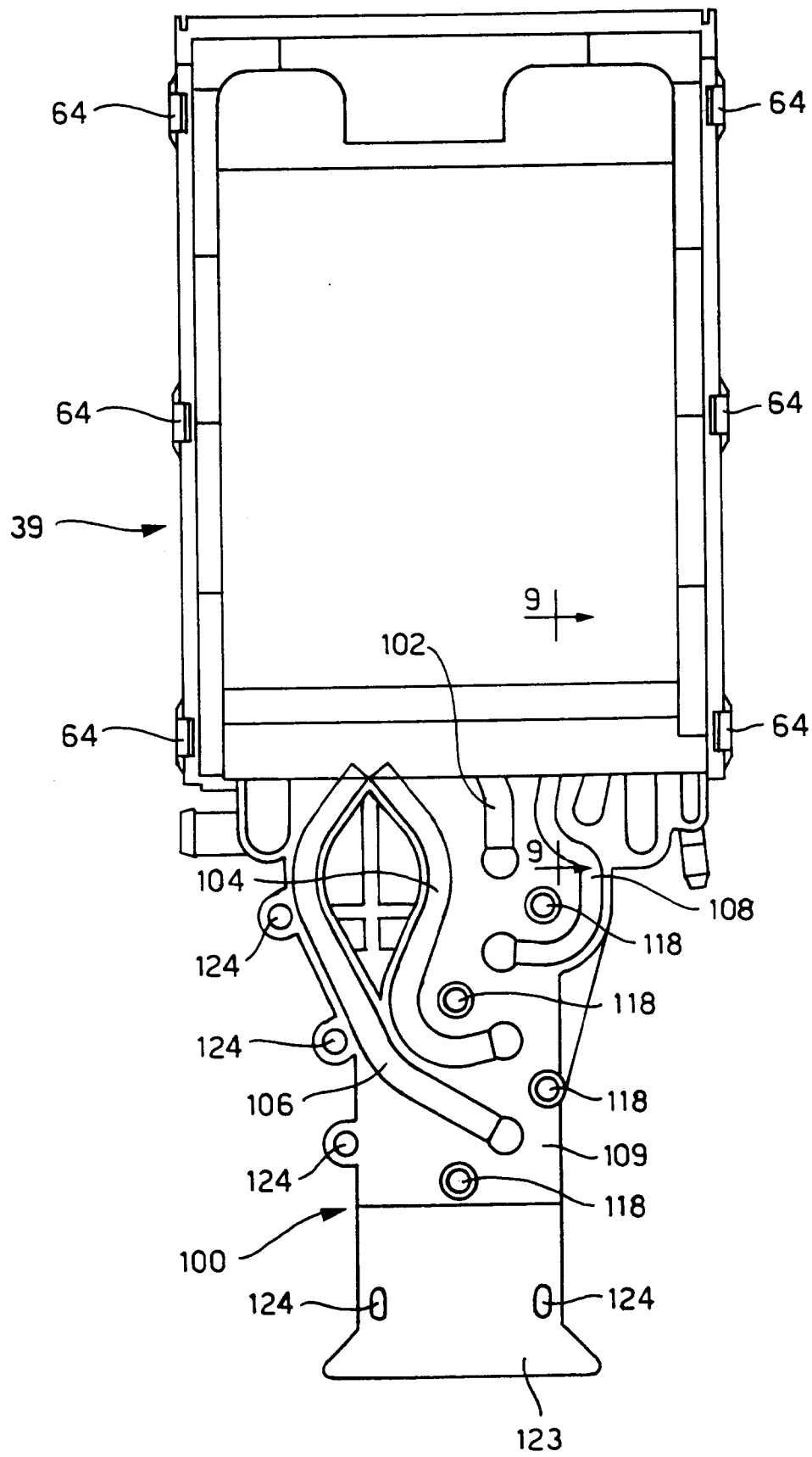


FIG. 4

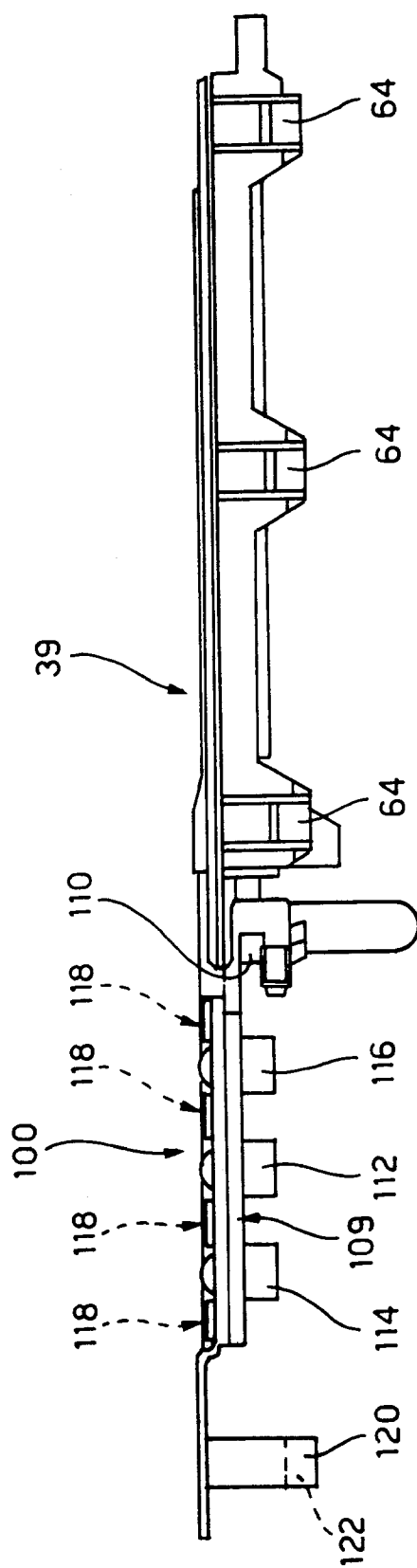


Fig. 5

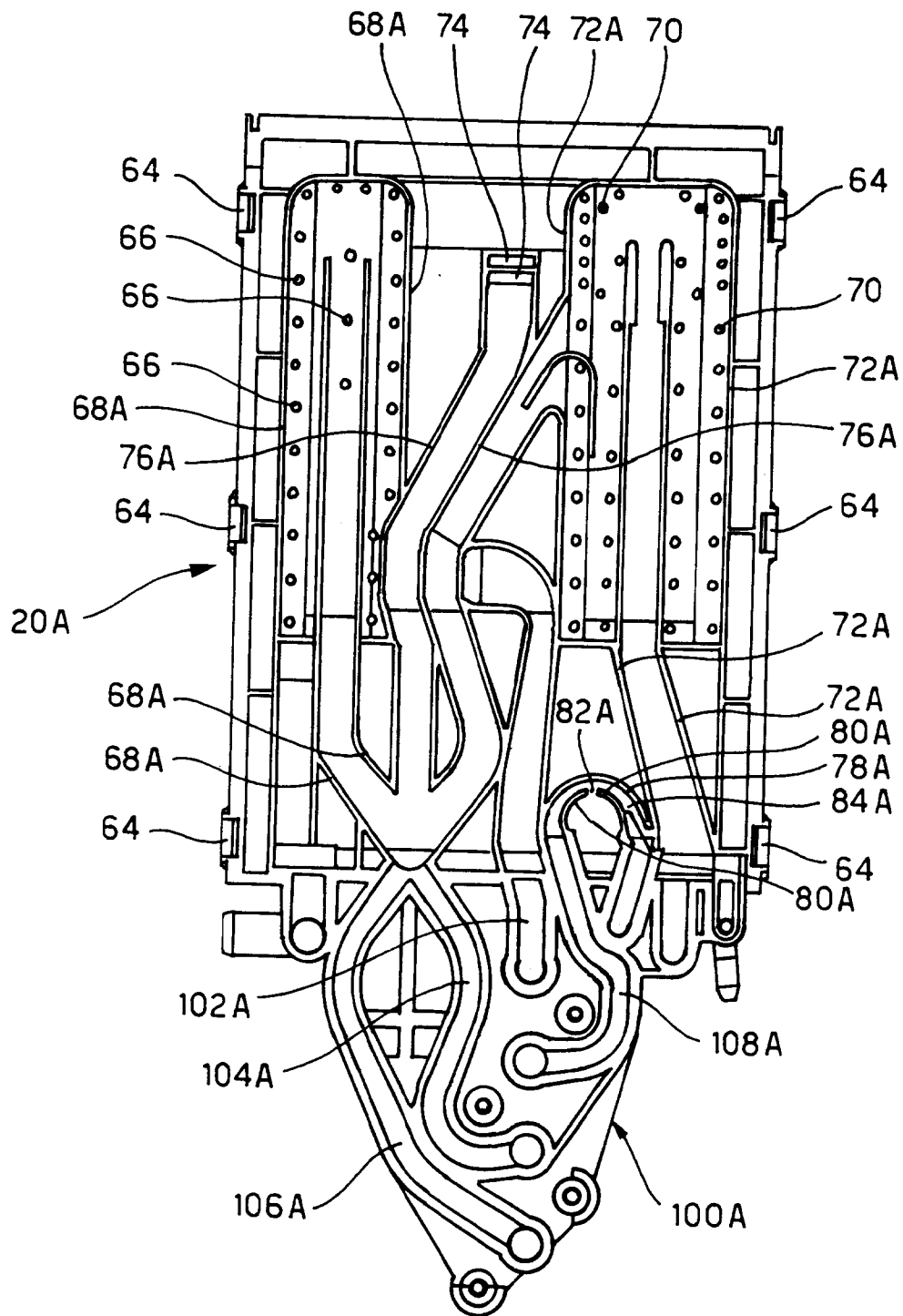


FIG. 7 A

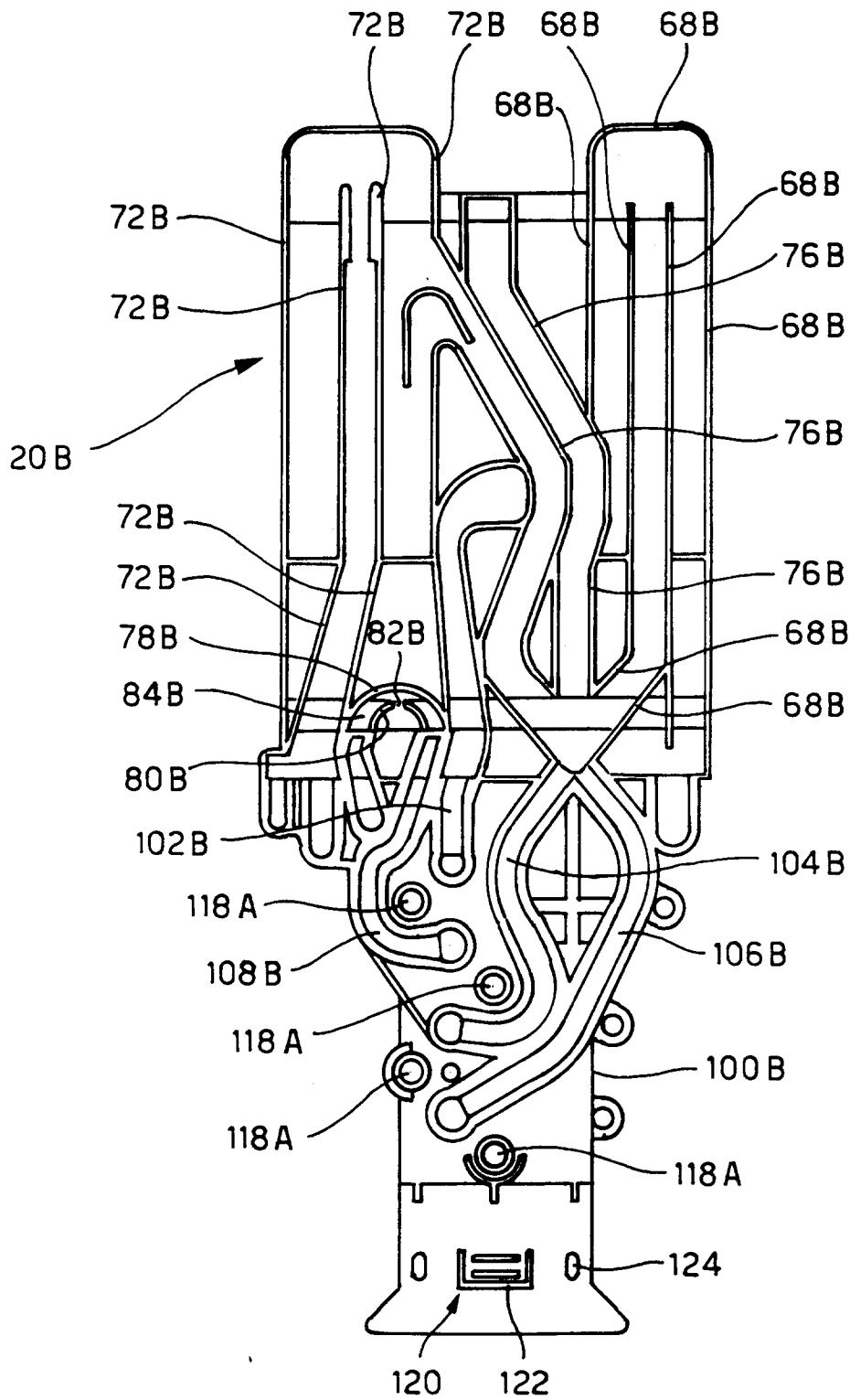


FIG. 7 B

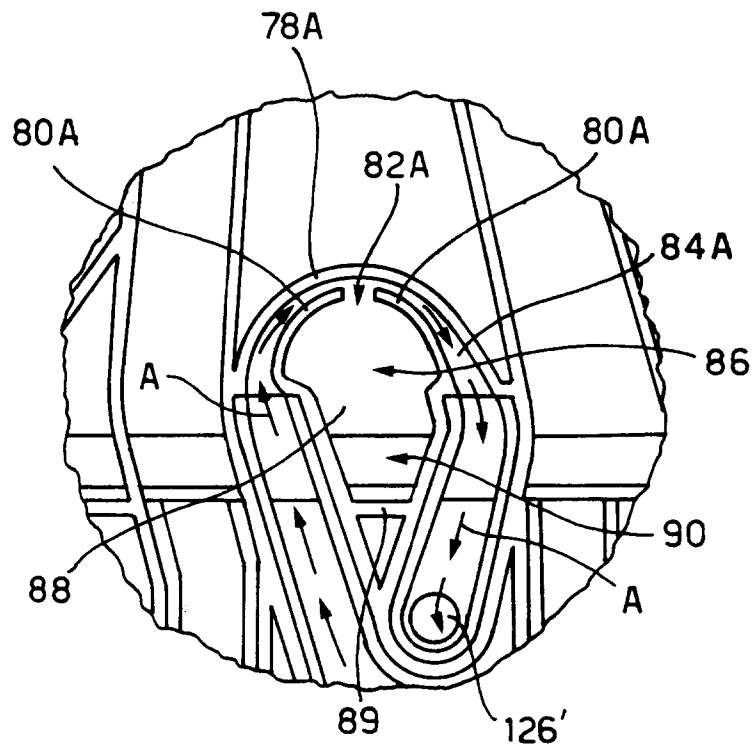


FIG. 8

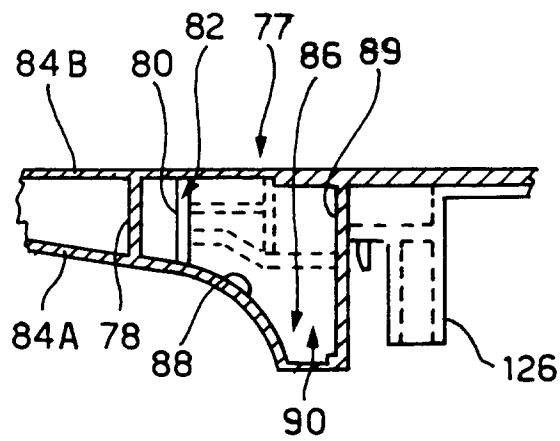


FIG. 9