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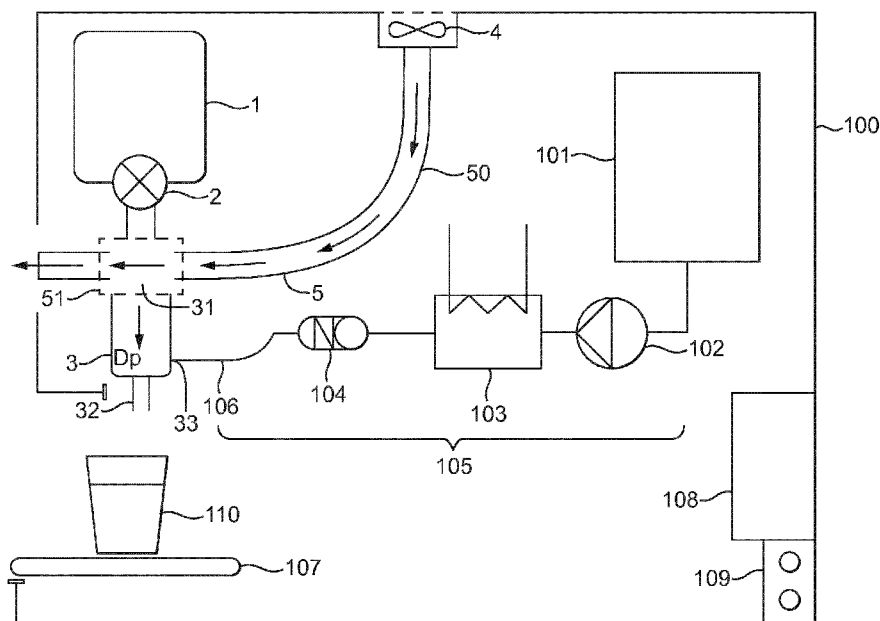


FIG. 1

(57) Abstract: The invention concerns a beverage preparation machine (100) comprising : - at least one container (1) for storing a beverage ingredient in bulk, - at least one dosing unit (2) for metering and dispensing a metered dose of beverage ingredient from the container, the bottom of the container cooperating with the dosing unit in order to supply beverage ingredient to the dosing unit, and the dosing unit (2) comprising a housing () and a dosing drawer able to slide longitudinally in and out of said housing (3) through the front end (34) of the housing between a metering position and a dispensing position respectively, - a water supply (105), - at least one beverage preparation chamber (3), said chamber being positioned under the dosing unit, the top (31) of said chamber being opened to receive the dose of beverage ingredient from the drawer of the dosing unit and said chamber being configured to receive water from the water supply, - a blowing device (4) configured for supplying a flow of air in the machine, and - an air conduit (5) to guide the flow of



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BEVERAGE DISPENSER

Field of the invention

The present invention relates to beverage dispensers preparing beverages from a beverage
5 ingredient stored in a container and from which a dose of beverage ingredient is dispensed
into a beverage preparation chamber to be mixed with a diluent.

Background of the invention

Many beverages like espresso and other coffee beverages, milk beverages, chocolate
10 beverages, ... are often prepared by mixing a beverage powder with a diluent. The beverage
powder is usually stored in a tank or canister provided with a dosing device in order to
deliver a dose of beverage powder in a mixing chamber supplied with a diluent, usually hot
water.

The tank or canister of powder is usually placed above top opened mouth of the mixing
15 chamber and a dosing device like a screw, a drawer or an auger doses and delivers the
powder which falls in the chamber.

During the beverage preparation and depending on the technology used to mix the powder
with the diluent (whipper, jet, baffles, ...), strong agitation of liquid can happen which induces
a lot of mist and humidity, a part of which rises up to the top of the chamber and out of the
20 chamber. Humidity can settle on the internal walls of the beverage machine positioned
above the chamber, in particular this humidity can reach the device dosing the beverage
ingredient above the chamber. The effect is drastic because humidity reacts with residues of
beverage ingredient, most particularly if the beverage ingredient is soluble, and blocks this
device if it is not regularly cleaned. Humidity can carry beverage ingredient out of the
25 chamber too and dirty the internal walls of the machine.

It is known to use an extractor hood at the top of the chamber and to connect it to an
evacuation fan in order to suck steam and powder fines flying above the chamber during the
beverage preparation. The extractor hood avoids that steam flows up to the powder dosing
30 device and the powder tank which would lead to a caking of the powder in these devices.
The extractor hood avoids that fines of powder fly in the internal housing of the beverage
preparation machine too. Yet, extractor hoods usually simply consist in an air sucking
opening above the mixing chamber, and as a result, there is no real control of the path for air
above the chamber. Then, to be efficient, extractor hoods are usually used with a powerful
35 fan to guarantee that humidity is sucked, but the powerful generated flow of air sucks
humidity and powder indifferently. It becomes necessary to provide a trap for powder and to
regularly clean said trap or the machine to remove sucked powder therefrom.

Another solution consists in blowing air inside the chamber along the direction of fall of the powder in the chamber and then preventing mist and humidity from rising through the top of the chamber like in US 4,194,651 or US 2,755,000. Yet the machines implementing this solution are not compact because they require additional vertical place to orient the flow of air inside the mixing chamber.

EP 2 000 065 solved this drawback and proposed to guide air across the inlet opening of the chamber and perpendicularly to the center axis of the inlet opening to generate a venture effect sucking off steam or other humidity from the chamber. The device comprises a controller synchronizing the operation of the air blowing means and the operation of the dosing device such that the blowing means are not active when the dosing device allows an ingredient dose drop in the mixing chamber.

A drawback of this solution is that the operation of the air blowing means – either activation or stopping – presents a certain inertia. As a result, although the controller has deactivated the air blowing means, usually a fan, a flow of air still moves in the air conduit that leads to the top opening of the chamber. As a result, if dosing of powder has been initiated simultaneously, a part of the powder being dosed is blown by air before it reaches the chamber. This part of the powder is carried by the remaining flow of air downstream in the air conduit and dirties the internal parts of the machine. As a result, the complete dose of powder does not reach the powder inlet, and dosing is inconsistent, and powder dirties the machine.

An object of the invention is to address at least some of the drawbacks of the prior art beverage preparation machines or at least to provide an alternative thereto.

Summary of the invention

In a first aspect of the invention, there is provided a beverage preparation machine comprising :

- 30 - at least one container for storing a beverage ingredient in bulk,
- at least one dosing unit for metering and dispensing a metered dose of beverage ingredient from the container, the bottom of the container cooperating with the dosing unit in order to supply beverage ingredient to the dosing unit, and
- the dosing unit comprising :
- 35 - a housing comprising a bottom wall, a top wall, two lateral walls, a front end and a rear end, the top wall comprising a port cooperating with the bottom of the container,

- a dosing drawer able to slide longitudinally in and out of said housing through the front end of the housing between a metering position and a dispensing position respectively, said drawer comprising :

. a bottom wall and a top wall, and

5 . a metering cavity extending from the top wall to the bottom wall and designed to receive beverage ingredient from the port of the housing when the drawer is in the metering position and to discharge the metered quantity of beverage ingredient when the drawer is in the dispensing position,

- a water supply,

10 - at least one beverage preparation chamber, said chamber being positioned under the dosing unit, the top of said chamber being opened to receive the dose of beverage ingredient from the drawer of the dosing unit and said chamber being configured to receive water from the water supply,

- a device configured for supplying a flow of air in the machine, and

15 - at least one air conduit configured to guide the flow of air between the air flow supplying device and the beverage ingredient dispense area at the top of the beverage preparation chamber,

wherein the machine comprises a device for closing the air conduit when the dosing drawer moves in the dispensing position.

20

The container of the device is configured for storing beverage ingredient in bulk like a powder, free flowing particles, pellets, granulates, granules or grains. Preferably, the beverage ingredient can be :

- powders of instant coffee, milk, cacao or instant tea, or

25 - pellets of such powders.

The container stores multiple doses of beverage ingredient and its bottom cooperates with the top wall of the housing of the dosing unit for metering and dispensing a metered dose of beverage ingredient from the storing container. Beverage ingredient flows by gravity from the container to the port in the top wall of the dosing unit.

30 Preferably, at least a part of the container is removably attached to the dosing unit. Accordingly, the container can be detached from the dosing unit temporarily in order to refill or clean the container or for maintenance operations.

35 The dosing unit comprises a housing and a drawer. The drawer is able to slide longitudinally in and out of the housing through the front end of the housing between a metering position and a dispensing position respectively.

The housing of the dosing unit comprises a bottom wall, a top wall, two lateral walls, a front end and a rear end.

Usually, the bottom wall of the housing is flat and solid so that said bottom wall closes the lower opening of the metering cavity when the drawer slides in the housing.

5 Similarly, usually the top wall of the housing is flat and solid so that said top wall closes the upper opening of the metering cavity when the drawer slides in the housing, except at the port cooperating with the bottom of the container. As a result, beverage ingredient is able to flow through this port from the container to the drawer.

10 The front end of the housing is usually fully opened in order to enable the movement of the drawer in and out of the housing.

The rear end of the housing can be opened or at least partially closed by a wall. Preferably, it comprises a stopping member on which the drawer is able to abut at the end of its movement in the housing.

15 The drawer of the dosing unit comprises a bottom wall, a top wall and a metering cavity. This metering cavity extends vertically from the top wall to the bottom wall so that :

- it is filled with beverage ingredient from the port of the housing when the drawer is in the metering position inside the housing, and

- it discharges the metered quantity of beverage ingredient present in the metering cavity when the drawer is in the dispensing position outside the housing.

20 Usually, the bottom wall of the drawer is flat and solid except at the lower opening of the metering cavity.

Similarly, usually, the top wall of the drawer is flat and solid except at the upper opening of the metering cavity.

Preferably, the drawer of the dosing unit comprises a front wall and a rear wall.

25 The sliding movement of the drawer in and out the housing can be carried out manually or can be motorized. In one embodiment, the machine can comprise a motor to slide the drawer of the dosing unit between the metering and the dispensing positions back and forth.

30 The machine comprises a water supply so that a dose of water can be mixed with the beverage ingredient inside a beverage preparation chamber.

The machine comprises at least one beverage preparation chamber, wherein the beverage ingredient in bulk is mixed with water to produce the beverage.

35 The beverage preparation chamber is preferably a chamber configured for enabling the dissolution of a soluble beverage ingredient with an aqueous liquid by contacting and mixing the ingredient with the liquid. The chamber can be the mixing chamber described in WO 2008/071613.

In another alternative embodiment, the beverage preparation chamber can be a drinking cup. This embodiment is adapted to the preparation of a beverage by dissolution of a soluble beverage ingredient with water. Once the beverage ingredient has been dosed and put in the cup, water can be introduced in the cup in the form of jets in order to dissolve the beverage ingredient. The drinking container is preferably retained in a container holder in order to be correctly positioned under the outlet of the beverage ingredient container.

The chamber is positioned under the outlet of the dosing unit and the top of the chamber is opened. Accordingly, the beverage ingredient dispensed from the dosing drawer is able to fall by gravity inside the chamber along an essentially straight and downwardly oriented direction D_p . Generally, the direction D_p is an essentially vertical direction.

The machine comprises a device, usually a fan, configured for supplying at least one flow of air in the machine. The device can create the flow of air either by blowing air in direction of the dispense area or by sucking air from the dispense area. This air flow supplying device is usually a fan.

Preferably, after air has flown through the dispense area, it is directed outside the machine, preferably in direction of the front side of the machine so that consumers are able to smell the odour of the beverage, usually coffee.

Inside the machine the flow of air is guided through at least one air conduit.

The air conduit is configured to convey the flow of air supplied by the air flow supplying device to the beverage ingredient dispense area at the top of the chamber.

The machine comprises a device for closing the air conduit when the dosing drawer moves in the dispensing position. Generally, this device automatically closes the air conduit during the movement of the drawer, and accordingly, systematically closes the air conduit when the drawer is in the dispensing position.

Preferably the device for closing the air conduit is actuated by the movement of the dosing drawer. Consequently, the closure of the air conduit during the movement of the drawer is systematic.

According to the preferred embodiment, the device for closing the air conduit is a shutter.

The closing device is designed to provide a barrier to the air inside the air conduit. It means that the closure does not need to be perfectly tight. Providing an obstacle through the air conduit like a shutter presenting a shape cooperating with the internal shape of the conduit is sufficient to stop the flow of air.

Preferably the machine comprises an air guiding device at the dispense area at the opened top of the chamber. This air guiding device is configured to guide the conveyed flow of air

emerging from the air conduit so that the flow of air traverses the dispense area along a plane P, said plane P crossing the straight and downwardly oriented direction Dp of dispense of beverage ingredient.

5 According to one preferred embodiment, the plane P can be essentially perpendicular to the straight and downwardly oriented direction Dp of dispense of beverage ingredient. Since the direction Dp is generally an essentially vertical direction, it means that the conveyed flow of air preferably traverses the dispense area along an essentially horizontal plane P.

10 Guiding the air along the plane P has the effect that the air flow extends through all the surface above the chamber and sweeps across the whole surface of the dispense area along the plane P. During beverage preparation, air creates a physical barrier along this plane P limiting the rise of steam, mist, vapour from the chamber in direction of the outlet of the dosing drawer. Steam, mist, vapour can either flow back to the chamber or can be trapped by the flow of air and moved out of the machine.

15 Preferably the air guiding device is also configured to collect the flow of air having traversed the dispense area at the edge of said area and to guide said flow of air from the dispense area out of the machine.

Preferably the air guiding assembly is configured to collect the flow of air having traversed the dispense area and to guide said flow of air out of the machine through an air flow outlet of the machine.

20 Preferably this air flow outlet of the machine is positioned on the front face of the machine.

The machine can comprise several assemblies of one container, one dosing unit, one beverage preparation member and one air conduit assembled as described above. The different assemblies usually differ by the nature of the beverage ingredient stored in the container and as a result of the produced beverage. Dosing units can differ by the amount of beverage ingredient metered therefrom and beverage preparation chamber can be adapted to the nature of the beverage ingredient.

30 According to a second aspect there is provided a method for producing a beverage in a beverage preparation machine such as described above, said method comprising the steps of :

- supplying a flow of air in the machine,
- positioning the drawer in the dispensing position and closing the air guiding assembly, then
- positioning the drawer in the metering position and opening the air guiding assembly, then
- 35 - introducing liquid in the beverage preparation chamber.

This method guarantees that the air conduit is closed when beverage ingredient falls from the dosing drawer in the chamber, even if the air flow supplying device remains switched on.

The dosing is rapid and efficient, no beverage ingredient is blown away from the chamber during this operation.

In general, air is continuously supplied in the machine. Air can be stopped if no beverage has been ordered for a certain time and can be blown or sucked again when a consumer
5 begins ordering a beverage, usually through a user interface of the machine.

This method implies that the drawer is always moved to its metering position between two beverage preparations.

In the present application the terms "rear", "front", "top", "bottom", "lateral", "longitudinal",
10 "vertical", "lower", "upper" are used to describe the relational positioning of features of the invention. These terms should be understood to refer to the devices of the machine, in particular the dosing drawer, in their normal orientation when positioned in a beverage preparation machine for the production of a beverage as shown in the figures 1 to 4b.

15 The above aspects of the invention may be combined in any suitable combination. Moreover, various features herein may be combined with one or more of the above aspects to provide combinations other than those specifically illustrated and described. Further objects and advantageous features of the invention will be apparent from the claims, from the detailed description, and annexed drawings.

20

Brief description of the drawings

The characteristics and advantages of the invention will be better understood in relation to the following figures :

- Figure 1 is a schematic illustration of a beverage preparation device according to the
25 invention,

- Figures 2a and 2b are perspective views of an assembly of a container, a chamber and an air guiding assembly in a machine according to the invention, the drawer being represented in its metering position and its dispensing position respectively,

- Figures 3a and 3b are vertical cross section view of the assembly of Figures 2a and 2b
30 respectively,

- Figures 4a and 4b are isolated perspective views of the air guiding assembly from Figures 3a and 3b respectively.

- Figures 5a and 5b are schematic illustration of the air guiding device used in the beverage preparation device of Figure 1.

35

Detailed description of the drawings

Figure 1 schematically illustrates a beverage production apparatus 100. The apparatus includes a beverage preparation chamber 3 for producing a beverage from a soluble beverage ingredient and an aqueous liquid, preferably water, entering the chamber.

5 The beverage ingredient is stored in a container 1. The container can be a hopper which is permanent or a disposable package containing the beverage ingredient.

A dose of beverage ingredient is metered and dispensed by a dosing device 2. The dosing device has the primary function to meter upon request doses of ingredient into mixing chamber 3. The dosing device dispenses the dose of beverage ingredient in the chamber 1,
10 by gravity fall through the opened 31 of the chamber along an essentially straight and downwardly oriented direction D_p .

The dosing device 2 is a dosing drawer as illustrated further in Figures 2a, 2b. The beverage ingredient is typically a dry beverage powder, preferably a soluble powder, even more preferably instant coffee. However, it could also be pellets of agglomerated soluble powder.

15 The chamber is fed upon request with ingredient automatically as prompted by a controller 108 and command 109 or manually by manual pulling and pushing of the dosing drawer.

A liquid, preferably water, supplying system 105 is provided in the machine to be able to feed water in the chamber 3, more particularly, hot water.

The water supplying system 105 comprises :

- 20 - a tank 101 that can be replenished with fresh water, or eventually connected to tap water,
- a water pump 102 for pumping water from the tank 101. The pump can be any type of pump such as a piston pump, diaphragm pump or a peristaltic pump.
- a water heater 103 such as a thermoblock or a cartridge type heater to heat the pumped water, alternatively or in addition to, the machine can comprise a water cooler in a line
25 bypassing the heater.

Finally water is fed into the water inlet 33 of the mixing chamber by a tube 106.

As illustrated in Figure 1, the chamber 3 can be placed directly above a service tray 107 onto which is placed a drinking cup 110 to receive the beverage liquid. Generally, the mixing chamber 3 is removable from the machine for cleaning. Usually the machine comprises a
30 mixing chamber receiving area to removably fix the chamber inside and to provide cooperation between the mixing chamber liquid inlet and the liquid supply tube 106.

If the machine is fully automatic, the controller 108 can coordinate the movement of the dosing device 2 and the water pump 102 upon the user actuating or being prompted to press the command 109 on the apparatus.

35 If the dosing is manual, the controller 108 can coordinate the activation of the water pump thereafter.

The machine comprises a fan 4 configured for supplying at least one flow of air in the machine. In Figure 1, air is sucked by the fan from outside and supplied to an air conduit 5.

This air conduit 5 conveys the flow of air to the dispense area defined between the outlet of the dosing device and the top 31 of the chamber. In an alternative embodiment, air can be
5 sucked by the fan from the top 31 of the chamber.

An air guiding device 51 is provided to guide and force the flow of air to traverse the dispense area along a plane P that crosses the straight and downwardly oriented direction Dp of dispense of beverage ingredient. Preferably the air guiding device 51 collects the flow of air having traversed the dispense area and guides the flow of air out of the machine.

10 The machine can comprise several assemblies of a container1, a dosing unit 2, a chamber 3 and optionally an air guiding assembly 51 such as illustrated above.

Figure 2a is a perspective view of the assembly of a container, a dosing unit, a chamber and an air guiding assembly in a machine according to the invention, the drawer being
15 represented in its metering position.

Only the bottom 11 of the container is represented. In the illustrated embodiment, the bottom is designed to receive a complementary part storing the beverage ingredient, for example a refilling cartridge. In an alternative embodiment the illustrated bottom can be replaced by a complete container.

20 The bottom of the container cooperates with a dosing unit 2. The dosing unit comprises a housing 21 in which a drawer 22 with a metering cavity 23, presenting opened bottom and opened top, slides. Further to a back and forth sliding movement of the drawer, the cavity is successively filled with beverage ingredient and emptied. The bottom of the cavity forms an outlet through which beverage ingredient falls. In **Figure 2b**, the drawer 22 is represented in
25 its dispensing position that is in the position where ingredient falls along an essentially straight and downwardly oriented direction.

The beverage preparation chamber 3 is positioned under the dosing drawer. The top of the chamber is opened. Accordingly the chamber is able to receive the metered dose of ingredient from the metering cavity of the drawer when this cavity 23 is positioned above the
30 chamber. The chamber 3 is connected to the water supply through a diluent inlet 33. Beverage is delivered through the outlet 32 at the bottom of the chamber.

An air conduit 5 supplies air to the dispense area at the top of the chamber.

An air guiding device 51 is positioned between the bottom of the metering cavity 23 of the dosing unit and the top of the chamber. It is attached to the top of the chamber but not to the
35 bottom of the cavity 23 since the latter is movable. The air guiding device 51 comprises :

- an air inlet positioned on the rear side and cooperating with the air conduit 5 and
- an air outlet 512 positioned on the front side of the machine.

The beverage preparation machine can comprise several assemblies such as described above.

Figures 3a, respectively **3b**, is a vertical cross section view of the assembly of Figure 2a, respectively 2b. It makes apparent the internal parts of the dosing drawer and the air guiding assembly.

Concerning the dosing drawer, these figures show the movement of the drawer 22 and specifically the metering cavity 23.

Concerning the air guiding assembly, a fan 4 is positioned at the rear end 5a of the air conduit. It sucks air from the rear end of the machine in direction of the air conduit 5. At its front end 5b, the conduit 5 emerges at the top 31 of the beverage preparation chamber providing a flow of air in the dispense area.

A shutter 8 is present in the air conduit 5. The shutter can be alternatively positioned :

- either above the air conduit as illustrated in Figure 3a, that is when the dosing drawer 22 is in the metering position,
- or through the air conduit 5, as illustrated in Figure 3b, that is when the dosing drawer 22 is in the dispensing position. In this position, the shutter closes sufficiently the air conduit to significantly reduce the air flow in the dispense area. As a result, during the step of dispensing dosed powder along the essentially straight and downwardly oriented direction D_p , powder is not blown or sucked by the flow of air and totally falls inside the top opening 31 of the chamber.

The movement of the shutter 8 is driven by the coupling member 9 attached to the dosing drawer 22 at connecting point 91.

According to the beverage preparation method of the present invention, the activation of the fan is independent from the steps of dosing powder and the diluent. Specifically, when the machine is switched on and ready to prepare a beverage, the machine is configured for continuously supplying a flow of air in the machine, here through the fan. The fan is not switched off during the dosing steps, but the air conduit is simply closed to prevent air from being supplied in the dispense area above the chamber when the drawer is in the dispensing position that is when powder falls from the metering cavity to the chamber.

In order to save energy, the fan can be switched off after a certain period if no beverage is ordered again , e.g. after 1 minute.

Figure 4a, respectively **4b**, is an isolated perspective view of the air conduit from Figure 3a, respectively 3b illustrating the mechanical movement of the shutter.

The shutter 8 comprises an arm 81 on one side. This arm is engaged in a guiding path 92

designed on the internal side of the movable coupling member. The arm and the guiding path are designed to cooperate in order to position the shutter 8 :

- either in a position closing the air conduit 5 when the drawer 22 is in the dispensing position (Figure 4b),

5 - or in a position freeing the air conduit 5 when the drawer 22 is in the metering position (Figure 4a).

Other alternative mechanical movements of the shutter can be used.

Figures 5a and 5b illustrate the principle of an air guiding device 51 that can be used in the beverage preparation machine such as illustrated in Figures 2a and 2b.

Figure 5a is a vertical section of the schematic illustration of the air guiding device 51. The air guiding device 51 comprises one beverage ingredient channel 52 configured for dispensing the beverage ingredient. This beverage ingredient channel 52 extends along an essentially straight and downwardly oriented direction D_p . In Figure 2, the channel is vertically oriented, yet, this channel can also be tilted versus vertical as long as it is able to dispense beverage ingredient by gravity fall.

The air guiding device comprises one air channel 53 configured to guide an air flow 6 sucked by a fan 4 downstream to the air guiding device (in an alternative mode, the fan can be positioned upstream and can blow a flow of air to the guiding device). The air channel 53 extends through the plane P that crosses the straight and downwardly oriented direction D_p of the beverage ingredient channel. Accordingly, the air channel 53 and the beverage ingredient channel 52 cross each other

Consequently, the air flow 6 guided through the air channel 53 extends along said plane P while it crosses the beverage ingredient channel 52 and forms a physical barrier between the downstream part of the beverage ingredient channel, cooperating with the beverage preparation chamber, and the upstream part of the beverage ingredient channel, cooperating with the outlet of the beverage ingredient container. In particular, during the mixing of beverage ingredient and water in the chamber, this air channel 53 extending along the plane P prevents humidity and mist from rising to the upstream part of the beverage ingredient channel. The air flow can carry out humidity and mist in direction of the fan.

The air inlet 531 and the air outlet 532 of the air channel can comprise holes or a grid to reinforce the structure of the device and to prevent objects from reaching the chamber.

Figure 5b is a horizontal section of the air guiding device 51 illustrating how the plane P forms a barrier for steam rising from the chamber.

35

Although the invention has been described with reference to the above illustrated embodiments, it will be appreciated that the invention as claimed is not limited in any way by these illustrated embodiments.

Variations and modifications may be made without departing from the scope of the invention as defined in the claims. Furthermore, where known equivalents exist to specific features, such equivalents are incorporated as if specifically referred in this specification.

As used in this specification, the words "comprises", "comprising", and similar words, are not to be interpreted in an exclusive or exhaustive sense. In other words, they are intended to mean "including, but not limited to".

10

List of references in the drawings :

	container	1
	tank	11
		12
15	dosing unit	2
	housing	21
	drawer	22
	dosing cavity	23
	chamber	3
20	top	31
	outlet	32
	diluent inlet	33
	fan	4
	air conduit	5
25	rear end	5a
	front end	5b
	air guiding device	51
	beverage ingredient channel	52
	air channel	53
30	air inlet	511
	air outlet	512
	air flow	6
	frame	7
	shutter	8
35	arm	81
	coupling member	9
	connecting point	91

	guiding path	92
	beverage preparation machine	100
	water tank	101
	pump	102
5	heater	103
	water supply	105
	pipe	106
	control	108
	command	109
10	drip tray	107
	drinking cup	110

CLAIMS

1. Beverage preparation machine (100) comprising :
- at least one container (1) for storing a beverage ingredient in bulk,
 - 5 - at least one dosing unit (2) for metering and dispensing a metered dose of beverage ingredient from the container, the bottom of the container cooperating with the dosing unit in order to supply beverage ingredient to the dosing unit, and the dosing unit (2) comprising :
 - a housing (3) comprising a bottom wall (31), a top wall (32), two lateral walls (33a, 33b),
10 a front end (34) and a rear end (35), the top wall comprising a port (36) cooperating with the bottom of the container,
 - a dosing drawer (22) able to slide longitudinally in and out of said housing (3) through the front end (34) of the housing between a metering position and a dispensing position respectively, said drawer comprising :
 - 15 . a bottom wall (41) and a top wall (42), and
 - . a metering cavity (43) extending from the top wall to the bottom wall and designed to receive beverage ingredient from the port (36) of the housing when the drawer is in the metering position and to discharge the metered quantity of beverage ingredient when the drawer is in the dispensing position,
 - 20 - a water supply (105),
 - at least one beverage preparation chamber (3), said chamber being positioned under the dosing unit, the top (31) of said chamber being opened to receive the dose of beverage ingredient from the drawer of the dosing unit and said chamber being configured to receive water from the water supply,
 - 25 - a device (4) configured for supplying a flow of air in the machine, and
 - at least one air conduit (5) configured to guide the flow of air between the air flow supplying device (4) and the beverage ingredient dispense area at the top of the beverage preparation chamber,
- wherein the machine comprises a device (8) for closing the air conduit (5) when the dosing
30 drawer (22) moves in the dispensing position.
2. Beverage preparation machine according to Claim 1, wherein the device for closing the air conduit is actuated by the movement of the dosing drawer.
- 35 3. Beverage preparation machine according to Claim 1 or 2, wherein the device for closing the air conduit is a shutter (8).

4. Beverage preparation machine according to any one of the precedent claims, wherein said machine comprises an air guiding device (51) at the dispense area at the opened top of the chamber, said air guiding device being configured to guide the conveyed flow of air emerging from the air conduit (5) so that said flow of air traverses the dispense area along a plane P, said plane P crossing the straight and downwardly oriented direction Dp of dispense of beverage ingredient.
- 5
5. Beverage preparation machine according to the precedent claim, wherein the air guiding device (51) is configured to collect the flow of air having traversed the dispense area and to guide it out of the machine through an air flow outlet of the machine.
- 10
6. Beverage preparation machine according to the precedent claim, wherein said air flow outlet of the machine is positioned on the front face of the machine.
- 15
7. Method for producing a beverage in a beverage preparation machine according to any one of Claims 1 to 6 comprising the steps of :
- supplying a flow of air in the machine,
 - positioning the drawer (3) in the metering position, then
 - positioning the drawer (3) in the dispensing position and closing the air guiding assembly,
 - 20 - positioning the drawer (3) in the metering position and opening the air guiding assembly,
 - introducing liquid in the beverage preparation chamber (3).

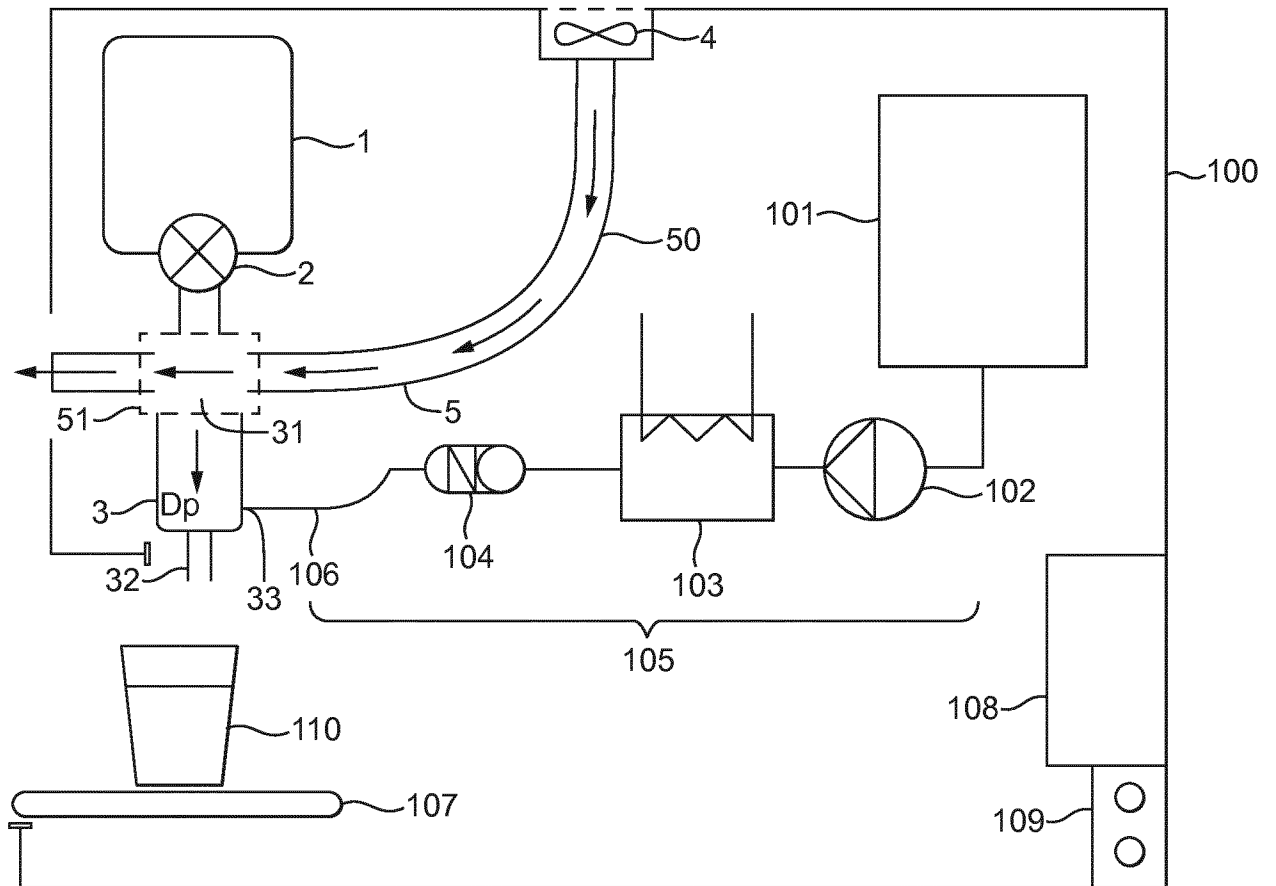


FIG. 1

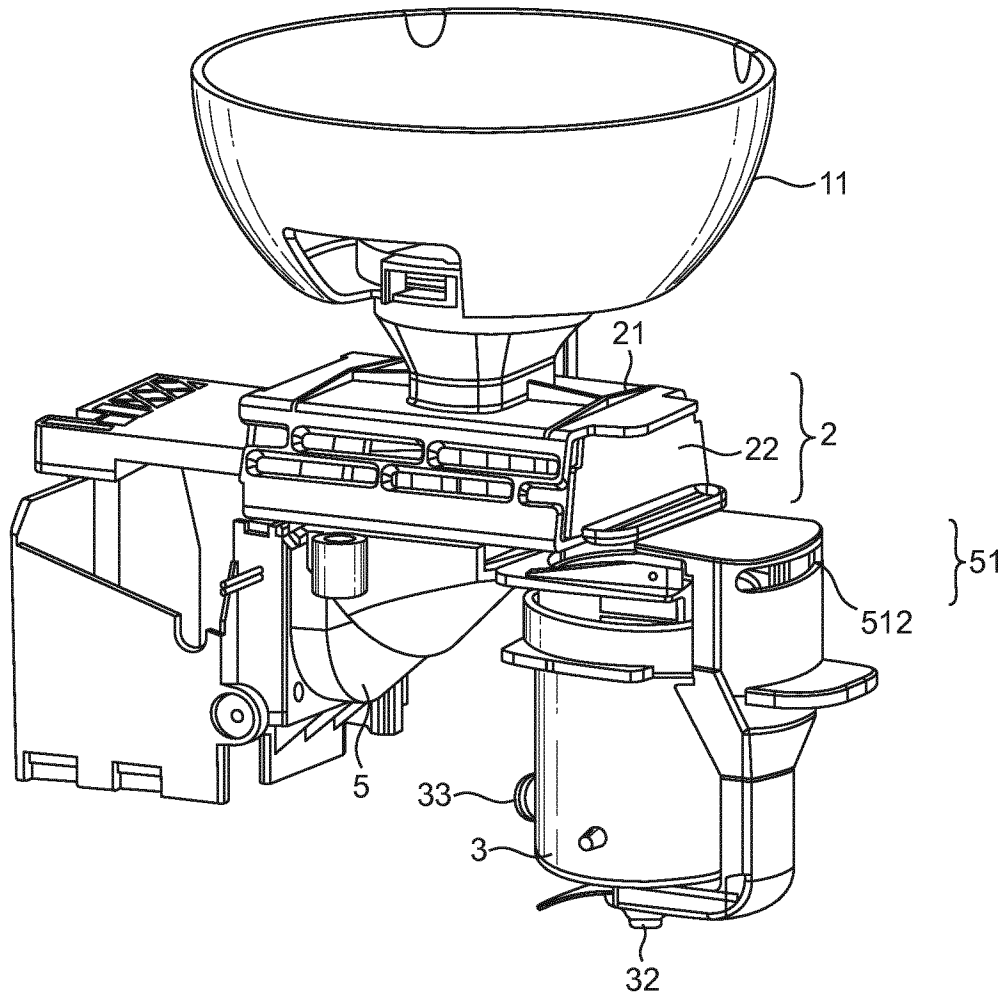


FIG. 2A

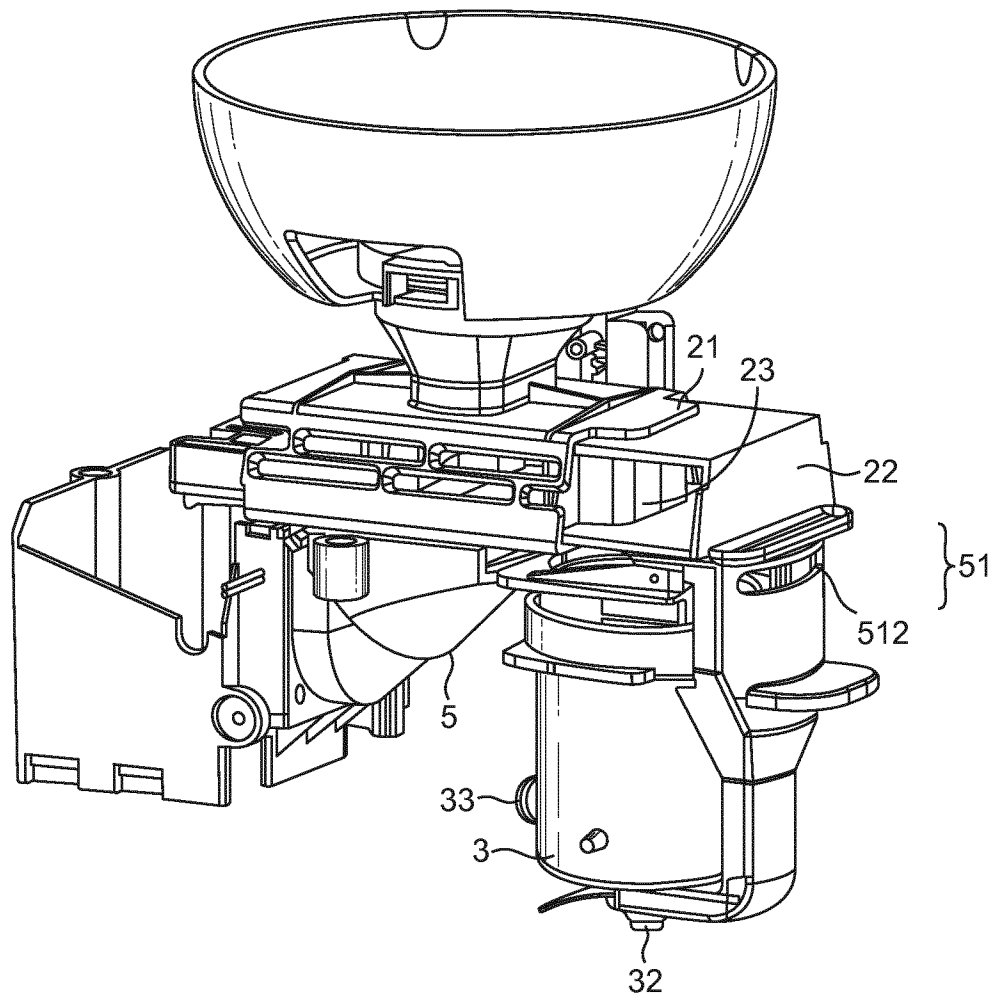


FIG. 2B

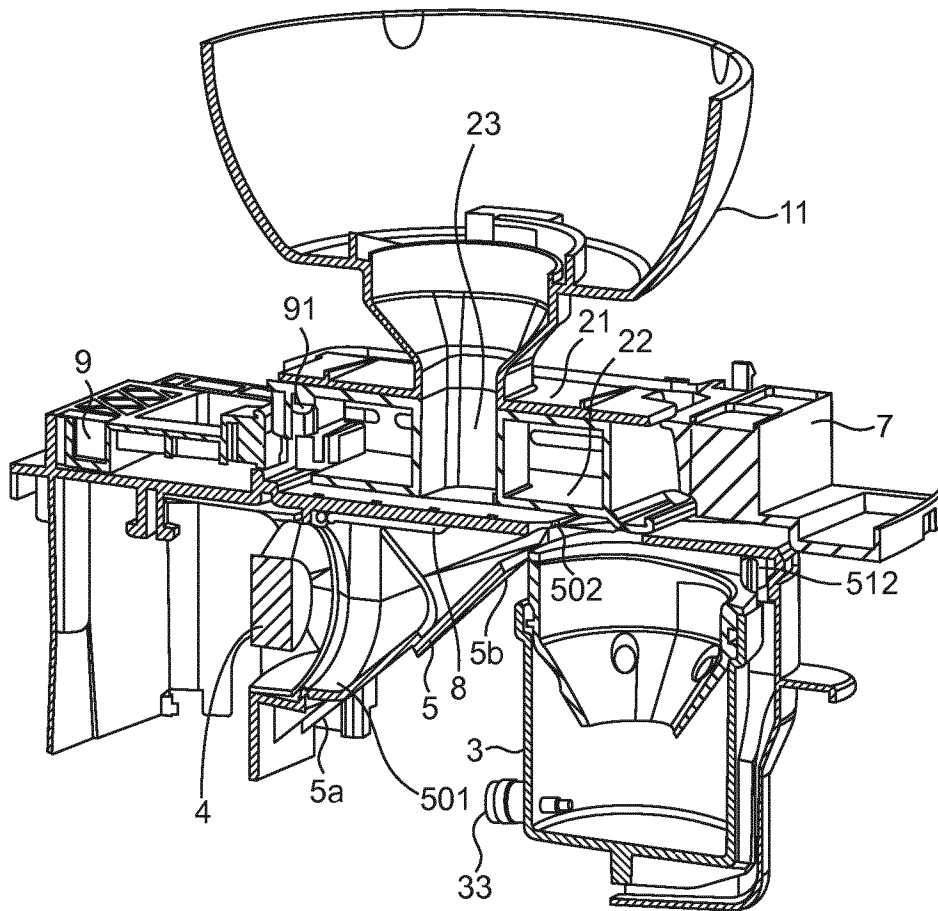


FIG. 3A

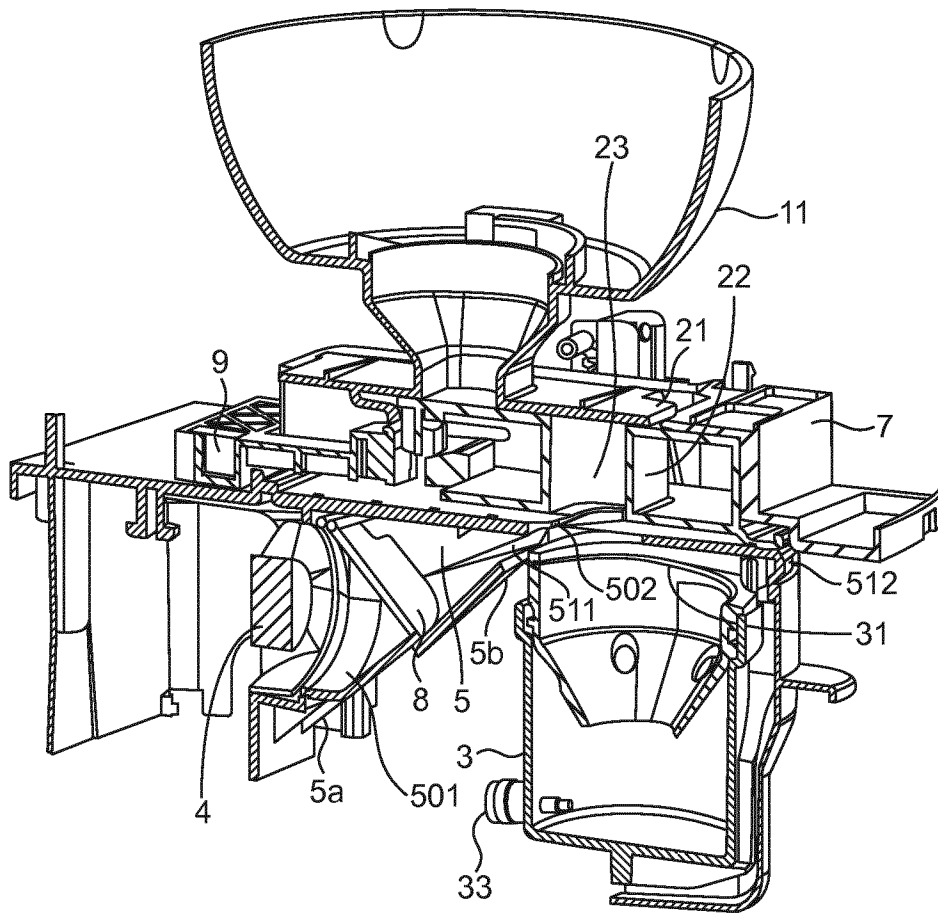


FIG. 3B

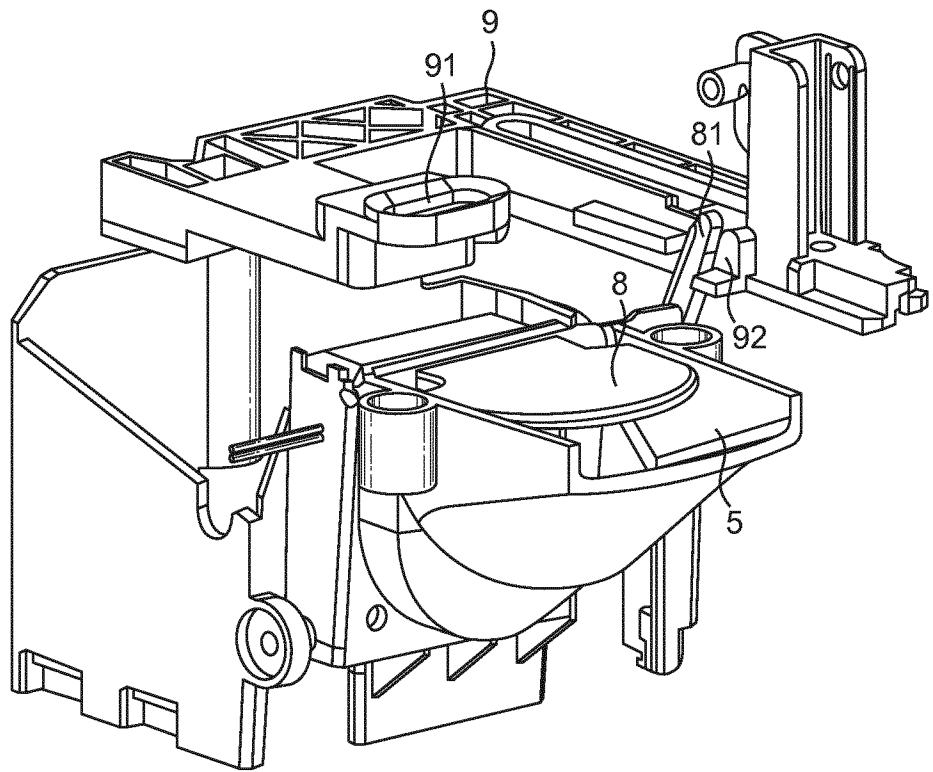


FIG. 4A

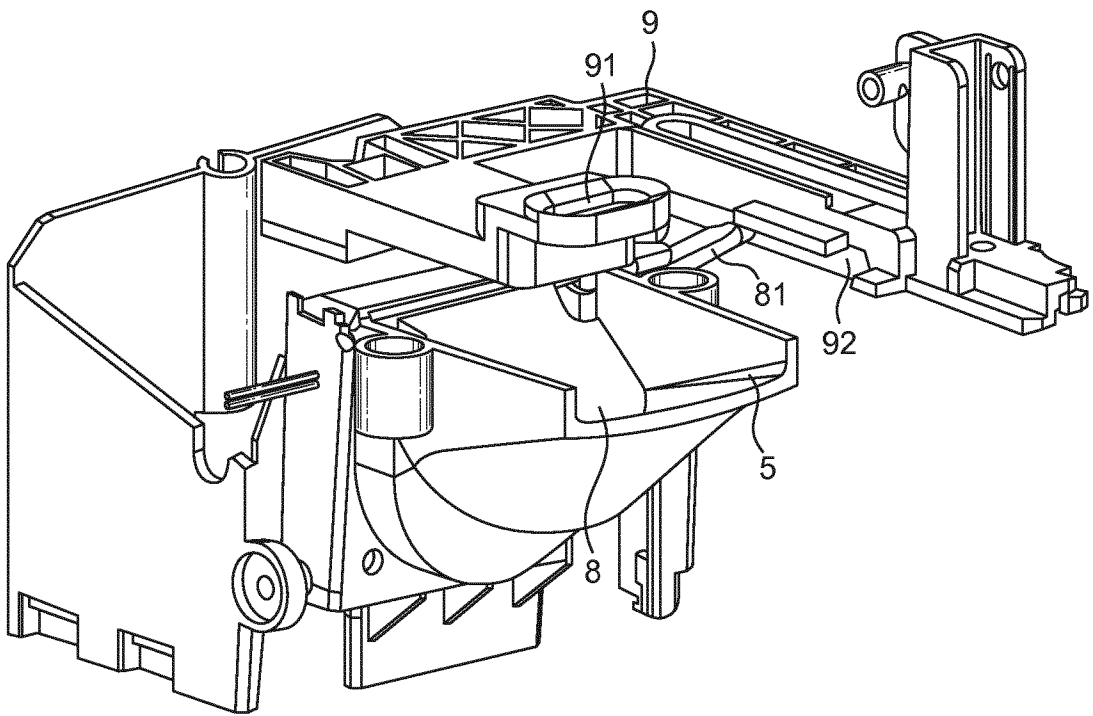


FIG. 4B

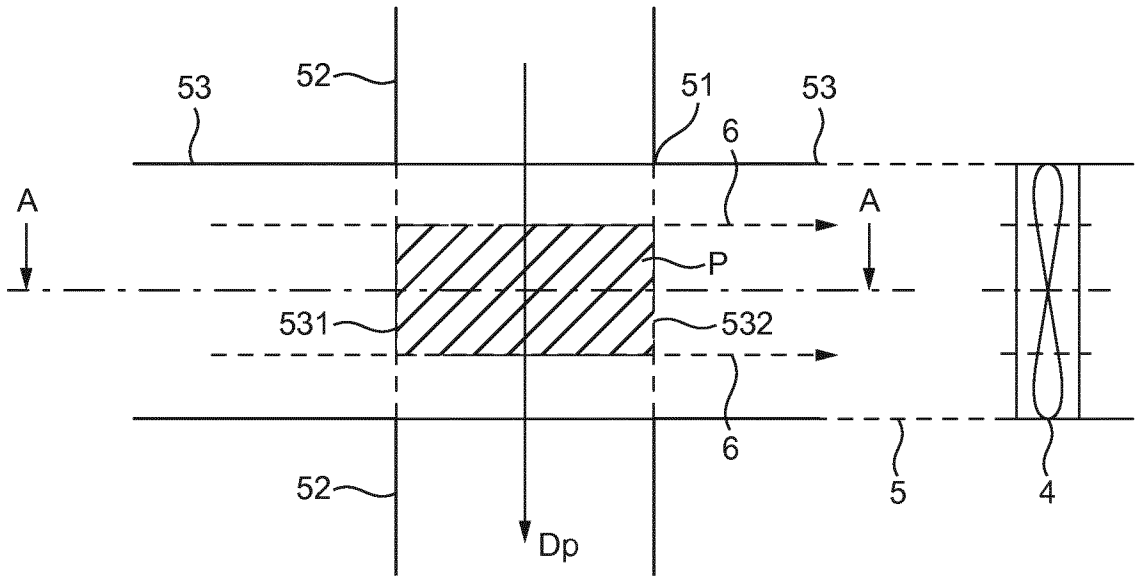


FIG. 5A

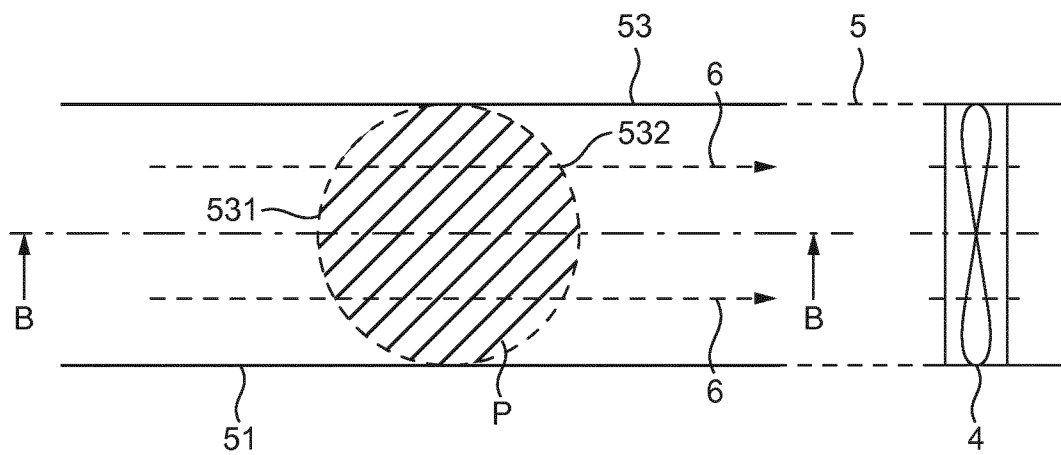


FIG. 5B

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2018/074001

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47J31/44 A47J31/40
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
A47J
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
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X	US 2017/000287 A1 (DUBIEF FLAVIEN [CH] ET AL) 5 January 2017 (2017-01-05) paragraphs [0001], [0019] - [0067], [0084] - [0094], [0115] - [0130], [0152] - [0164]; claims; figures -----	1-7
A	US 2011/076371 A1 (DEOLARTE FRANCISCO [FR] ET AL) 31 March 2011 (2011-03-31) paragraphs [0001], [0013] - [0015], [0020], [0030], [0040] - [0042]; claims; figures -----	1-7
A	US 2006/261095 A1 (REBORDOSA ANTONIO [ES] ET AL) 23 November 2006 (2006-11-23) the whole document ----- -/--	1-7

Further documents are listed in the continuation of Box C.

See patent family annex.

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search 21 November 2018	Date of mailing of the international search report 30/11/2018
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Moulié, Andreas

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2018/074001

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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