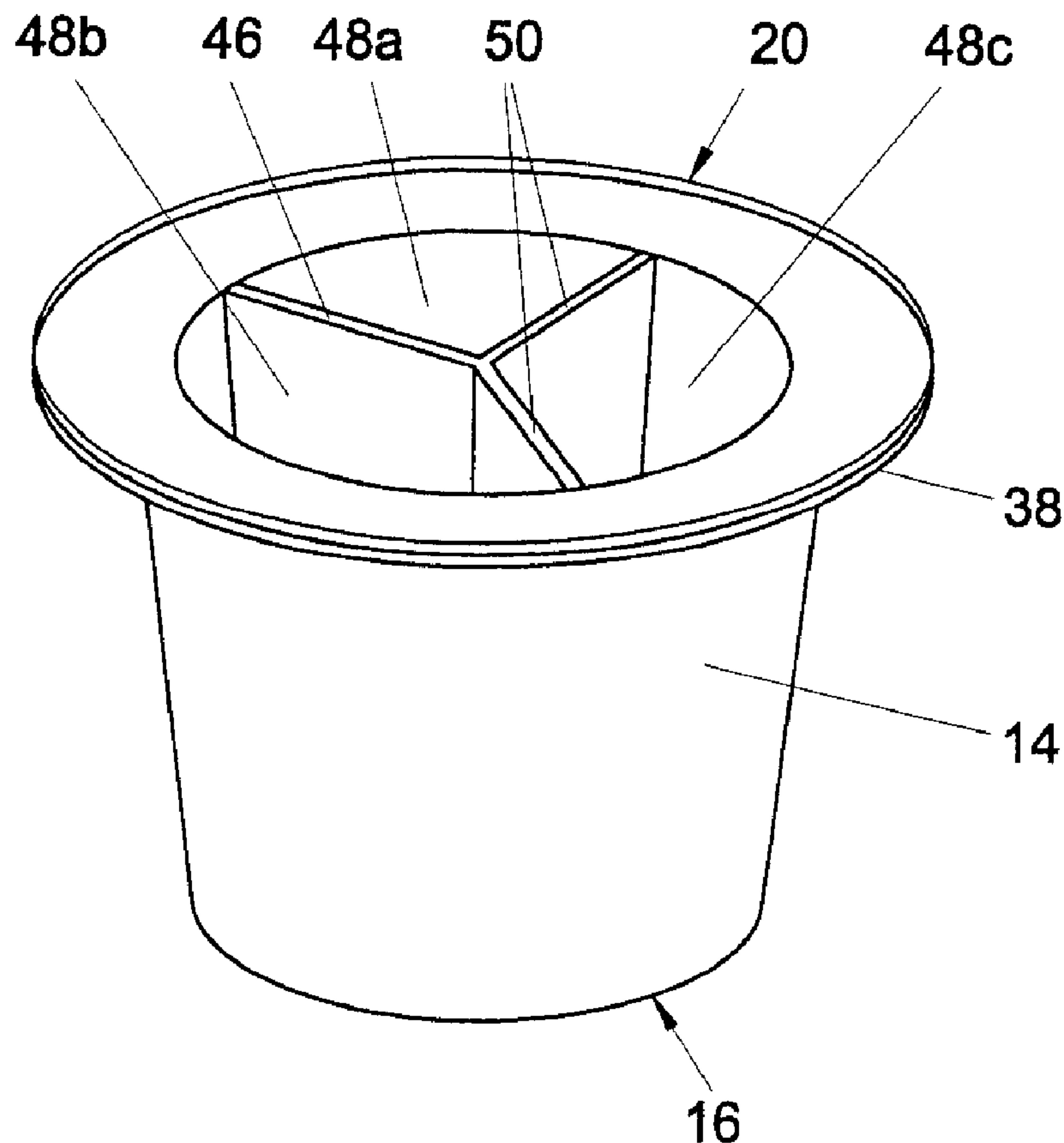




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(54) **Titre : SYSTEME, PROCEDE ET CAPSULE POUR PREPARER UNE BOISSON**
 (54) **Title: SYSTEM, METHOD AND CAPSULE FOR PREPARING A BEVERAGE**



(57) **Abrégé/Abstract:**

The invention relates to a system, method and capsule for preparing a predetermined quantity of beverage suitable for consumption using an extractable product. The system comprises an exchangeable capsule, and an apparatus comprising a



(57) Abrégé(suite)/Abstract(continued):

receptacle for holding the exchangeable capsule, and a fluid dispensing device for supplying a fluid to the exchangeable capsule. The exchangeable capsule comprises a circumferential wall, a bottom, and a lid. The wall, bottom and lid enclose an inner space comprising the extractable product. The bottom comprises an entrance layer for supplying an amount of a fluid by the fluid dispensing device through the entrance layer to the capsule. The lid comprises an exit layer for supplying a prepared beverage through the exit layer from the capsule to a container. The capsule comprises an additional wall element extending towards the inner space for providing additional stiffness.

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(54) Title: SYSTEM, METHOD AND CAPSULE FOR PREPARING A BEVERAGE

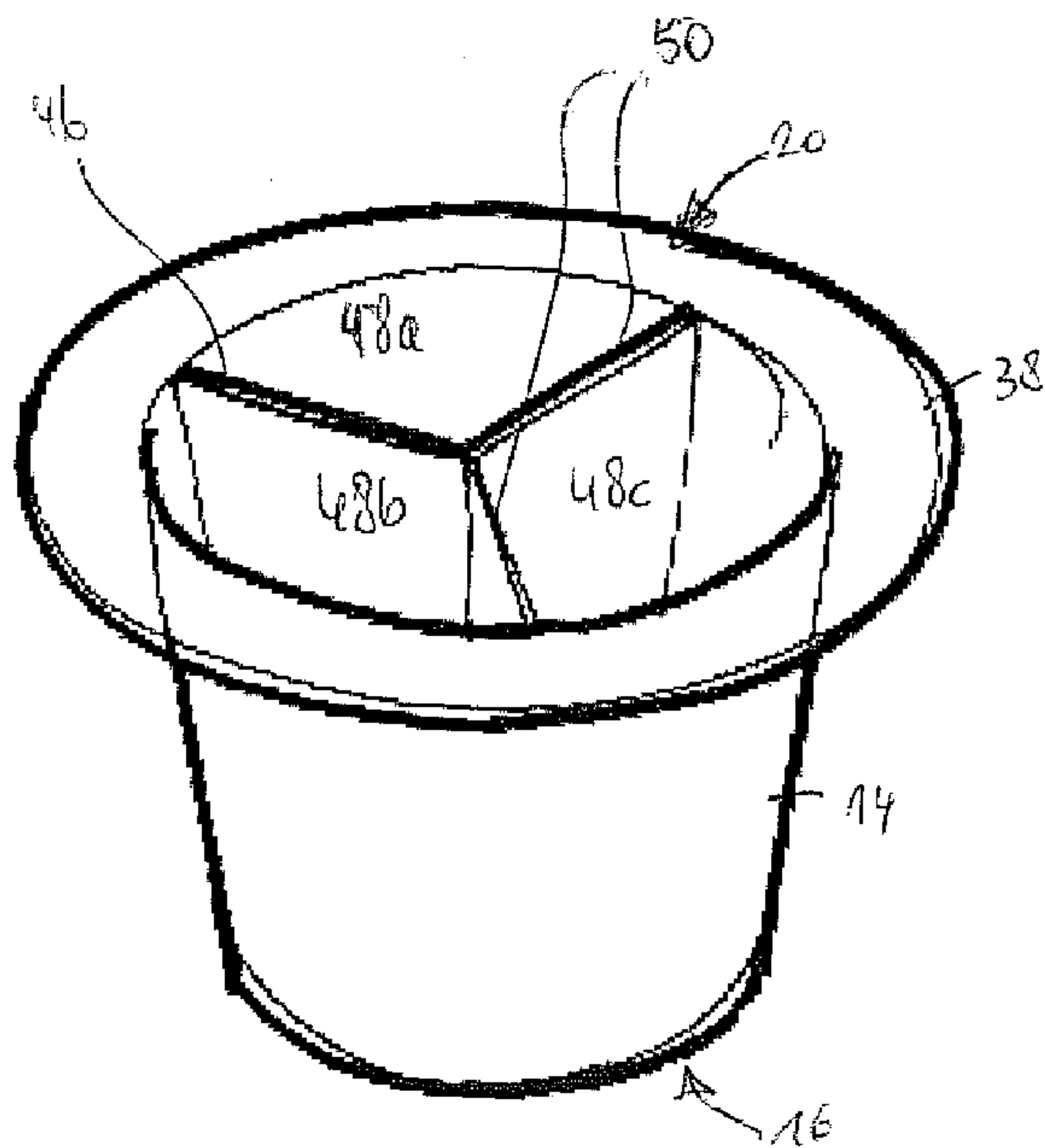


Fig. 3

(57) Abstract: The invention relates to a system, method and capsule for preparing a predetermined quantity of beverage suitable for consumption using an extractable product. The system comprises an exchangeable capsule, and an apparatus comprising a receptacle for holding the exchangeable capsule, and a fluid dispensing device for supplying a fluid to the exchangeable capsule. The exchangeable capsule comprises a circumferential wall, a bottom, and a lid. The wall, bottom and lid enclose an inner space comprising the extractable product. The bottom comprises an entrance layer for supplying an amount of a fluid by the fluid dispensing device through the entrance layer to the capsule. The lid comprises an exit layer for supplying a prepared beverage through the exit layer from the capsule to a container. The capsule comprises an additional wall element extending towards the inner space for providing additional stiffness.

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Title: System, method and capsule for preparing a beverage

The invention relates to a system for preparing a predetermined quantity of beverage suitable for consumption using an extractable product, comprising an exchangeable capsule, and an apparatus comprising a receptacle
5 for holding the exchangeable capsule, and a fluid dispensing device for supplying an amount of a fluid, such as fluid, under pressure to the exchangeable capsule, wherein the exchangeable capsule comprises a circumferential wall, a bottom closing the circumferential wall at a first end, and a lid closing the
10 circumferential wall at a second end opposite the bottom, wherein the wall, bottom and lid enclose an inner space comprising the extractable product, wherein the bottom comprises an entrance area and the system is arranged for bringing the fluid dispensing device in fluid connection with the entrance area for supplying the fluid to the extractable product for preparing the beverage, and
15 wherein the lid comprises an exit area and the system comprises an outlet which, in use, is in fluid communication with the exit area for draining the prepared beverage from the capsule and supplying the beverage to a container such as a cup.

Such systems are known per se. The capsule of such a system may have a substantially soft wall, thereby rendering the capsule susceptible for
20 environmental influences. For example, the capsule may be damaged and/or deformed during transport, handling and/or use. Also, the reproducibility of the prepared beverage may be poor, due to e.g. deformation during use under influence of the fluid pressure.

An aspect of the present disclosure is directed to improving the
25 above system, and more specifically to at least diminish one of the above problems.

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According to an aspect of the present invention, there is provided a system for preparing a predetermined quantity of beverage suitable for consumption using an extractable product, comprising: an exchangeable capsule, and an apparatus comprising a receptacle for holding the exchangeable capsule, and a fluid dispensing device for supplying an amount of a fluid under pressure to the exchangeable capsule, wherein the exchangeable capsule comprises a circumferential wall, a bottom closing the circumferential wall at a first end, and a lid closing the circumferential wall at a second end opposite the bottom, wherein the wall, bottom and lid enclose an inner space comprising the extractable product, wherein the bottom comprises an entrance area and the system is arranged for bringing the fluid dispensing device in fluid connection with the entrance area for supplying the fluid to the extractable product for preparing the beverage, wherein the lid comprises an exit area and the system comprises an outlet which, in use, is in fluid communication with the exit area for draining the prepared beverage from the capsule and supplying the beverage to a container, wherein the receptacle is arranged for draining the prepared beverage from the capsule through the exit area, wherein the circumferential wall comprises at least one additional wall element extending towards the inner space for providing additional stiffness, wherein the fluid dispensing device is arranged for supplying the fluid to the exchangeable capsule under a pressure of 4 - 20 bars and wherein the additional wall element forms a rib, wherein the receptacle comprises bottom piercing means intended for piercing a bottom of an alternative capsule for creating at least one entrance opening for supplying the fluid to the extractable product through said at least one entrance opening, and wherein the bottom of the capsule of the system comprises an entrance filter for supplying the fluid to the extractable product therethrough, which entrance filter is, in use, positioned at a distance from the bottom piercing means, such that the capsule of

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the system is not pierced by the bottom piercing means and the bottom stays intact.

According to another aspect of the present invention, there is provided a capsule suitable for use in the system described above, wherein the exchangeable capsule comprises a circumferential wall, a bottom closing the
5 circumferential wall at a first end, and a lid closing the circumferential wall at a second end opposite the bottom, wherein the wall, bottom and lid enclose an inner space comprising the extractable product, wherein the bottom comprises an entrance area, wherein the lid comprises an exit area, and wherein the
10 circumferential wall comprises at least one additional wall element extending towards the inner space for providing additional stiffness, the additional wall element forming a rib.

According to another aspect of the present invention, there is provided use of the capsule described above using the apparatus of the system described
15 above.

According to another aspect of the present invention, there is provided a method for preparing a predetermined quantity of beverage suitable for consumption using an extractable product, comprising: providing an exchangeable capsule, comprising a circumferential wall, a bottom closing the circumferential wall
20 at a first end, and a lid closing the circumferential wall at a second end opposite the bottom, wherein the wall, bottom and lid enclose an inner space comprising the extractable product, providing an apparatus comprising a receptacle for holding the exchangeable capsule, a fluid dispensing device for supplying an amount of a fluid under a pressure of at least six bars to the exchangeable capsule, and an outlet
25 which, in use, is in fluid communication with the capsule for draining the prepared beverage from the capsule and supplying the beverage to a container, arranging the exchangeable capsule with the lid in abutment with a support surface of the

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receptacle, and supplying the fluid under the pressure to the extractable product for preparing the beverage; wherein the circumferential wall comprises at least one additional wall element extending towards the inner space for providing additional stiffness and wherein the additional wall element forms a rib, wherein the receptacle
5 comprises bottom piercing means intended for piercing a bottom of an alternative capsule for creating at least one entrance opening for supplying the fluid to the extractable product through said at least one entrance opening, and wherein the bottom of the capsule of the system comprises an entrance filter for supplying the fluid to the extractable product therethrough, which entrance filter is, in use,
10 positioned at a distance from the bottom piercing means, such that the capsule of the system is not pierced by the bottom piercing means and the bottom stays intact.

According to one embodiment, a system is provided for preparing a predetermined quantity of beverage suitable for consumption using an extractable product, comprising an exchangeable capsule, and an apparatus comprising a
15 receptacle for holding the exchangeable capsule, and a

fluid dispensing device for supplying an amount of a fluid, such as water,
under pressure to the exchangeable capsule, wherein the exchangeable capsule
comprises a circumferential wall, a bottom closing the circumferential wall at a
first end, and a lid closing the circumferential wall at a second end opposite
5 the bottom, wherein the wall, bottom and lid enclose an inner space comprising
the extractable product, wherein the bottom comprises an entrance area and
the system is arranged for bringing the fluid dispensing device in fluid
connection with the entrance area for supplying the fluid to the extractable
product for preparing the beverage, wherein the lid comprises an exit area and
10 the system comprises an outlet which, in use, is in fluid communication with
the exit area for draining the prepared beverage from the capsule and
supplying the beverage to a container such as a cup, wherein the receptacle is
arranged for draining the prepared beverage from the capsule through the exit
area, wherein the capsule comprises at least one additional wall element
15 extending towards the inner space for providing additional stiffness.

By providing an additional wall element in the capsule, extending
towards the inner space of the capsule, the wall comprising the wall element
may be additionally reinforced, thereby reducing damage and/or deformation
during handling, use and/or transport of the capsule. The bottom may
20 comprise an additional wall element and/or the lid may comprise an additional
wall element and/or the circumferential wall may comprise an additional wall
element. By providing additional stiffness to the capsule by means of an
additional wall element, the reproducibility of the capsule may improve
because the capsule may be less deformable under influence of fluid pressure.

25 By providing a substantially rigid circumferential wall, the capsule
becomes a substantially rigid capsule instead of a substantially soft capsule.
By providing a substantially rigid capsule with an additional wall element, the
substantially rigid capsule may be reinforced more. Also, the wall may become
more thin because stiffness may also be provided by the additional wall
30 element.

By providing an additional wall element that extends from the bottom to the lid of the capsule, the additional wall element may be a stiffening rib. The rib may be configured such that it also provides e.g. a flow resistance to the fluid entering the capsule and thereby aiding the pressure build up in the capsule. In particular, the pressure may be built up in the capsule until the pressure is sufficiently high for providing a relatively optimal prepared beverage. Also, the quality of the prepared beverage may be more reproducible.

In an embodiment, the rib may be configured wedge-shaped with an increasing cross-section from bottom to lid for providing flow resistance to the fluid entering the capsule, thereby providing a more controlled pressure built up in the capsule.

In an embodiment, the additional wall element comprises a bore at an end facing the bottom for letting fluid therein. Also, the additional wall element may comprise perforate and/or porous sides for letting fluid there through. By providing an additional wall element with an opening for letting fluid in and e.g. a plurality of openings for letting fluid through, the fluid may be directed to specific areas of the capsule. The pressure build-up and the brewing process may be improved and may be controlled more. Also, the reproducibility of the pressure built up and/or of the prepared beverage may improve.

In an embodiment, the additional wall element divides the inner space of the capsule into two or more compartments. The compartments may provide additional stiffness and/or rigidity to the capsule. Different compartments may comprise different extractable product and/or different compositions of extractable product and/or different compaction of extractable product. For example, there may be two compartments provided of which one compartment is filled with extractable product such as roasted and ground coffee and of which one compartment remains empty. This way, the external dimensions of the capsule may be provided such that the capsule fits

appropriately in the receptacle. In the inner space a compartment may be provided that is sufficiently large to contain the extractable product in an optimal compaction, so an optimal pressure built up may be obtained.

In a further embodiment, different compartments may comprise
5 different products, e.g. different extractable products such as coffee or tea
and/or different soluble products, such as milk or cacao. For example, one
compartment may comprise coffee, a second compartment may comprise
amaretto and a third compartment may comprise cream. Also different
compartments may comprise different melanges of roasted and ground coffee.
10 The pressure built up in the compartments may be different to provide e.g. a
particularly composed prepared beverage. For example the pressure in a first
compartment may be built up to a lower level than the pressure in a second
compartment, so that the extractable product in the first compartment is
delivered first to the cup and the extractable product in the second
15 compartment is delivered later to the cup.

In a compartment comprising a soluble product, a stir arrangement
or a disturbing arrangement may be provided to create a disturbance such as a
swirl or a vortex or otherwise a disturbance in the flow in the compartment to
optimally dissolve the soluble product. The disturbing arrangement may for
20 example be a grid or a vane or a spiral structure or a labyrinth-like structure
or a tree-like structure or otherwise a structure that disturbs the flow in the
compartment. The disturbing arrangement preferably comprises at least a
structural element that imposes a flow velocity component transverse to the
axial direction of the capsule, e.g. in radial and/or circumferential direction.
25 For example, a tree-like structure may have branches that disturb the flow
and create a swirl in the compartment. The thus created swirl comprises
velocity components in many directions. For example, the vane like structure
may be extend in one direction approximately axially and may extend in
another direction at an angle to a radial direction, thereby introducing a vortex
30 or swirl with at least one velocity component transverse to the axial direction

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to create a disturbance for better dissolving the soluble product. Also a grid-like structure, which for example may be arranged substantially parallel to the entrance and/or the exit of the capsule, creates a vortex or a swirl or an otherwise non-laminar and/or non-linear flow disturbed flow. Such a disturbed flow has
5 velocity components in many directions, in addition to the velocity component in the axial direction from entrance to exit, so dissolving of the soluble product may improve. Many variants and orientations of the disturbing arrangement are possible.

Alternatively and/or additionally, by mixing the soluble product in a
10 limited way with coffee, dissolving of the soluble product may be improved as well.

In some embodiments, the additional wall element may be perforate and/or porous to allow fluid passing through and to allow a uniform pressure build up in the capsule, but to prevent passing extractable product there through.
15 Alternatively, the additional wall element may be impermeable to prevent passing fluid and extractable product there through, e.g. when different pressure is to be built up in different compartments of the capsule.

In some embodiments, preferably the exit area is provided with a perforate and/or porous exit filter to allow the prepared beverage to drain there
20 through. Advantageously the exit filter is of biodegradable material. Also the entrance area may be provided with an entrance filter to prevent extractable product spilling from the inner space of the capsule via the entrance area and to allow fluid passing through the entrance filter. Advantageously the entrance filter is of biodegradable material. Also, the capsule and/or the additional wall
25 element may be made of biodegradable material.

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In an embodiment, the receptacle comprises bottom piercing means intended for piercing the bottom of an alternative capsule for creating at least one entrance opening for supplying the fluid to the extractable product through said at least one entrance opening, and wherein the bottom of the capsule of the system comprises an entrance filter for supplying the fluid to the extractable product there through, which entrance filter is, in use, positioned at a distance from the bottom piercing means, such that the capsule of the system is not pierced by the bottom piercing means and the bottom stays intact.

In a further embodiment, the receptacle comprises lid piercing means intended for piercing the exit filter of an alternative capsule when the exit area sufficiently presses against the lid piercing means under the influence of the pressure of the fluid and/or beverage in the capsule for creating at least one exit opening through which the beverage can drain from the alternative capsule, and wherein the exit area of the capsule of the system comprises an exit filter, through which the beverage can drain from the capsule of the system such that the capsule of the system, in use, is not pierced by the lid piercing means and the lid stays intact.

In an embodiment, the fluid dispensing device is arranged for supplying the fluid to the exchangeable capsule under a pressure of approximately 4 - 20 bars, preferably 4.5 - 18 bars, more preferably 5 - 15 bars. By providing a relatively high pressure build up in the capsule and/or in a compartment of the capsule, the pressure build up in the capsule may be more controllable and the beverage may be more reproducible.

Another aspect of the invention relates to a capsule with an additional wall element.

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Another aspect of the invention relates to the use of a capsule with an additional wall element for preparing a beverage using the apparatus of the system.

Another aspect relates to a method for preparing a predetermined
5 quantity of beverage suitable for consumption using an extractable product,
comprising providing an exchangeable capsule, comprising a circumferential wall,
a bottom closing the circumferential wall at a first end, and a lid closing the
circumferential wall at a second end opposite the bottom, wherein the wall,
bottom and lid enclose an inner space comprising the extractable product,
10 providing an apparatus comprising a receptacle for holding the exchangeable
capsule, a fluid dispensing device for supplying an amount of a fluid, such as
water, under a pressure of at least four bars to the exchangeable capsule, and an
outlet which, in use, is in fluid communication with the capsule for draining the
prepared beverage from the capsule and supplying the beverage to a container
15 such as a cup, arranging the exchangeable capsule with the lid in abutment with
a support surface of the receptacle, and supplying the fluid under the pressure to
the extractable product for preparing the beverage; wherein the capsule
comprises at least one additional wall element extending towards the inner space
for providing additional stiffness.

20 Embodiments of the invention will be further elucidated by means of
non-limiting examples referring to the drawings, in which:

Fig. 1a shows an example of a first embodiment of a system
according to the invention;

Fig. 1b shows an example of a second embodiment of a system
25 according to the invention;

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Fig. 2 shows a first embodiment of the capsule according to the invention;

Fig. 3 shows a second embodiment of the capsule according to the invention; and

5 Fig. 4a and 4b show a third embodiment of the capsule according to the invention.

In this description, identical or corresponding items have identical or corresponding reference numerals. The exemplary embodiments shown should not be construed to be limitative in any manner and serve merely as illustration.

10 Fig. 1a shows an example of a first embodiment of a system 1 for preparing a predetermined quantity of beverage suitable for consumption using an extractable product according to the invention. The system 1 comprises an exchangeable open capsule 2, and an apparatus 4. The apparatus 4 comprises a receptacle 6 for holding the exchangeable capsule 2. In Fig. 1a a

gap is drawn between the capsule 2 and the receptacle 6 for clarity. It will be appreciated that, in use, the capsule 2 may lie in contact with the receptacle 6. In this example the receptacle 6 has a shape complementary to the shape of the capsule 2. In this example the receptacle 6 comprises an upper part 8 and
5 a support surface 10.

The apparatus 4 further comprises a fluid dispensing device 12 for supplying an amount of a fluid, such as hot water, under a high pressure, of e.g. more than approximately four bars (absolute pressure), to the exchangeable capsule 2.

10 In the system 1 shown in Fig. 1a, the exchangeable capsule 2 comprises a substantially rigid circumferential wall 14, a bottom 16 closing the circumferential wall 14 at a first end 18, and a lid 20 closing the circumferential wall 14 at a second, open, end 22 opposite the bottom 16. The circumferential first wall 14, the bottom 16 and the lid 20 enclose an inner
15 space 24 comprising the extractable product, in this example roasted and ground coffee. In this example, the exchangeable capsule 2 comprises an amount of extractable product, e.g. approximately 5 grams of roasted and ground coffee, suitable for preparing a single portion of the beverage, preferably a single cup of the beverage, e.g. from 30-200ml of the prepared
20 beverage. The exchangeable capsule, thus, is a single-portion-pack.

In the example of Fig. 1a, the circumferential first wall 14 is substantially rigid. The circumferential wall 14 may e.g. comprise a plastics material and may be formed by e.g. injection moulding, vacuum-forming, thermoforming or the like.

25 In this example the bottom 16 is integral with the circumferential wall 14. In this example the bottom 16 is sheet-shaped and comprises a plurality of entrance openings 26 for allowing the fluid to enter the capsule 2.

In this example the lid 20 is flexible and sheet-shaped. Further, in this example the lid 20 is porous. The lid 20 is in this example manufactured
30 from filtering layer. In this example the filtering layer comprises polyethylene

(PE) fibres. In this example the lid 20 is connected to the circumferential wall 14 by heat sealing. In this example the lid 20 forms an outermost boundary of the capsule 2 in an axial direction thereof. It can be seen from Fig. 1a that the lid 20 abuts against the support surface 10 of the receptacle 6.

5 The system 1 shown in Fig. 1a is operated as follows for preparing a cup of coffee.

 The capsule 2 is placed in the receptacle 6. The lid 20 is brought into abutment with the support surface 10. The fluid, here hot water under pressure, is supplied to the extractable product in the inner space 24 through
10 the entrance openings 26. The water will wet the coffee grounds and extract the desired substances to form the coffee beverage. The prepared coffee will drain from the capsule 2 through the porous lid 20. The coffee beverage is further drained from the receptacle 6 via a plurality of outlets 28, and may be supplied to a container 30 such as a cup.

15 In the example of Fig. 1a, the bottom 16 comprises an entrance layer 32 with a plurality of entrance openings 26 which are distributed over substantially the entrance layer 32. In this example the entrance layer 32 forms the bottom 16. The entrance layer 32 has a certain flow resistance determined by e.g. the width, the cross-section and/or the distribution of the
20 entrance openings 26 over the entrance layer 32.

 In the example of Fig. 1a the lid 20, forming an exit area of the capsule 2, through which the beverage, here coffee, can drain from the capsule, comprises an exit layer 34. In this example the exit layer 34 forms the lid 20. In this example, the exit layer 34 is formed by a porous sheet, such as a filter
25 layer or a filter paper. In this example the entire lid 20 is formed as the porous sheet exit layer 34. In this example the lid 20 forms a substantially continuous fluid-permeable sheet spanning substantially the entire second open end 22 of the capsule 2. The exit layer 34 has a certain flow resistance determined by e.g. the porosity and/or permeability of the filter layer such as filter paper.

The flow resistance of the exit layer 34 is higher than the flow resistance of the entrance layer 32, to enable a pressure build-up in the capsule 2 before the beverage drains from the capsule 2 via the exit layer 20. Due to the pressure build-up in the capsule 2, the pressure in the capsule 2 may become higher than the pressure with which the hot water is supplied to the capsule 2. The higher pressure in the capsule 2 is favourable for the brewing process and may give a better beverage. Also, the time the hot water is in the capsule 2 to extract beverage from the extractable product may become larger and thus may result in a better beverage. Also, pressure build-up upstream of the capsule may be prevented, which may damage the system 1 and/or is unfavourable for the brewing process.

Fig. 1b shows an example of a second embodiment of a system 1 according to the invention for preparing a predetermined quantity of beverage suitable for consumption using an extractable product. The system 1 comprises an exchangeable capsule 2, and an apparatus 4. The apparatus 4 comprises a receptacle 6 for holding the exchangeable capsule 2. In this example, the receptacle 6 has a shape complementary to the shape of the capsule 2. In Fig. 1b a gap is drawn between the capsule 2 and the receptacle 6 for clarity. It will be appreciated that, in use, the capsule 2 may lie in contact with the receptacle 6. The apparatus 4 further comprises a fluid dispensing device 12 for supplying an amount of a fluid, such as water, under pressure to the exchangeable capsule 2.

In the system 1 shown in Fig. 1b, the exchangeable capsule 2 comprises a circumferential wall 14, a bottom 16 closing the circumferential wall 14 at a first end 18, and a lid 20 closing the circumferential wall 14 at a second end 22 opposite the bottom 16. The circumferential wall 14, the bottom 16 and the lid 20 enclose an inner space 24 comprising the extractable product. In this example, the exchangeable capsule 2 comprises an amount of extractable product suitable for preparing a single portion of the beverage, preferably a single cup of the beverage, e.g. from 30-200ml of the prepared

beverage. The exchangeable capsule, thus, is a single-portion-pack. Approximately a capsule may filled with 4 – 8 gram roasted and ground coffee. The grain size of the coffee may e.g. be between 0.2 and 0.4 mm for approximately 5 gram of ground coffee in the capsule 2.

5 In this embodiment, the bottom 16 comprises an entrance layer 32 with entrance openings 26 distributed over the entrance layer 32, which are distributed over substantially the entire bottom 16. In the example of Fig. 1b the bottom 16 is integral with the circumferential wall 14.

In this embodiment, the system 1 of Fig. 1b comprises bottom
10 piercing means 122 intended for piercing a capsule. Fig. 1b shows the bottom piercing means 122 in an extended position, intended for creating an entrance opening in the bottom 16 of a capsule. However, here the bottom 16 of the capsule 2 is positioned at a distance from the bottom piercing means 122, such that the capsule 2 is not pierced by the bottom piercing means 122 and the
15 bottom 16 stays intact when the bottom piercing means 122 are brought in the extended position.

In Fig. 1b the bottom piercing means 122 comprise a bore 126 through which the fluid is supplied to an inner space of the receptacle 6. The fluid, here hot water under a pressure of e.g. more than four bars, will flow
20 through the entrance layer 32 into the inner space 24 of the capsule 2 for extracting desired substances from the extractable product, in this example approximately 5 grams of roasted and ground coffee, for preparing, in this example the single cup of the beverage, here coffee. The flow resistance of the entrance layer 32 usually is sufficiently low such that no pressure build-up
25 upstream of the entrance layer in the receptacle 6 or the bore 126 may be possible, which may have a negative influence on the system 1 and/or the beverage.

In the example of Fig. 1b, the circumferential wall 14 is substantially rigid. The circumferential wall 14 may e.g. comprise a plastics

material and may be formed by e.g. injection moulding, vacuum-forming, thermoforming or the like.

Further, the system 1 shown in Fig. 1b may comprise lid piercing means 128 intended for piercing the lid of an alternative capsule. However, the lid 20 of the capsule 2 comprises an exit layer 34, through which the beverage can be drained from the capsule 2. The exit layer 34 is arranged to having sufficiently high tear strength and/or to be sufficiently stiff not to be pierced by the lid piercing means 128 under the influence of the pressure inside the capsule 2. However, the exit layer 34 may be deformed against the top sides of the piercing means under influence of the pressure in the capsule, but will not rupture and/or tear and/or be pierced by the piercing means.

In the example of Fig. 1b the exit layer 34, forming an exit area of the capsule 2, through which the beverage, here coffee, can drain from the capsule, is formed by a porous sheet, such as filter paper or a filter layer of an alternative material. In this example the exit layer 34 is positioned in the exit area of the lid 20. The exit layer 34 may form a substantially continuous fluid-permeable sheet spanning substantially the entire second, open end 22 of the capsule 2. Thus, the fluid can drain from the capsule 2 over a large area.

Fig. 2 shows an embodiment of a capsule 2 according to the invention, wherein the capsule 2 comprises an additional wall element 50. The additional wall element 50 provides additional stiffness to the capsule 2. The additional wall element 50 may extend from the bottom 16 to the lid 20. The additional wall element 50 extends from the circumferential wall 14 towards the inner space of the capsule. In this embodiment the additional wall 50 divides the inner space 24 of the capsule 2 in two compartments 48a and 48b. For example can one compartment 48a be filled with extractable product and the second compartment 48b can remain empty. This way an optimal volume for the extractable product, e.g. roasted and ground coffee, may be created, so an optimal compaction of the extractable product may be obtained. In an other embodiment, the second compartment 48b may be filled with an other

extractable product e.g. a different kind of coffee, or e.g. cream, or with a soluble product, e.g. milk or cacao. The additional wall 50 may be porous and/or perforate or may be impermeable as not to mix the products in both compartments. Also, the pressure to be built up in the compartments may be
5 different. For example, in one compartment 48a filled with roasted and ground coffee, the pressure to be build up is lower than in the compartment 48b filled with e.g. cream. Thus the container 30 will be first filled with the coffee liquid and thereafter filled with the cream. The properties of the additional wall element 50, the wall 14, and the lid 20 with exit filter 36 may have to be
10 adapted such as to accommodate the different pressure levels in the different compartments.

Fig. 3 shows another embodiment of the capsule 2 according to the invention, comprising additional wall elements 50 dividing the inner space 24 of the capsule in three compartments 48a, 48b and 48c. Each compartment
15 may be filled with a different extractable and/or soluble product, such as roasted and ground coffee, cream and/or liquor flavoured extractable product. The pressure built-up in the different compartments may be different, e.g. to create a beverage that is drained into layers in the container 30 for an attractive serving of the beverage or a particular taste experience. Also, the
20 additional wall elements 50 may provide additional stiffness to the capsule 2. The wall 14, the lid 20 and/or the bottom 16 may thus be provided less stiff, which may result in an easier to manufacture and/or more cost effective capsule 2.

Fig. 4 shows an embodiment of a capsule according to the invention
25 that comprises additional wall elements 50 in the form of wedge-shaped ribs 46. The cross-section of the ribs 46 increases from the bottom 16 towards the lid 20. The lid 20 comprises an exit filter 36 with exit openings 37 for draining the prepared beverage there through. The ribs 46 may provide additional stiffness to the circumferential wall 14. Preferably the circumferential wall 14
30 is substantially rigid. By providing additional wall elements 50 attached to the

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circumferential wall 14 and extending towards the inner space 24, additional stiffness may be provided to the circumferential wall 14, so a more stiff and rigid circumferential wall may be obtained. One or more additional wall elements 50 may be provided. Different shapes of the additional wall element 50 may be provided, 5 such as for example wedge-shaped, rectangular, circular, polygonal. Also, the volume of the additional wall elements 50 may be such that the remaining volume of the inner space 24 is optimal for providing sufficient extractable product in an optimal compaction. Thus the volume of the inner space may be adapted by the additional wall elements depending on the extractable product. When the capsule 2 is provided 10 with an entrance filter 32 and an exit layer 34, the inner space 24 of the capsule may be adapted by the additional wall elements 50 to be entirely filled with extractable product so that no air volume is present in the capsule, thereby improving the shelf life of the extractable product in the capsule. The capsule 2 can be properly sealed, for example by a biodegradable seal.

15 Also, the additional wall element 50, e.g. the rib 46 may be provided with a bore facing the bottom and ending at or near the lid or in between the lid and the bottom. The bore is open for letting water therein, such that for example, the extractable product can also be wetted at a level below the bottom entrance area in addition to the extractable product being wetted by the fluid through the bottom 20 entrance area. This way for example a more uniform pressure build up may be obtained.

In the foregoing specification, the invention has been described with reference to specific examples of embodiments of the invention. It will, however, be evident that various modifications and changes may be made therein without 25 departing from the scope of the invention as set forth in the appended claims.

It may be clear that the compartments may be arranged circumferentially next to each other, or may be arranged axially next to each

other. Many variants and combinations of compartment arrangement are possible.

In the claims, any reference signs placed between parentheses shall not be construed as limiting the claim. The word 'comprising' does not exclude
5 the presence of other features or steps than those listed in a claim.

Furthermore, the words 'a' and 'an' shall not be construed as limited to 'only one', but instead are used to mean 'at least one', and do not exclude a plurality. The mere fact that certain measures are recited in mutually different claims does not indicate that a combination of these measures cannot be used to
10 advantage.

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CLAIMS:

1. A system for preparing a predetermined quantity of beverage suitable for consumption using an extractable product, comprising:

an exchangeable capsule, and

5 an apparatus comprising a receptacle for holding the exchangeable capsule, and a fluid dispensing device for supplying an amount of a fluid under pressure to the exchangeable capsule,

wherein the exchangeable capsule comprises a circumferential wall, a bottom closing the circumferential wall at a first end, and a lid closing the
10 circumferential wall at a second end opposite the bottom, wherein the wall, bottom and lid enclose an inner space comprising the extractable product,

wherein the bottom comprises an entrance area and the system is arranged for bringing the fluid dispensing device in fluid connection with the entrance area for supplying the fluid to the extractable product for preparing the
15 beverage,

wherein the lid comprises an exit area and the system comprises an outlet which, in use, is in fluid communication with the exit area for draining the prepared beverage from the capsule and supplying the beverage to a container,

wherein the receptacle is arranged for draining the prepared
20 beverage from the capsule through the exit area,

wherein the circumferential wall comprises at least one additional wall element extending towards the inner space for providing additional stiffness, wherein the fluid dispensing device is arranged for supplying the fluid to the

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exchangeable capsule under a pressure of 4 - 20 bars and wherein the additional wall element forms a rib,

wherein the receptacle comprises bottom piercing means intended for piercing a bottom of an alternative capsule for creating at least one entrance opening for supplying the fluid to the extractable product through said at least one entrance opening, and

wherein the bottom of the capsule of the system comprises an entrance filter for supplying the fluid to the extractable product therethrough, which entrance filter is, in use, positioned at a distance from the bottom piercing means, such that the capsule of the system is not pierced by the bottom piercing means and the bottom stays intact.

2. A system according to claim 1, wherein the circumferential wall is rigid.
3. A system according to claim 1 or 2, wherein the additional wall element extends from the bottom to the lid of the capsule.
4. A system according to any one of claims 1 to 3, wherein the additional wall element comprises a bore at an end facing the bottom for letting fluid therethrough.
5. A system according to claim 4, wherein the additional wall element further comprises one or more of perforate and porous sides.
6. A system according to any one of claims 1 to 5, wherein the rib is wedge-shaped.
7. A system according to claim 6, wherein the cross-section of the wedge-shaped rib increases from the bottom towards the lid.

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8. A system according to any one of claims 1 to 7, wherein the exit area is provided with an exit filter that is one of or both porous and perforate.

9. A system according to any one of claims 1 to 8, wherein the entrance area is provided with an entrance filter that is one of or both porous and
5 perforate.

10. A system according to any one of claims 1 to 9, wherein the receptacle comprises lid piercing means intended for piercing an exit filter of an alternative capsule when the exit area of the alternative capsule sufficiently presses against the lid piercing means under the influence of the pressure of one
10 or more of the fluid and beverage in the alternative capsule for creating at least one exit opening through which the beverage can drain from the alternative capsule, and

wherein the exit area of the capsule of the system comprises an exit filter, through which the beverage can drain from the capsule of the system such
15 that the capsule of the system, in use, is not pierced by the lid piercing means and the lid stays intact.

11. A system according to any one of claims 1 to 10, wherein the fluid dispensing device is arranged for supplying the fluid to the exchangeable capsule under a pressure of 4.5 -18 bars.

20 12. A capsule suitable for use in the system according to any one of claims 1 to 11, wherein the exchangeable capsule comprises a circumferential wall, a bottom closing the circumferential wall at a first end, and a lid closing the circumferential wall at a second end opposite the bottom, wherein the wall, bottom and lid enclose an inner space comprising the extractable product,
25 wherein the bottom comprises an entrance area, wherein the lid comprises an

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exit area, and wherein the circumferential wall comprises at least one additional wall element extending towards the inner space for providing additional stiffness, the additional wall element forming a rib.

13. Use of a capsule according to claim 12 for preparing a beverage
5 using the apparatus of the system according to any one of claims 1 to 11.

14. A method for preparing a predetermined quantity of beverage suitable for consumption using an extractable product, comprising:

10 providing an exchangeable capsule, comprising a circumferential wall, a bottom closing the circumferential wall at a first end, and a lid closing the circumferential wall at a second end opposite the bottom, wherein the wall, bottom and lid enclose an inner space comprising the extractable product,

15 providing an apparatus comprising a receptacle for holding the exchangeable capsule, a fluid dispensing device for supplying an amount of a fluid under a pressure of at least six bars to the exchangeable capsule, and an outlet which, in use, is in fluid communication with the capsule for draining the prepared beverage from the capsule and supplying the beverage to a container,

arranging the exchangeable capsule with the lid in abutment with a support surface of the receptacle, and

20 supplying the fluid under the pressure to the extractable product for preparing the beverage;

wherein the circumferential wall comprises at least one additional wall element extending towards the inner space for providing additional stiffness and wherein the additional wall element forms a rib,

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wherein the receptacle comprises bottom piercing means intended for piercing a bottom of an alternative capsule for creating at least one entrance opening for supplying the fluid to the extractable product through said at least one entrance opening, and

5 wherein the bottom of the capsule of the system comprises an entrance filter for supplying the fluid to the extractable product therethrough, which entrance filter is, in use, positioned at a distance from the bottom piercing means, such that the capsule of the system is not pierced by the bottom piercing means and the bottom stays intact.

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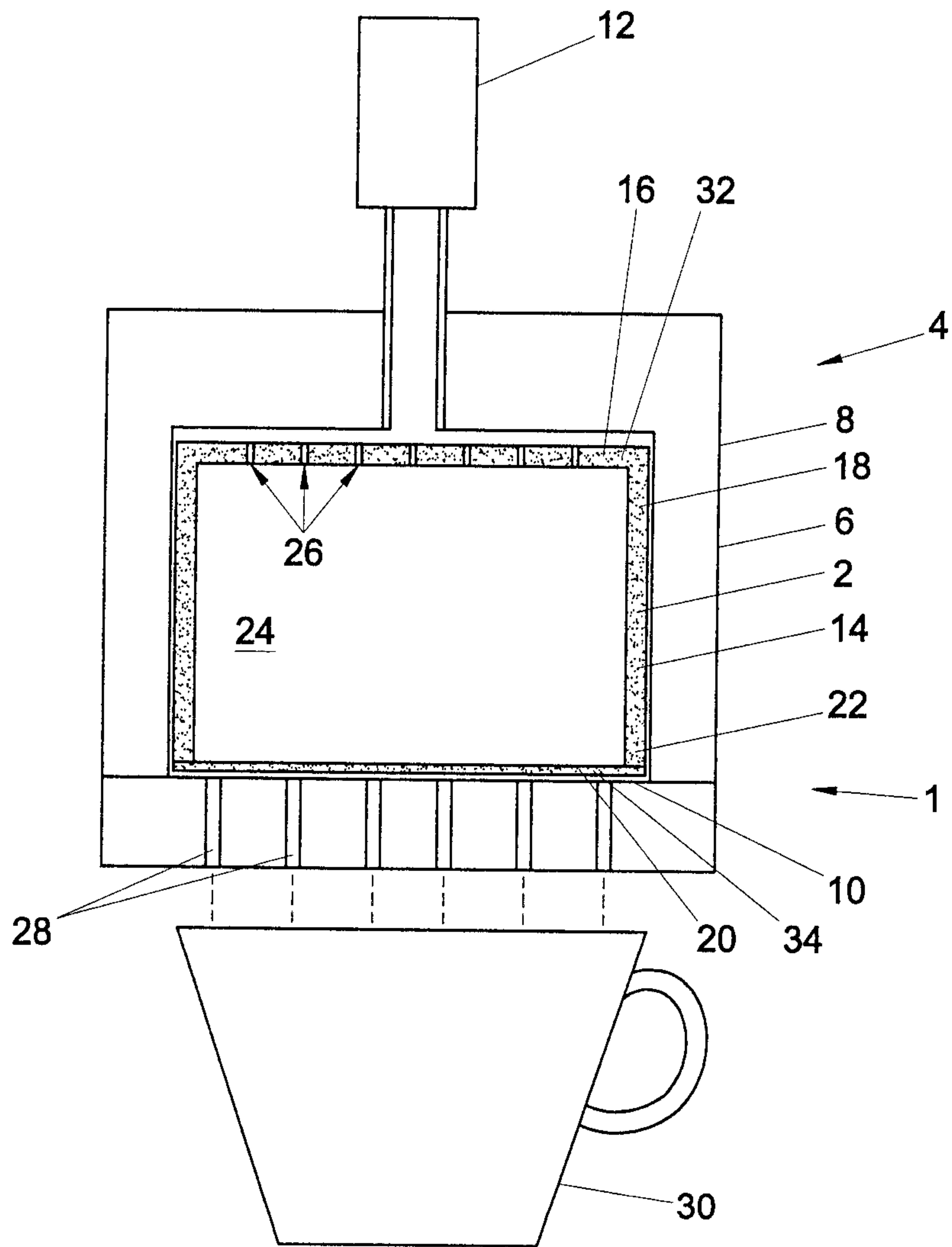


Fig. 1a

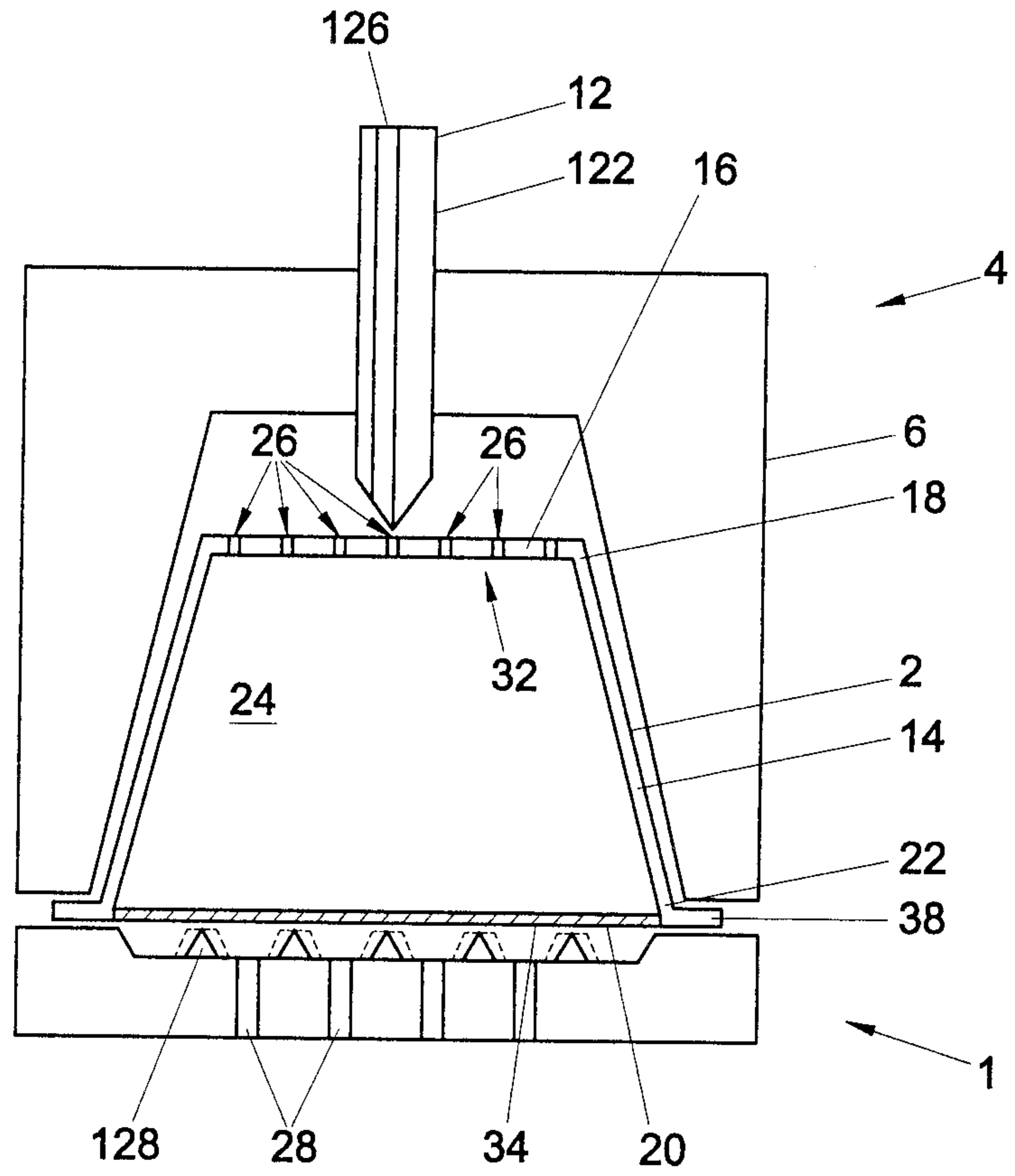


Fig. 1b

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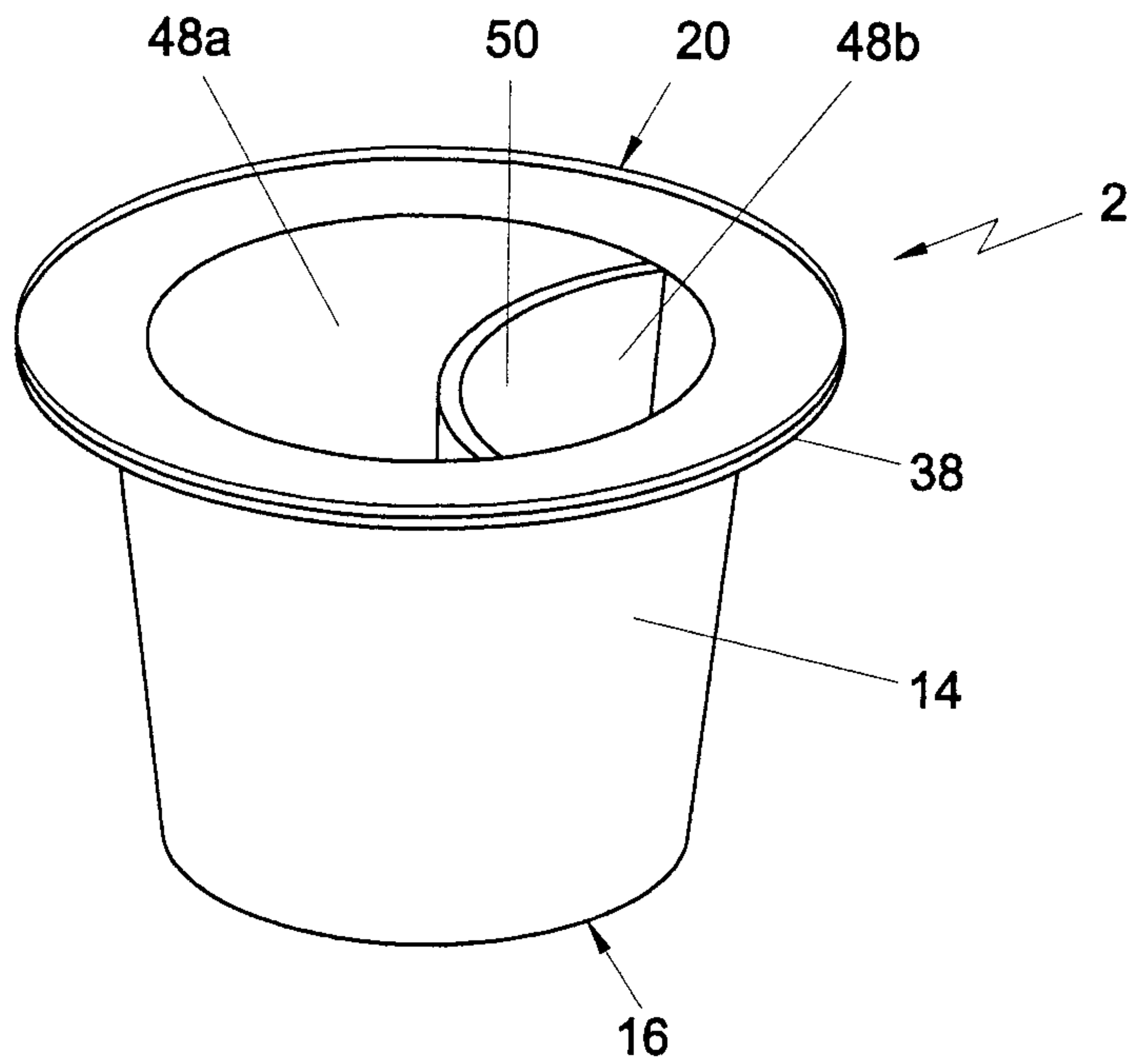


Fig. 2

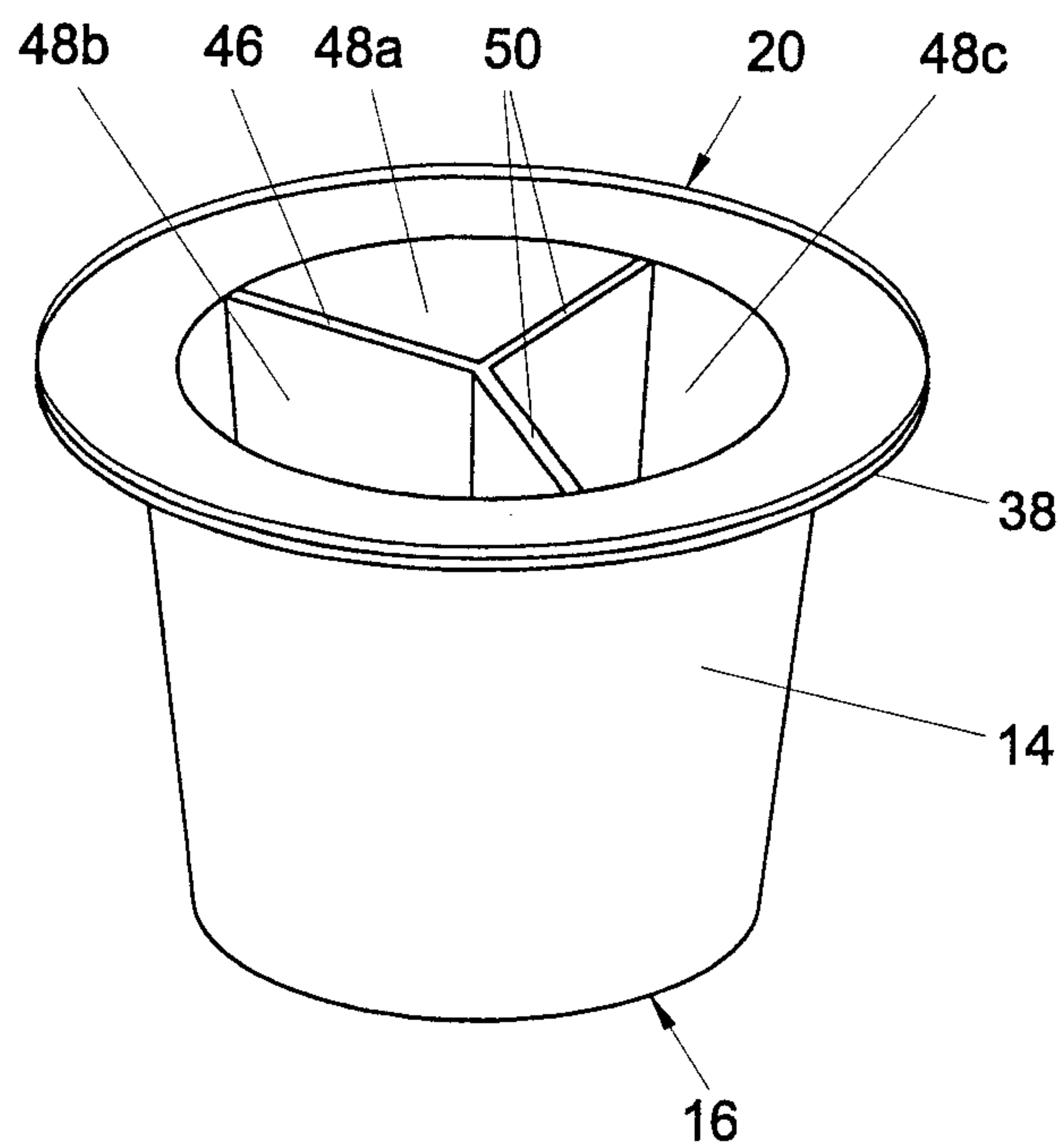


Fig. 3

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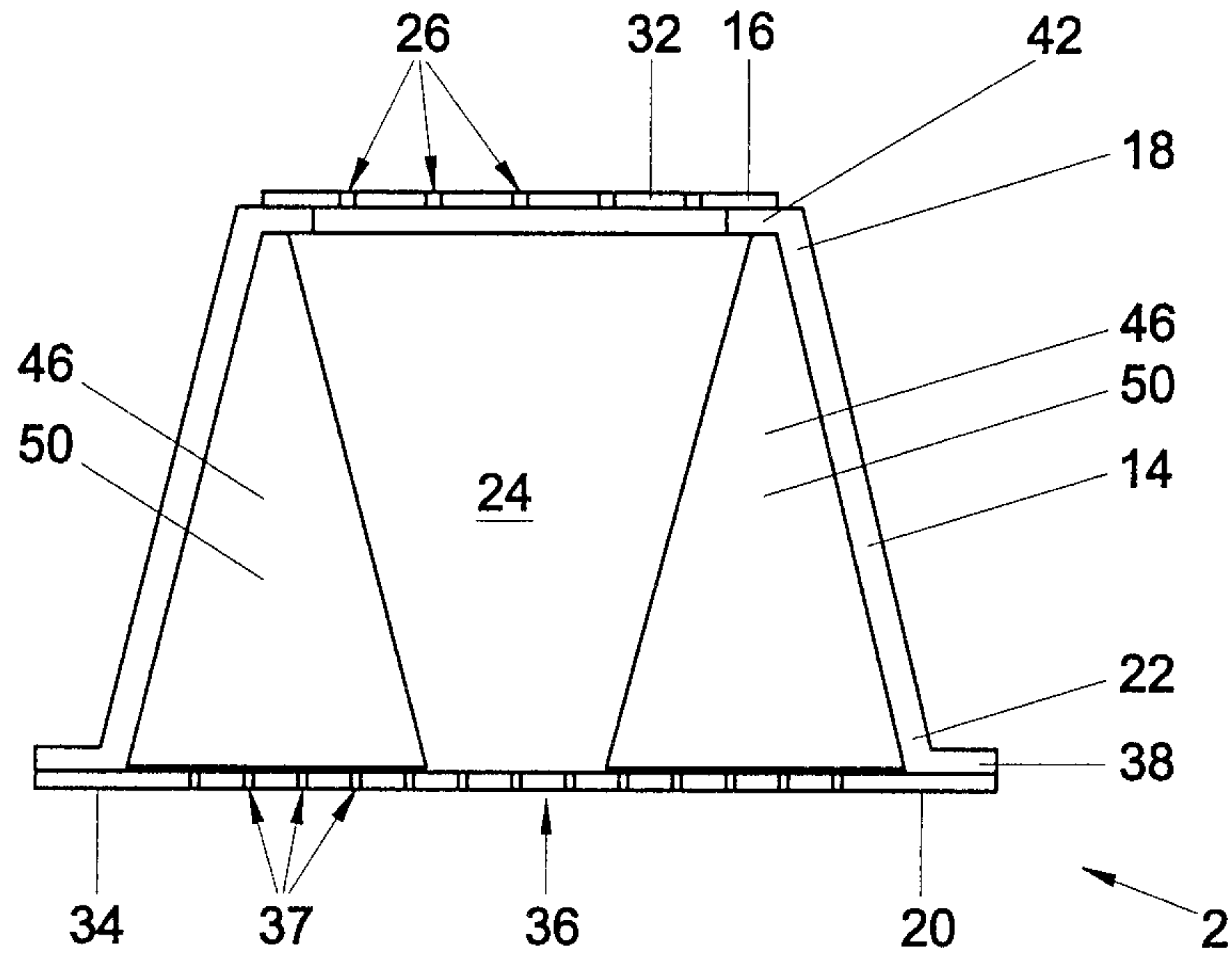


Fig. 4a

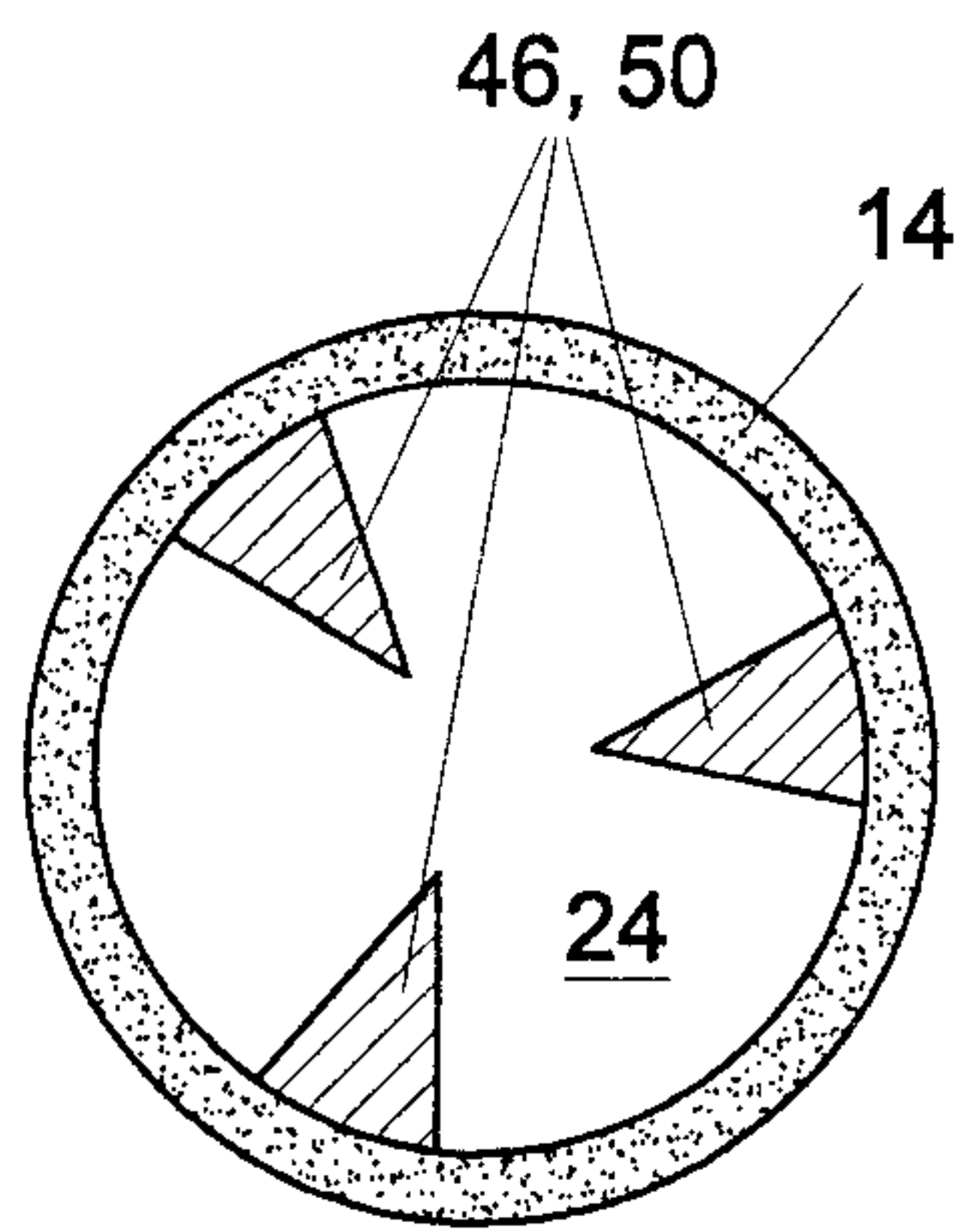


Fig. 4b

