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(54) Title: CAPSULE AND METHOD FOR MAKING BEVERAGES

(57) Abstract: The present invention concerns a capsule (1; 21; 41; 71; 81) suited to contain a substance for making a beverage, comprising a container (2) suited to define an area (3) for housing the substance. Said container (2) comprises at least a controlled breaking area (10; 49; 69; 79; 90) suited to remain intact in a first rest condition of the capsule (1; 21; 41; 71; 81) and suited to be broken in a second operating condition of the capsule (1; 21; 41; 71; 81) so as to create a communication way between the housing area (3) and the outside of the capsule (1; 21; 41; 71; 81). The invention also implements a method for making a beverage using said capsule.



## CAPSULE AND METHOD FOR MAKING BEVERAGES

## TECHNICAL FIELD OF THE INVENTION

The present invention concerns a capsule containing a substance for making  
5 beverages, suited to be accommodated in apposite apparatuses for making  
beverages.

In particular, the present invention concerns a capsule containing coffee powder  
suited to be used in systems for making espresso coffee.

## DESCRIPTION OF THE STATE OF THE ART

10 It is known that in the field of the preparation of beverages apparatuses are used  
that employ containers, commonly known as capsules, containing a dose of a  
substance suited to be used to obtain the desired beverage.

Said capsules are of the disposable type and therefore they are used for making a  
beverage and then thrown away.

15 Said capsules are inserted in a suitable housing seat in the apparatus and then a  
pressurized fluid is passed through the substance, in such a way that the desired  
beverage flows out of the apparatus.

The pressurized fluid is usually constituted by hot water or steam, properly  
generated in a suitable boiler provided in the apparatus.

20 A first known type of capsule is substantially constituted by a container in a  
plastic material inside which there is the base substance of the beverage to be  
obtained, like for example coffee powder or tea leaves, said container being  
closed by suitable closing elements at the level of two of its opposite side walls.

A first type of closing element can be constituted by a breather element, for  
25 example a breather paper filter or a holed plastic film, which is applied to the  
container once the substance has been placed inside it.

The capsules constructed in this way are usually supplied in sealed packs, for  
example contained in plasticized packs, which are opened only at the moment of  
use in order to maintain the aroma of the substance contained in the capsule as  
30 intact as possible.

Once the pack has been opened, the capsule is inserted in the apparatus in the  
apposite housing seat and then the pressurized fluid is forced to flow between the  
two side walls through the substance. The beverage obtained in this way is  
conveyed towards a suitable container, for example a glass or a cup.

Another type of closing element normally used is constituted by a non breathing or impermeable element (called sealing film) usually made of aluminium foil applied to the container, too. Compared to breather paper, this type of closing element makes it possible to maintain the aroma of the substance unchanged over  
5 time in the most effective way. When these capsules are used, furthermore, there is no need to use external containing packs, as they are sealed.

In fact, thanks to the use of this type of seal, the substance is contained in a substantially tight container. This type of capsule is also called sealed or tight capsule.

10 In order to be able to use said capsules of the sealed type, the apparatuses are provided, at the height of the housing seat, with suitable means for perforating the sealing film in order to create ducts for the passage of the fluid.

Said perforating means are preferably constituted by a plurality of needles that act on the side walls of the capsule once it has been inserted in the apposite  
15 housing seat.

The operation of said needles preferably takes place when the operator exerts pressure manually through a suitable lever mechanism that acts on a thrust element provided with said needles.

Once the sealing films have been perforated, the fluid for the preparation of the  
20 beverage is supplied. Said fluid passes through the container between the perforated sealing films and thus through the base substance, in such a way that the desired substance flows out of the apparatus.

A drawback posed by the capsules of the known type is represented by their complex constructive structure, due in particular to the application of the two  
25 closing elements.

Another drawback posed by the capsules of known type, in particular by the capsules with closing elements of the impermeable type, is constituted by the fact that the apparatus intended to use them must be provided with means for perforating the impermeable closing element and therefore a complex and/or  
30 expensive apparatus is required.

The object of the present invention is to overcome the drawbacks typical of the known art at least partially.

In particular, it is an object of the invention to provide a capsule that is simpler to produce and less expensive than the capsules of the known type.

It is another object of the invention to provide a capsule of the universal type, which can be used both in apparatuses provided with seal breaking means and in apparatuses not provided with said breaking means.

#### SUMMARY OF THE PRESENT INVENTION

5 The present invention is based on the general consideration that it is desirable to provide a capsule suited to contain a substance for making a beverage comprising a container suited to define an area for housing said substance, said container comprising at least one controlled breakage area.

According to a first embodiment, the object of the present invention is a capsule  
10 according to claim 1, meaning a capsule suited to contain a substance for making a beverage comprising a container suited to define a housing area for said substance, said container comprising at least one controlled breaking area suited to remain intact when said capsule is in a first rest condition and suited to be broken when said capsule is in a second operating condition in order to create a  
15 communication way between said housing area and the outside of said capsule.

The second operating condition of the capsule is preferably a condition of compression.

Advantageously, the controlled breaking area comprises a projecting element that protrudes from the external surface of the container.

20 In the second operating condition the projecting element properly comes to be arranged at least partially inside the container.

The projecting element is preferably defined between a base portion associated with the container and an end portion that projects with respect to the external surface of the container.

25 In a preferred embodiment of the invention, at the level of the base portion of the projecting element, the container comprises a portion with reduced thickness.

In another preferred embodiment of the invention, at the level of the base portion of the projecting element, the container comprises a portion with lower mechanical hardness compared to the surrounding areas.

30 The projecting element is advantageously made in a single piece with the container.

The projecting element has preferably the shape of a truncated pyramid.

More preferably, the truncated pyramid shape has a substantially triangular base.

In an alternative embodiment of the invention, the truncated pyramid shape has a

substantially rectangular base.

In a variant embodiment of the invention, the projecting element is substantially cylindrical in shape.

The external surface of the projecting element preferably comprises at least one  
5 grooved portion intended to create said communication way between the housing area and the outside of the capsule.

The container is advantageously produced through a moulding process.

The controlled breaking area is preferably associated with a bottom portion of the container.

10 In preferred embodiments of the invention the capsule comprises several controlled breaking areas.

In a first preferred embodiment of the invention, the controlled breaking areas are distributed on the container at equal distances.

The capsule preferably comprises at least one closing element of the housing area  
15 and comprises means for breaking said closing element suited to be inactive in the first rest condition of the capsule and suited to be active in the second operating condition of the capsule.

The capsule properly comprises deformation means suited to allow the breaking means and the closing element to mutually approach each other.

20 The deformation means preferably comprise an elastically yielding portion.

According to a preferred embodiment of the invention, the closing element is applied to an annular edge associated with the housing area, said annular edge comprising said elastically yielding portion.

The breaking means preferably comprise at least one projecting element directed  
25 towards the closing element.

Advantageously, the breaking means comprise a plurality of projecting elements directed towards the closing element and are distributed peripherally with respect to the closing element.

As an alternative, the breaking means comprise a plurality of projecting elements  
30 directed towards the closing element and distributed in such a way as to substantially occupy the entire area of the closing element towards which they are directed.

The breaking means preferably comprise one or more pointed elements.

In a preferred embodiment of the invention the closing element is of the

impermeable type.

In another preferred embodiment of the invention the closing element is of the permeable type.

Advantageously, the capsule substantially has the shape of a truncated cone.

- 5 A second aspect of the invention concerns a method according to claim 14, meaning a method for making a beverage by making a fluid flow through a dose of a substance for the preparation of said beverage, said method including the following steps:

- 10 - preparing a capsule comprising a container suited to define a housing area for said substance, **wherein** said container comprises at least one controlled breaking area;
- exerting a force on said capsule at the level of said at least one controlled breaking area so as to break said container and create a communication way between said housing area and the outside of said capsule.

- 15 Said method is preferably implemented in an apparatus comprising a seat suited to house the capsule.

Advantageously, the step of exerting a force on the capsule comprises the step of compressing the capsule in the housing seat provided in the machine.

- 20 The passage of the fluid in the dose of the substance for preparing the beverage properly comprises the step of making the fluid pass through the housing area of the capsule when this is inserted in the housing seat provided in the apparatus.

#### BRIEF DESCRIPTION OF THE DRAWINGS

- Further advantages, objects and characteristics, as well as further embodiments of the present invention are defined in the claims and will be illustrated in the following description, with reference to the enclosed drawings; in the drawings, corresponding or equivalent characteristics and/or components are identified by the same reference numbers. In particular:

- 25 - Figure 1 shows a perspective view of a capsule according to a first embodiment of the invention;
- 30 - Figure 2 shows a bottom view of Figure 1;
- Figure 3 shows a sectional view of Figure 1 along line III-III;
- Figure 3A shows an enlarged detail of Figure 3;
- Figure 4 shows the capsule of Figure 3 inserted in an apparatus for making a beverage in a first operating position;

- Figure 5 shows the capsule of Figure 3 inserted in an apparatus for making a beverage in a second operating position;
- Figure 5A shows an enlarged detail of Figure 5;
- Figure 6 shows a variant embodiment of Figure 2;
- 5 - Figure 7 shows a perspective top view of the capsule of Figure 6 without the upper closing element;
- Figure 8 shows a sectional view of Figure 6 along line VIII-VIII;
- Figure 8A shows an enlarged detail of Figure 8;
- Figures from 9 to 12 show different steps during use of the capsule of Figure
- 10 8;
- Figure 12A shows an enlarged detail of Figure 12;
- Figure 13 shows another variant embodiment of Figure 2;
- Figure 14 shows a further variant embodiment of Figure 2;
- Figure 15 shows another variant embodiment of Figure 2;
- 15 - Figure 16 shows a sectional view of Figure 15;
- Figure 17 shows a variant embodiment of Figure 7;
- Figure 18 shows a perspective bottom view of Figure 17;
- Figure 19 shows a sectional view of Figure 17 along line XXVII-XXVII;
- Figures from 20 to 24 show different stages during use of the capsule of
- 20 Figure 19;
- Figure 24A shows an enlarged detail of Figure 24.

#### DETAILED DESCRIPTION OF THE PRESENT INVENTION

The capsule of the invention described here below is particularly suited to make espresso coffee.

- 25 It is clear that the inventive concept can be extended to any type of known capsules that are commonly used to make express beverages in general, like teas, infusions, cappuccinos etc.

Figures from 1 to 3 show a capsule 1 according to a first embodiment of the invention.

- 30 The capsule 1 substantially comprises a container 2 that defines inside it an area 3 suited to house a base substance used for making a beverage.

The base substance, not shown in the figures, can be constituted for example by coffee powder in the case of espresso coffee, or tea leaves or other essences for making teas or infusions in general.

As is known, for the preparation of beverages a fluid, for example hot water, steam or milk, is passed through the substance in order to obtain the desired beverage that thus flows out of the apparatus.

5 The container 2 comprises a side surface 4, substantially in the shape of a truncated cone, delimited by two upper and lower closing areas 5 and 6.

The upper closing area 5 comprises a closing element 8. The closing element 8 is associated with an external annular edge 9. Said closing element 8 preferably comprises a film made of a permeable material, for example a layer of breather paper. In variant embodiments of the invention said closing element 8 may be  
10 constituted by other permeable materials, like for example a plastic film provided with small holes, a film provided with micro holes or a non-woven fabric with filtering characteristics.

The closing element 8 can be associated with the external annular edge 9 through connection means of the known type, for example by glueing with an adhesive  
15 substance, welding or induction.

The lower closing area 6 comprises a tight bottom 7 advantageously made of the same material as the side surface 4.

The bottom 7 is provided with controlled breaking areas 10, four in the embodiment shown herein. The controlled breaking areas 10 are advantageously  
20 equally distributed on the bottom 7 of the lower closing area 6 and are thus substantially positioned at the vertices of a square.

Each controlled breaking area 10 comprises a projecting portion 11 that protrudes from the external surface 6a of the capsule in the lower closing area 6, as shown in Figure 3A.

25 The projecting portion 11 has substantially the shape of a truncated pyramid with triangular base.

At the level of the base of the projecting portion 11 the thickness of the wall W of the capsule is reduced with respect to the adjacent portions.

The particular shape of the projecting portion 11 and of the area with reduced  
30 thickness W is advantageously obtained directly, during the production of the capsule 1, for example through a moulding process.

The use of the capsule 1 of the invention in a suitable apparatus A of the known type used for making beverages, in particular espresso coffee, is described here below with reference to Figures 4 and 5.



Only the part of the apparatus A intended to accommodate the capsule 1 is shown herein. The apparatus A comprises a first portion 50 provided with a seat 51 suited to accommodate the capsule 1 and a second portion 52 suited to lock the capsule 1 on the first portion 50 before use. The first portion 50 comprises an inlet channel 53 through which the fluid for making the beverage is supplied, said fluid being usually constituted by hot water and/or stream suitably produced by a boiler in the apparatus A. The second portion 52 comprises an outlet channel 54 suited to convey the ready beverage towards a receiving container, like for example a glass or a cup.

10 The preparation of the beverage requires first the insertion of the capsule 1 in the seat 51 in the first portion 50 of the apparatus A, as shown in Figure 4. The projecting portions 11 come to be placed against the walls of the bottom 51a of the housing seat 51 in the first portion 50. Successively, the second portion 52 is moved near the first portion 50. In the apparatuses of the known type this operation is carried out by means of a suitable mechanical system, for example by operating a lever that displaces the second portion 52. The second portion 52 is then pushed towards the first portion 50, as shown in Figure 5.

In particular, when the second portion 52 is pushed towards the first portion 50, the thrusting forces are concentrated in the controlled breaking areas 10 and the projecting portions 11 are pushed towards the inside of the capsule 1. The areas W with reduced thickness are thus subjected to high stress and to breakage. The projecting portions 11 thus come to be arranged towards the inside of the capsule 1.

25 This results in the creation of a plurality of passage ducts, one per each controlled breaking area 10, from the bottom of the seat 51 to the inside of the capsule 1.

In this closed condition of the apparatus A, shown in fact in Figure 5, the capsule 1 is ready for use.

30 The successive step, in fact, consists in supplying the fluid from the inlet channel 53 towards the capsule 1, in order to make it pass through the substance contained inside it and to convey it outside through the outlet channel 54 in the form of a beverage.

The fluid coming from the inlet channel 53 reaches the substance inside the capsule 1 passing from the bottom of the seat 51 in the first portion 50 of the apparatus A through the ducts created by the breakage of the controlled breaking

areas 10. The fluid then passes through the upper permeable closing element 7 and flows into the outlet channel 54 so as to be dispensed outside the apparatus.

The use of the capsule 1 is thus advantageous in all those apparatuses of the standard type that are intended for making beverages and use capsules provided  
5 with permeable closing elements, substantially in the apparatuses of the type shown in Figures 4 and 5.

However, the presence, for the lower closing area 6, of a tight bottom 7 made of the same material as the side surface 4, makes it possible to produce the capsule 1 by applying a single closing element, the upper closing element 8. This reduces  
10 the operations necessary to make the capsule 1 as well as its production costs.

Furthermore, the presence of the tight bottom 7 makes it possible to improve the ability to maintain the aroma of the substance contained in the capsule 1 unchanged and thus to obtain a higher quality beverage.

In the embodiment described above, the upper closing element 8 is  
15 advantageously of the permeable type, so that the capsule 1 can be used in a standard apparatus for capsules with permeable seals.

However, in a preferred embodiment of the invention, the upper closing element may be of the impermeable type, for example it can be made of aluminium foil.

In this case, the capsule can be used in an apparatus of the known type provided  
20 with means for breaking the seals.

In this case, the capsule is absolutely tight in both the closing areas and offers the above mentioned advantages deriving by the presence of the tight bottom made of the same material as the side wall of the capsule.

The breakage of the container in the controlled breaking areas as described above  
25 is determined, as explained above, by the reduced thickness of the container in those same areas. In variant embodiments of the invention, however, said breakage can be obtained in a different manner. For example, at the level of the base of the projecting element the material of which the container is made may present lower mechanical hardness compared to the surrounding areas, so that  
30 when the projecting element is pushed towards the inside of the capsule said areas break.

Figures from 6 to 8 show a capsule 21 according to a variant embodiment of the invention.

The capsule 21 differs from the capsule previously described with reference to

Figures from 1 to 3 due to the different configuration of the upper closing area 25.

5 The upper closing area 25 comprises a closing element 8, not shown in Figure 7 for the sake of simplicity. The closing element 8 may comprise a film in a permeable material, and more preferably it may comprise a film in an impermeable material, for example an aluminium layer, in which case the closure with be tight.

In particular, the closing element 8 is associated with an external annular edge 29 of the upper closing area 25.

10 The closing element 8 can be associated with the external annular edge 29 through connection means of the known type, for example by glueing with an adhesive substance, induction or heat sealing.

15 The upper closing area 25 is provided with an internal annular edge 30 provided with a plurality of projecting elements 31, in the number of twelve in the embodiment illustrated herein, that extend from the internal annular edge 30 in the direction of the closing element 8.

20 The projecting elements 31 are preferably constituted by pointed projections, in the case at hand having the shape of a truncated cone, and preferably carried out in a single piece with the container 2. This can advantageously be obtained directly, during production of the capsule 21, for example when this is made of a plastic material and is obtained by means of a moulding process.

In construction variants of the invention, however, the number and shape of the projecting elements can be different. This choice can depend, for example, on the material of which the closing element 8 is made.

25 Between the peripheral annular edge 29 and the internal annular edge 30, the container 2 is provided with an intermediate shaped area 32, better visible in the detail shown in Figure 8A.

30 Said intermediate area 32 is elastically yielding, as will be shown further on in the present description. The yielding nature of said intermediate area 32 may be the result of the appropriate choice of the thickness of the area 32 itself, or of the use of a suitable material with resilient properties.

The use of the capsule 21 in an apparatus A for making beverages substantially of the same type as previously described with reference to Figures 4 and 5 is described below with reference to Figures from 9 to 12.

Regarding the lower closing area 6 and the formation of the fluid passage ducts at the level of the controlled breaking areas 10, the description provided above for the first embodiment of the invention applies.

5 The preparation of the beverage requires first the insertion of the capsule 21 in the seat 51 in the first portion 50. Successively, the second portion 52 is moved near the first portion 50, as shown in Figure 11. The second portion 52 is then pushed towards the first portion 50, as shown in Figure 11.

10 During said step in which the second portion 52 is pushed towards the first portion 50, the external annular edge 52a of the second portion 52 comes to be arranged in contact with and thrusting against the peripheral annular edge 29 of the capsule 21, causing the deformation of the intermediate area 32, as shown in Figure 12A. At the same time, the closing element 8 is pressed and pulled peripherally downwards, thus causing it to come into contact with all the projecting elements 31 along the internal annular edge 30. Said pressure causes  
15 the closing element 8 to break at the level of said projecting elements 11. Said breaking effect is further amplified by the contact of the second portion 52 against the projecting elements 31 in said final closed condition.

In this closed condition of the apparatus A, shown in fact in Figure 12, the capsule 21 is ready for use. The successive step, in fact, consists in supplying the  
20 fluid from the inlet channel 53 towards the capsule 21, in order to make it pass through the substance contained inside it and to convey it outside through the outlet channel 54 in the form of a beverage.

The breakage of the closing element 8 at the level of the projecting elements 31 makes it possible to improve the passage of the fluid coming from the inside of  
25 the capsule 1 towards the outlet channel 54 and to make the flow of the same fluid through the substance more homogeneous. This means improving the quality of the beverage that flows out of the apparatus.

This advantage is ensured, for example, when the closing element 8 is constituted by a permeable material, like for example breather paper.

30 In fact the fluid, in addition to passing through the centre of the permeable layer, passes also through the breaking areas created at the level of the projecting elements 31.

The use of the capsule 21 is thus advantageous in all those apparatuses of the standard type that are intended for making beverages and use capsules provided

with permeable closing elements, substantially in the apparatuses of the type shown herein.

However, the presence of the means for breaking the closing element 8 constituted by the projecting elements 31 advantageously makes it possible to use  
5 a closing element of the impermeable type, for example made of aluminium foil. In this case, in fact, the breaking areas in proximity to the projecting elements 31 create the passage ducts needed by the fluid coming from the inside of the capsule 1 to reach the outlet channel 54. Said ducts represent the only areas through which the fluid passes, the closing element 8 being impermeable.

10 A capsule 21 provided with a closing element 8 of the impermeable type can thus be used also in an apparatus A of the standard type as shown in Figures 4 and 5, normally used only with capsules with permeable closing elements. The apparatuses used with capsules with impermeable closing elements differ from the standard apparatuses used with capsules with permeable closing elements in  
15 that they are provided with their own means suitable for breaking the tight closing element, for example perforating needles, thus becoming more complex and expensive.

Owing to the above, thanks to the presence of the breaking means constituted by the projecting elements 31 and to the deformability of the intermediate area 32,  
20 the tight closing element 8 is automatically perforated during the positioning of the capsule 21 inside the apparatus A of the standard type.

Advantageously, therefore, the capsule 21 of the invention makes it possible to use a tight closing element for producing it and it can be used in apparatuses of any type, independently of whether or not they are provided with suitable means  
25 for breaking the closing element.

The capsule 21 of the invention is therefore of the universal type suited to be used in all the known types of apparatuses.

Figure 13 shows a capsule 41 according to a variant embodiment of the invention.

30 The capsule 41 differs from the capsule previously described with reference to Figures from 6 to 8 due to the different configuration of the lower closing area 46.

In particular, said lower closing area 46 comprises eight controlled breaking areas 49 instead of four. The controlled breaking areas 49 are advantageously

equally distributed on the bottom 47 of the lower closing area 46 and are thus substantially positioned at the vertices of an octagon.

Each controlled breaking area 49 comprises a projecting portion 44 that protrudes from the external surface 46a of the capsule in the lower closing area 46.

- 5 The projecting portion 44 has substantially the shape of a truncated pyramid with triangular base.

The presence of eight controlled breaking areas 49 favours the passage of fluid on a larger surface.

- 10 Figure 14 shows a capsule 61 according to a variant embodiment of the invention.

The capsule 61 differs from the capsule previously described with reference to Figures from 6 to 8 due to the different configuration of the lower closing area 66.

- 15 In particular, said lower closing area 66 comprises eight controlled breaking areas 69. The controlled breaking areas 69 are advantageously equally distributed on the bottom 67 of the lower closing area 66 and are thus substantially positioned at the vertices of an octagon.

Each controlled breaking area 69 comprises a projecting portion 64 that protrudes from the external surface 66a of the capsule in the lower closing area 66.

- 20 The projecting portion 64 has substantially the shape of a truncated pyramid with rectangular base.

The presence of eight controlled breaking areas 49 favours the passage of fluid on a larger surface.

- 25 Figures 15 and 16 show a capsule 71 according to a variant embodiment of the invention.

The capsule 71 differs from the capsule previously described with reference to Figures from 6 to 8 due to the different configuration of the lower closing area 76.

- 30 In particular, said lower closing area 76 comprises eight controlled breaking areas 79. The controlled breaking areas 79 are advantageously equally distributed on the bottom 77 of the lower closing area 76 and are thus substantially positioned at the vertices of an octagon.

Each controlled breaking area 79 comprises a projecting portion 74 that protrudes from the external surface 76a of the capsule in the lower closing area 76.

The projecting portion 74 has substantially the shape of a wedge internally provided with a discharge channel 74a. The presence of said discharge channel 74a is particularly advantageous, as it guarantees a minimum passage of fluid even when the breakage of the projecting portion 74 is not complete.

- 5    Figures from 17 to 19 show a capsule 81 according to a variant embodiment of the invention.

The capsule 81 differs from the capsule previously described with reference to Figures from 6 to 8 due to the different configuration of the lower closing area 86.

- 10   The lower closing area 86 is tight and comprises a substantially annular bottom portion 87 carried out in a single piece with the side wall 4 and a centre projecting element 88 that is also carried out in a single piece with the bottom portion 87. Longitudinal grooves 89 are defined on the external surface of the projecting element.

- 15   The lower closing area 86 is tight, as already explained. Advantageously, this is obtained by making it through a plastic moulding process.

- 20   The centre projecting element 88 is carried out so that it can be released from the bottom portion 87 following a thrusting action exerted on the same towards the inside of the capsule 81, as will be explained in greater detail below. This can be obtained, for example, by defining a reduced thickness in the circular connection area 90 between the projecting element 88 and the bottom portion 87.

- 25   According to variant embodiments of the invention, however, at the level of the base of the projecting element the material of the container may have lower mechanical hardness than the surrounding areas, so that when the projecting element is pushed towards the inside of the capsule said areas will break and the projecting element can therefore be released from the bottom portion.

The use of the capsule 81 in an apparatus for making beverages substantially of the same type as described above is described here below with reference to Figures from 20 to 24.

- 30   Regarding the upper closing area 25 and the action of the projecting elements 31, the description provided above applies.

The preparation of the beverage requires first the insertion of the capsule 81 in the seat 51 in the first portion 50 of the apparatus A, as shown in Figure 20. The projecting element 88 comes to be placed against the bottom 51a of the housing

seat 51 in the first portion 50, as shown in Figure 21. Successively, the second portion 52 is moved near the first portion 50, as shown in Figures 22 and 23. In particular, when the second portion 52 is pushed against the first portion 50, as shown in Figure 23, the projecting element 88 breaks and is thus released from the bottom portion 87, thus being arranged towards the inside of the capsule 81. Owing to the continuing thrusting action, as shown in Figure 24, the closing element 8 will break at the level of the projecting elements 31, according to the description provided above.

The presence of the grooves 89 on the external surface of the projecting element 88 defines a corresponding number of passage ducts between the seat 51 in the first portion 50 and the inside of the capsule 81, as schematically shown by the arrow in Figure 24A.

In this closed condition of the apparatus A, shown in fact in Figure 24, the capsule 81 is ready for use. The successive step, in fact, consists in supplying the fluid from the inlet channel 53 towards the capsule 81, in order to make it pass through the substance contained inside it and to convey it outside through the outlet channel 54 in the form of a beverage.

In particular, the fluid coming from the inlet channel 53 reaches the inside of the capsule 81 passing through the ducts defined by the grooves 89.

Also in this case, therefore, the capsule 81 can be used in a standard apparatus without means for breaking tight elements.

In fact, thanks to the presence of the breaking means constituted by the projecting elements 31 on one side and of the projecting element 88 on the other side, the fluid passage ducts are automatically created on the two upper and lower closing areas 25, 86 during the positioning of the capsule 81 inside the apparatus A, as just described.

Advantageously, therefore, the capsule 81 of the invention makes it possible to use tight closing elements for producing it and it can be used in apparatuses of any type, independently of whether or not they are provided with suitable means for breaking the closing element.

The capsule 81 that is the subject of the invention is thus of the universal type, is suited to be used in all the apparatuses of known type and is completely tight, with the known advantages for the aroma, which is maintained over time, and the possibility to avoid using external sealing packages.



Even though the invention has been described with reference to the enclosed drawings, upon implementation certain modifications may be made that shall all be considered protected by the present patent, provided that they fall within the scope of the inventive concept expressed in the following claims.

- 5 In variant embodiments of the invention, for example, the shape of the container can be different, so that it can adapt to the different shapes of the seats for the capsules provided in the known apparatuses. Again, the materials used for making the capsule, meaning both the container and the closing elements, may be of different types and suited to the type of substance to be contained therein.
- 10 More generally, it should also be underlined that all the parts can be replaced with other technically equivalent parts, that any material can be used, provided that it is compatible with the intended use, and that the various elements can have any size, depending on the needs.

- It has thus been shown that the present invention allows all the set objects to be
- 15 achieved. In particular, the invention makes it possible to provide a capsule that is simpler to produce and less expensive than the capsules of the known type.

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

## CLAIMS

1. Capsule (1; 21; 41; 71; 81) suited to contain a substance for making a beverage, comprising a container (2) suited to define a housing area (3) for said substance, **characterized in that** said container (2) comprises at least one controlled breaking area (10; 49; 69; 79; 90) suited to remain intact when said capsule (1; 21; 41; 71; 81) is in said first rest condition and to be broken when said capsule (1; 21; 41; 71; 81) is in said second operating condition, so as to create a communication way between said housing area (3) and the outside of said capsule (1; 21; 41; 71; 81).
2. Capsule (1; 21; 41; 71; 81) according to claim 1), **characterized in that** said second operating condition of said capsule (1; 21; 41; 71; 81) is a compression condition for said capsule (1; 21; 41; 71; 81).
3. Capsule (1; 21; 41; 71; 81) according to any of the preceding claims, **characterized in that** said at least one controlled breaking area (10; 49; 69; 79; 90) comprises a projecting element (11; 44; 64; 74; 88) that protrudes from the outer surface (6a; 46a; 66a; 76a) of said container (2).
4. Capsule (1; 21; 41; 71; 81) according to claim 3), **characterized in that** in said second operating condition said projecting element (11; 44; 64; 74; 88) is arranged at least partially inside said container (2).
5. Capsule (1; 21; 41; 71; 81) according to claim 3), **characterized in that** said projecting element (11; 44; 64; 74; 88) is defined between a base portion associated with said container (2) and an end portion projecting from said outer surface (6a; 46a; 66a; 76a) of said container (2).
6. Capsule (1; 21; 41; 71; 81) according to claim 5), **characterized in that** at the level of said base portion of said projecting element (11; 44; 64; 74; 88) said container (2) comprises a portion with reduced thickness (W).
7. Capsule (1; 21; 41; 71; 81) according to any of the claims from 3) to 6), **characterized in that** said projecting element (11; 44; 64; 74; 88) is carried out in a single piece together with said container (2).
8. Capsule (81) according to any of the claims from 3) to 7), **characterized in that** said projecting element (88) is substantially cylindrical in shape.
9. Capsule (81) according to any of the preceding claims, **characterized in that** the outer surface of said projecting element (88) comprises at least one grooved portion (89) so as to create said communication way between said

- housing area (3) and the outside of said capsule (81).
10. Capsule (1; 21; 41; 71; 81) according to any of the preceding claims, **characterized in that** said container (2) is made through a moulding process.
11. Capsule (1; 21; 41; 71; 81) according to any of the preceding claims, **characterized in that** said at least one controlled breaking area (10; 49; 69; 79; 90) is associated with a bottom portion (6; 46; 66; 76; 86) of said container (2).
12. Capsule (21; 41; 71; 81) according to any of the preceding claims, **characterized in that** it comprises at least one closing element (8) of said housing area (3) and in that it comprises breaking means (31) of said closing element (8) suited to be inactive when said capsule (21; 41; 71; 81) is in said first rest condition and to be active when said capsule (21; 41; 71; 81) is in said second operating condition.
13. Capsule (21; 41; 71; 81) according to claim 12), **characterized in that** it comprises deformation means (32) suited to allow said breaking means (11) and said closing element (8) to mutually approach each other.
14. Method for making a beverage by having a fluid pass into a portion of a substance for preparing said beverage, **characterized in that** it comprises the following steps:
- preparing a capsule (1; 21; 41; 71; 81) comprising a container (2) suited to define a housing area (3) for said substance, **wherein** said container (2) comprises at least one controlled breaking area (10; 49; 69; 79; 90);
  - exerting a force on said capsule (1; 21; 41; 71; 81) at the level of said at least one controlled breaking area (10; 49; 69; 79; 90) so as to break said container (2) and create a communication way between said housing area (3) and the outside of said capsule (1; 21; 41; 71; 81).
15. Method according to claim 14), **characterized in that** it is implemented in an apparatus (A) comprising a seat (51) suited to accommodate said capsule (1; 21; 41; 71; 81).

1/10

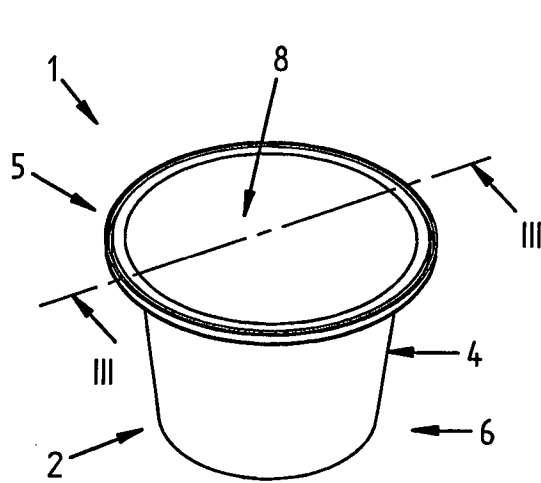


FIG. 1

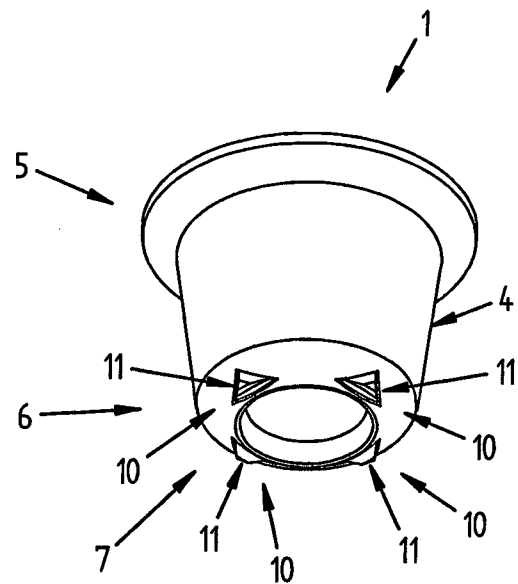


FIG. 2

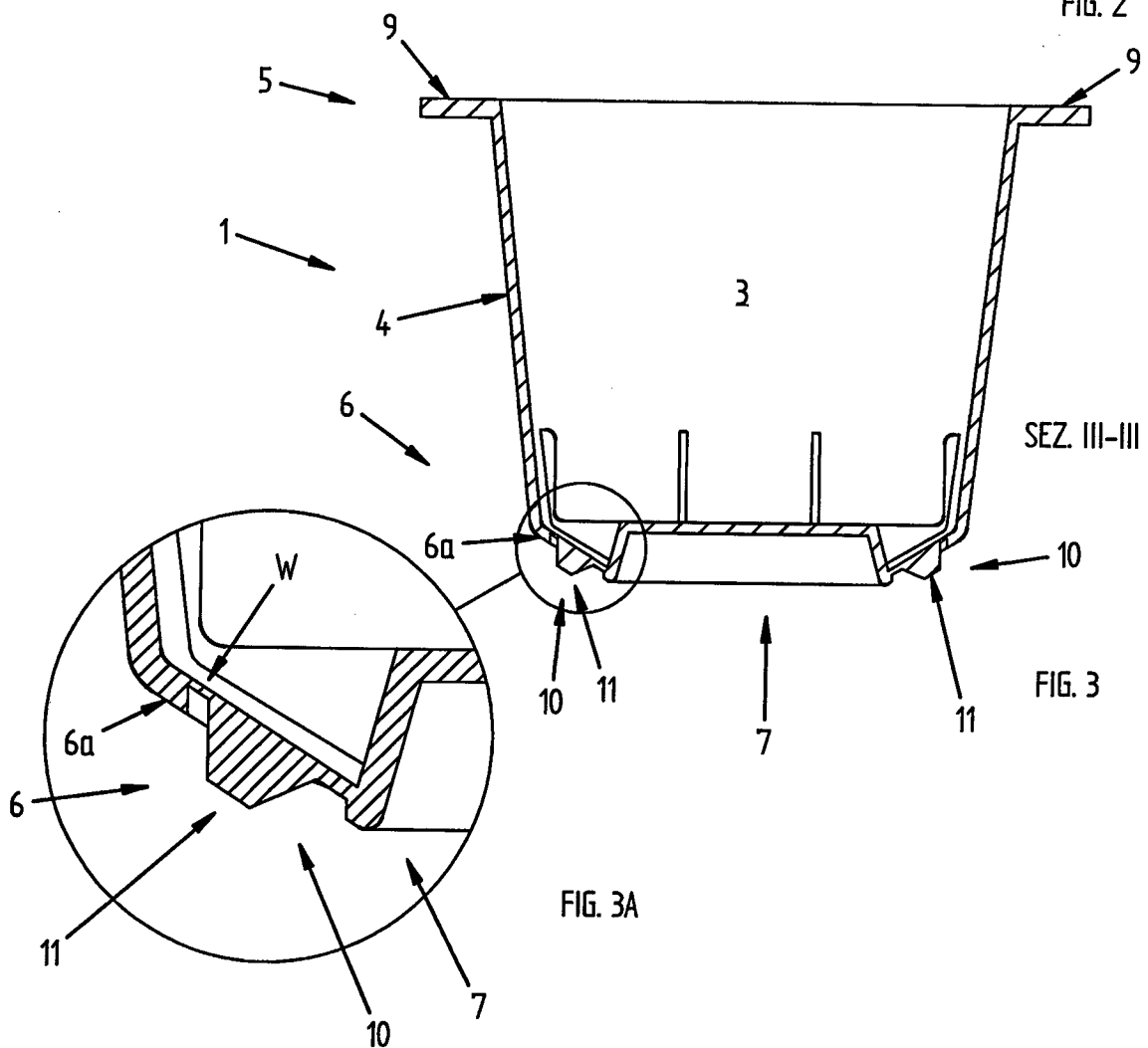
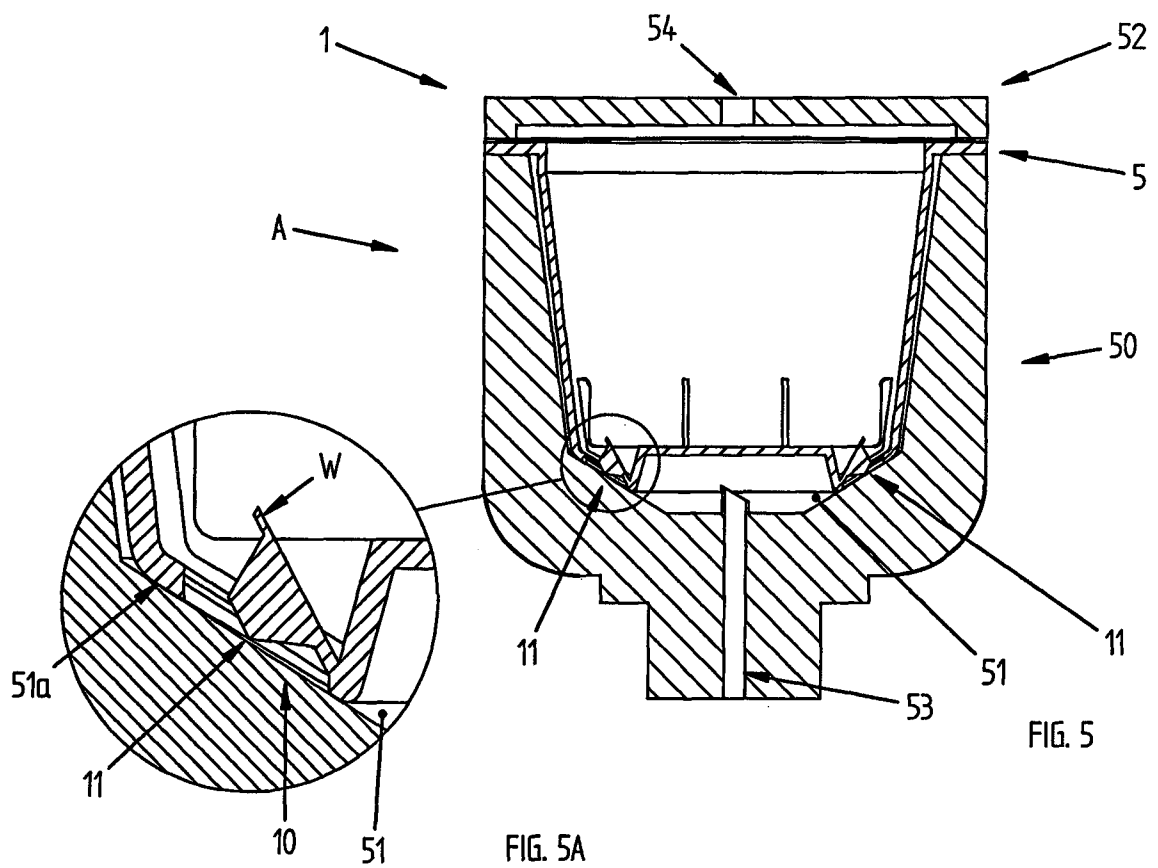
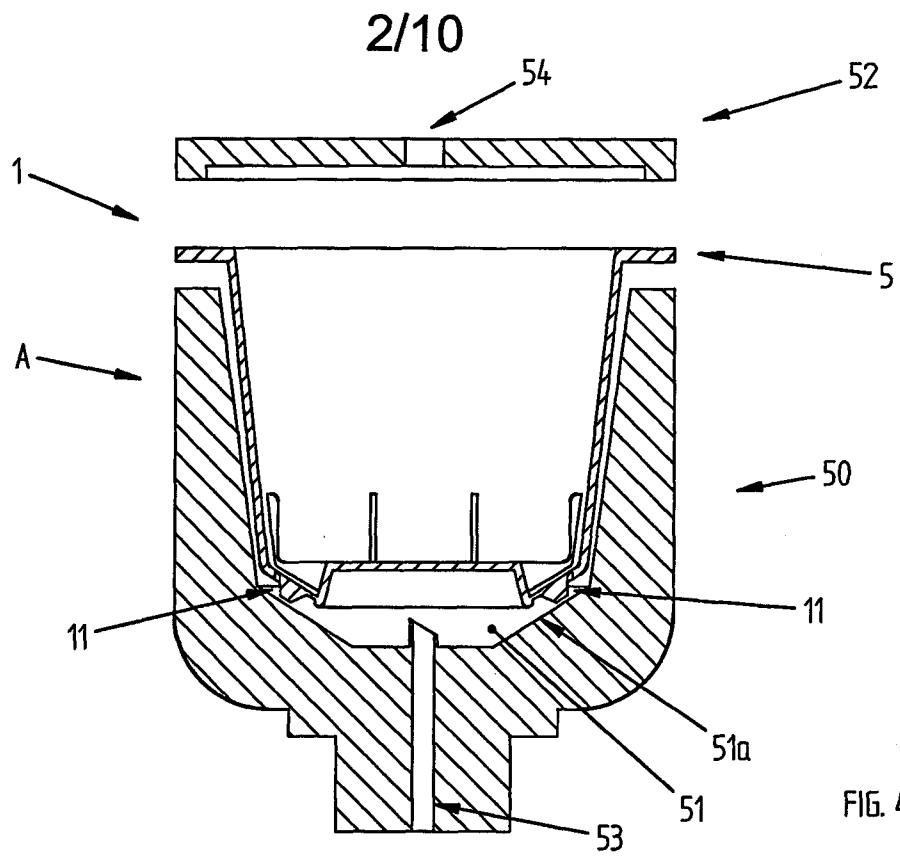


FIG. 3A



3/10

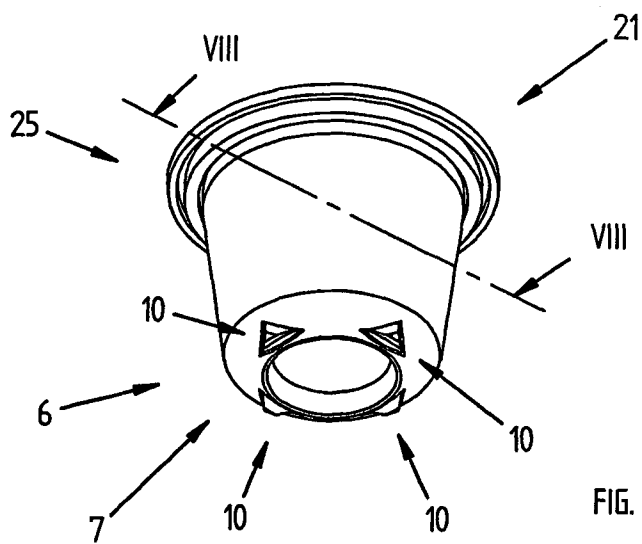


FIG. 6

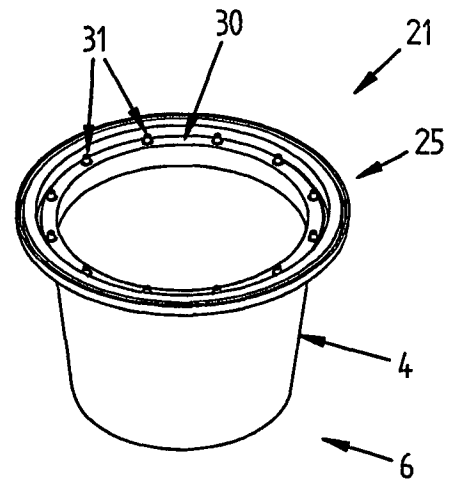


FIG. 7

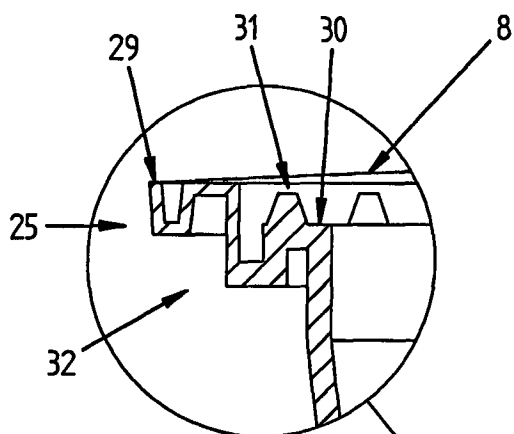


FIG. 8A

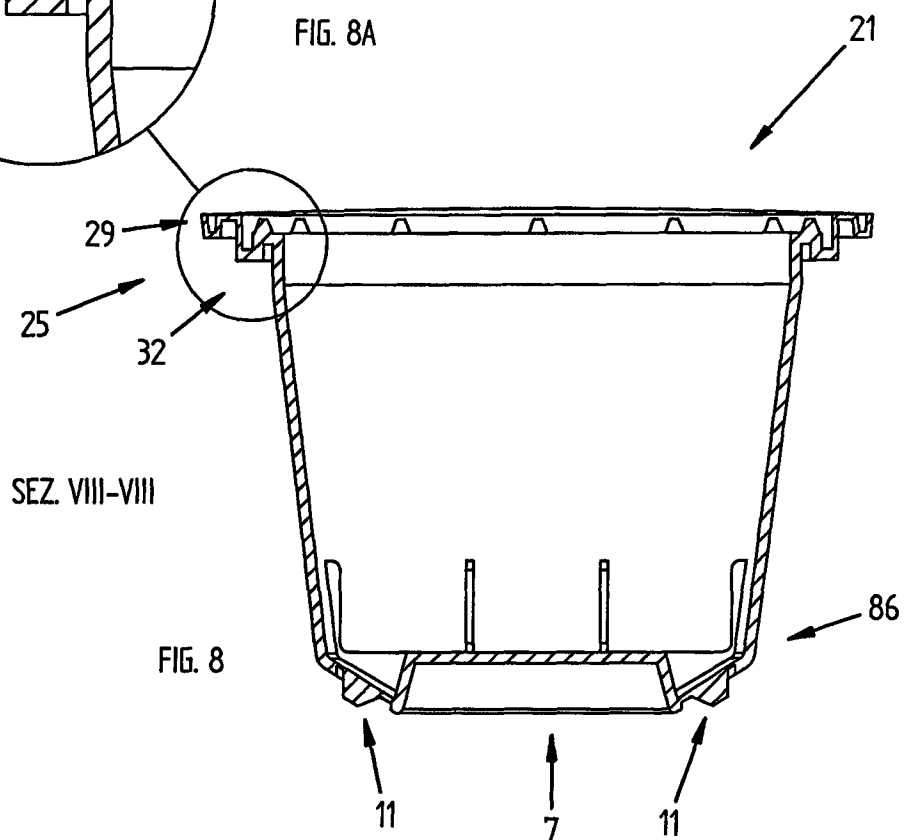


FIG. 8

SEZ. VIII-VIII



5/10

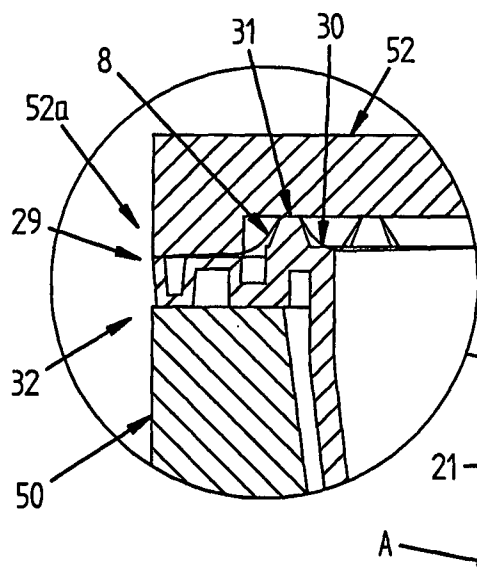
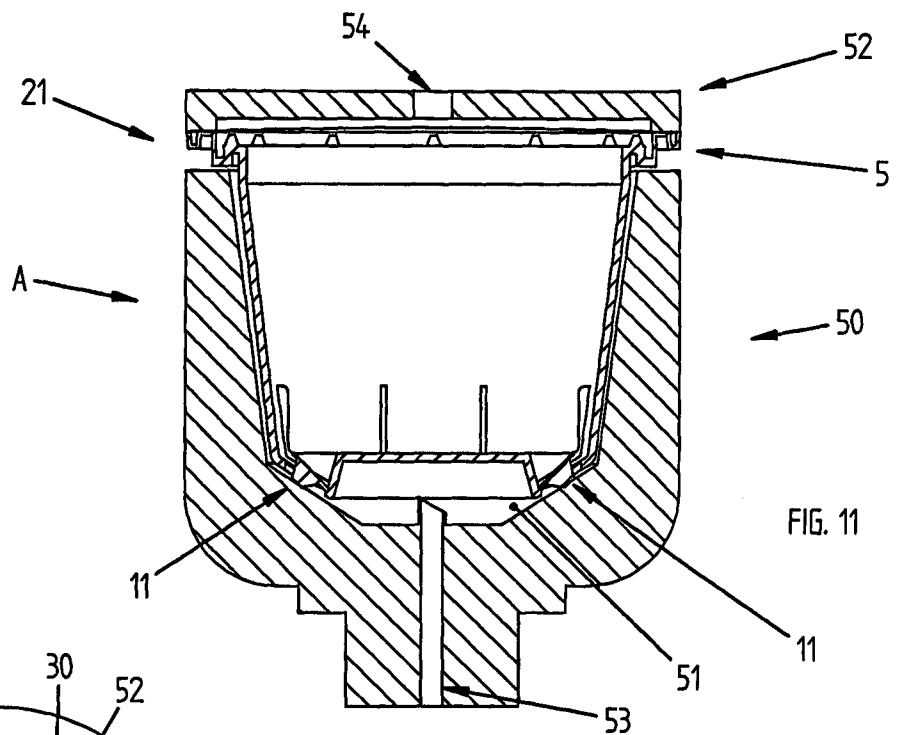


FIG. 12A

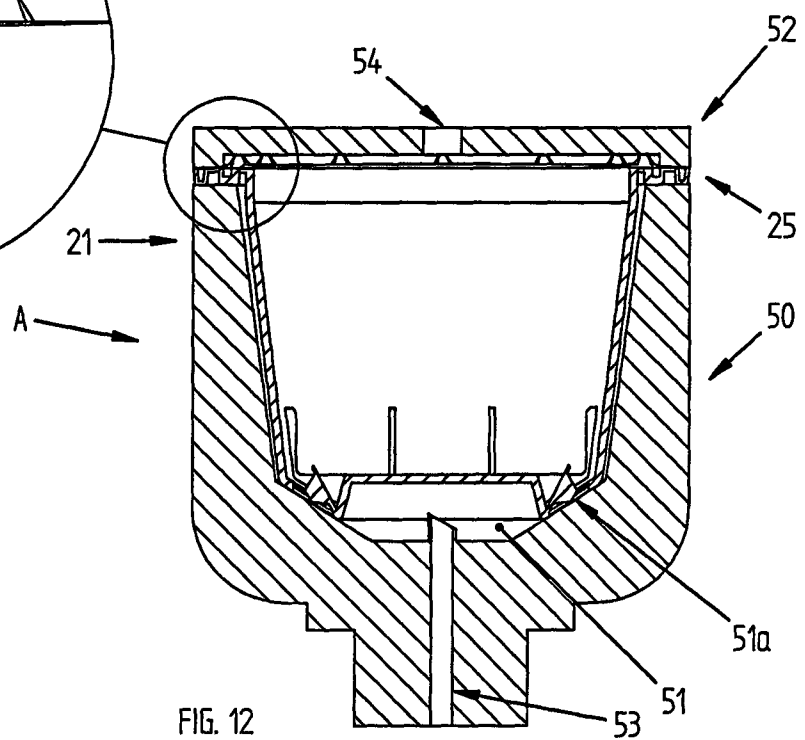


FIG. 12



6/10

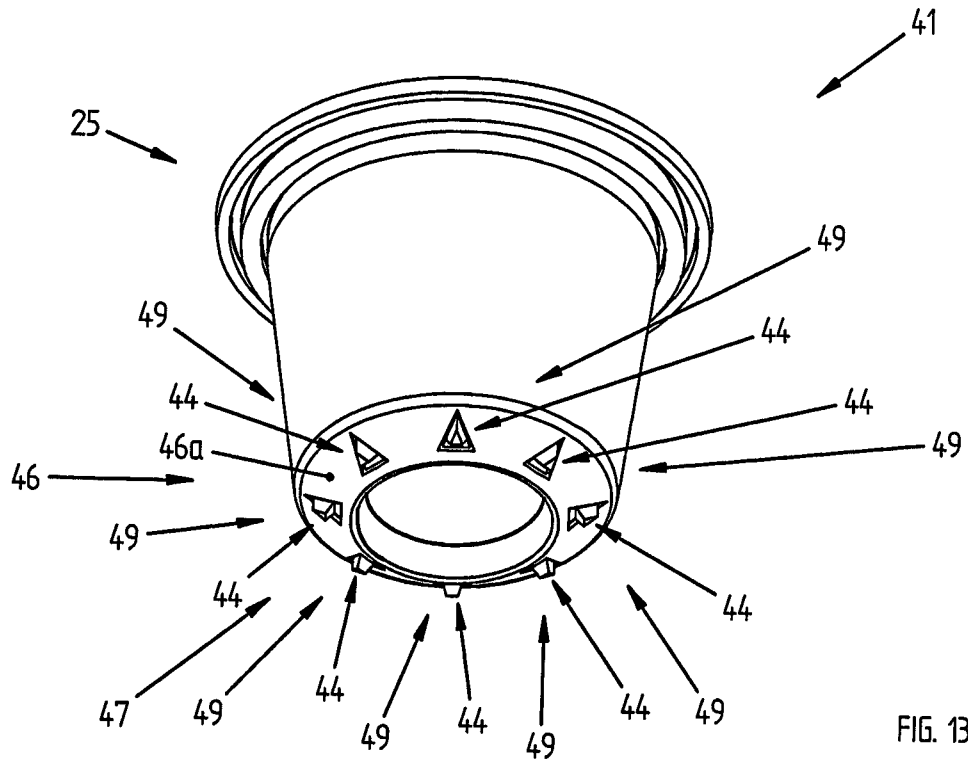


FIG. 13

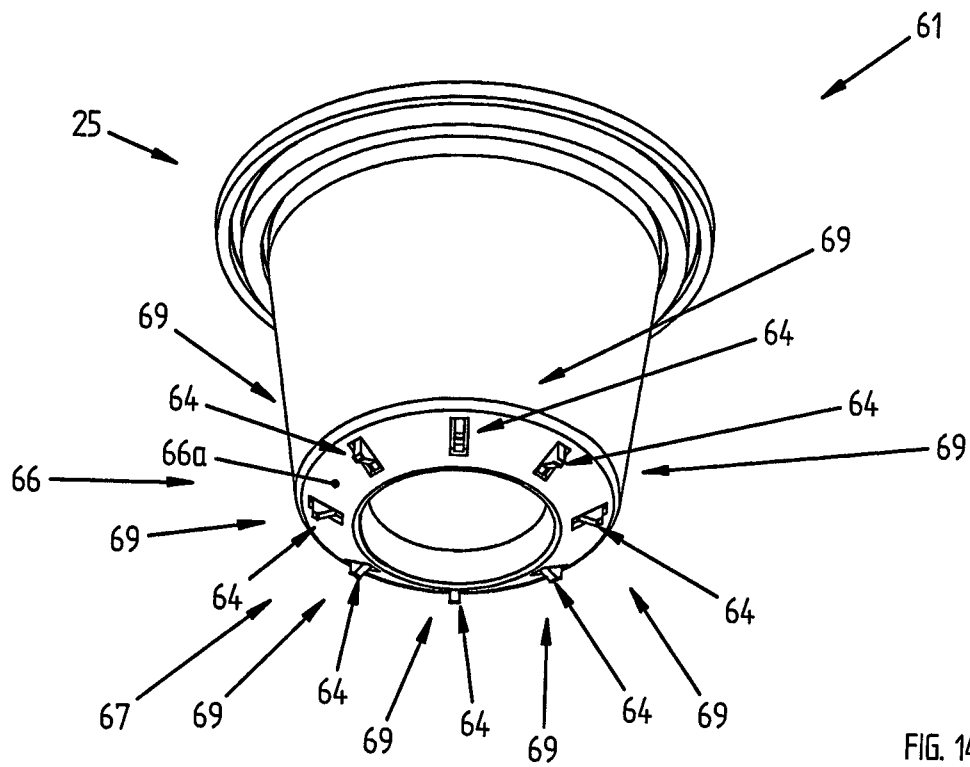
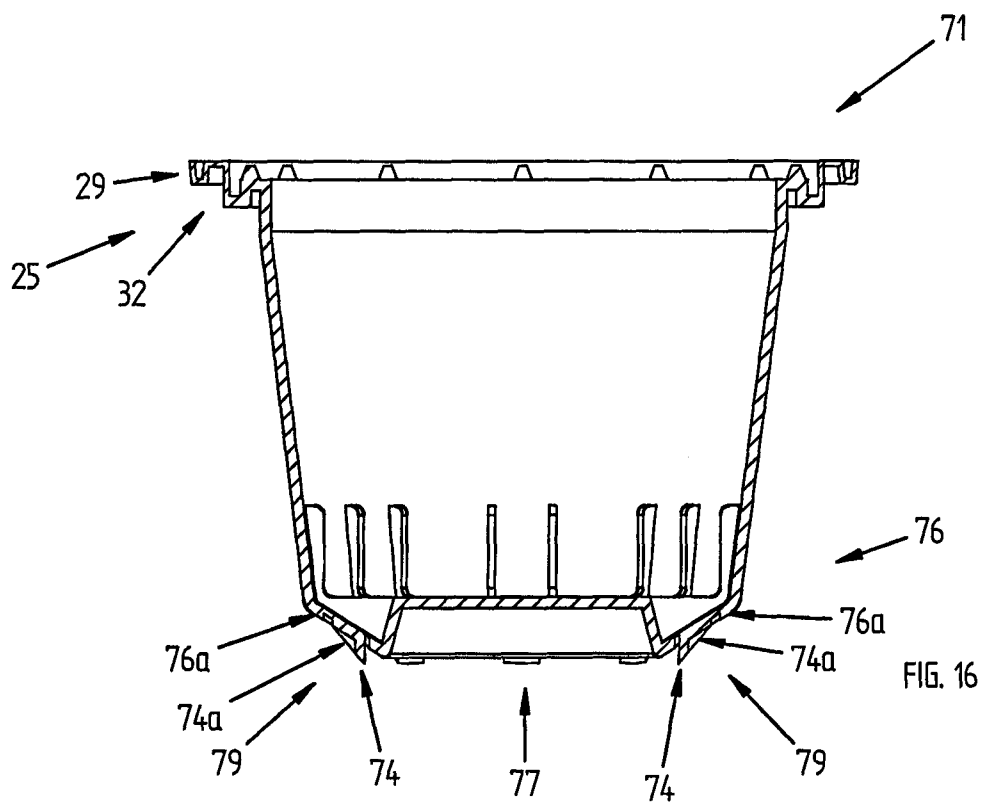
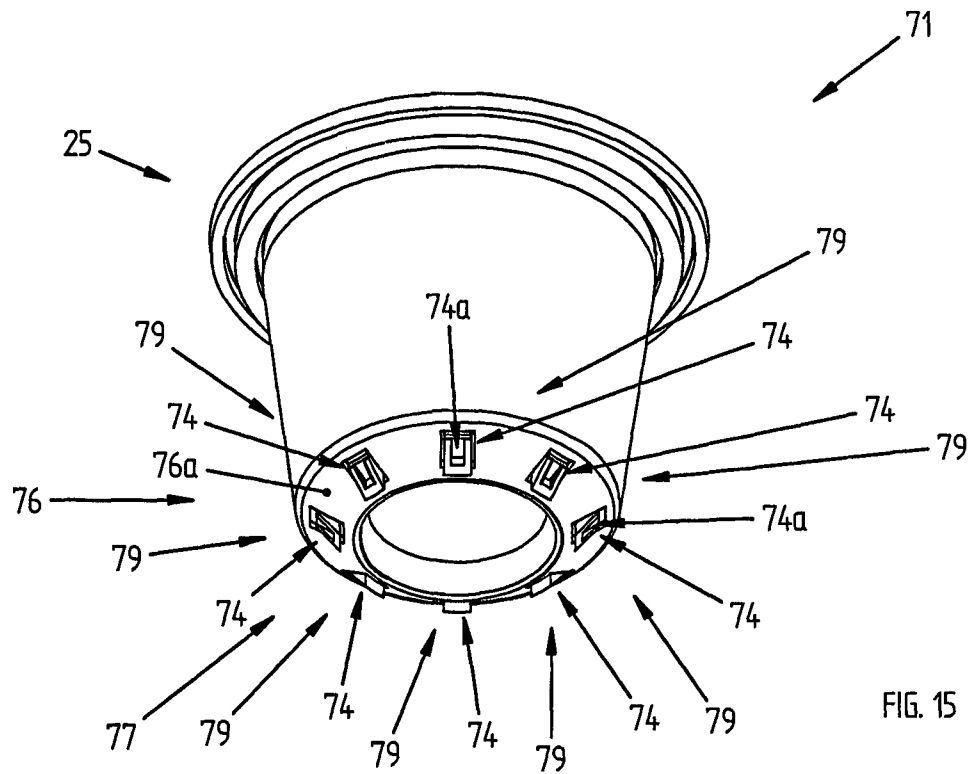


FIG. 14

7/10



8/10

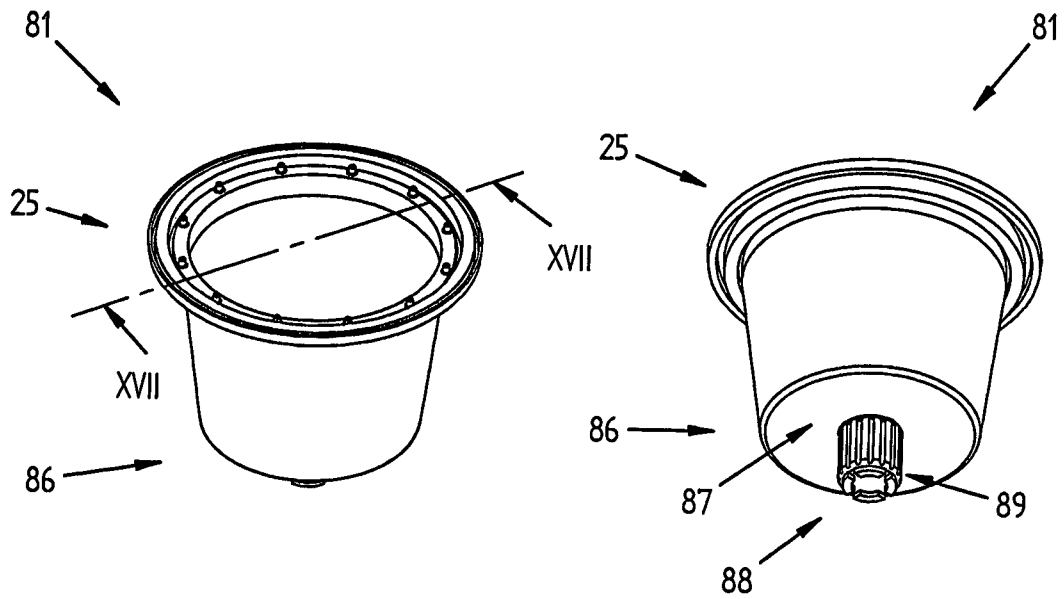
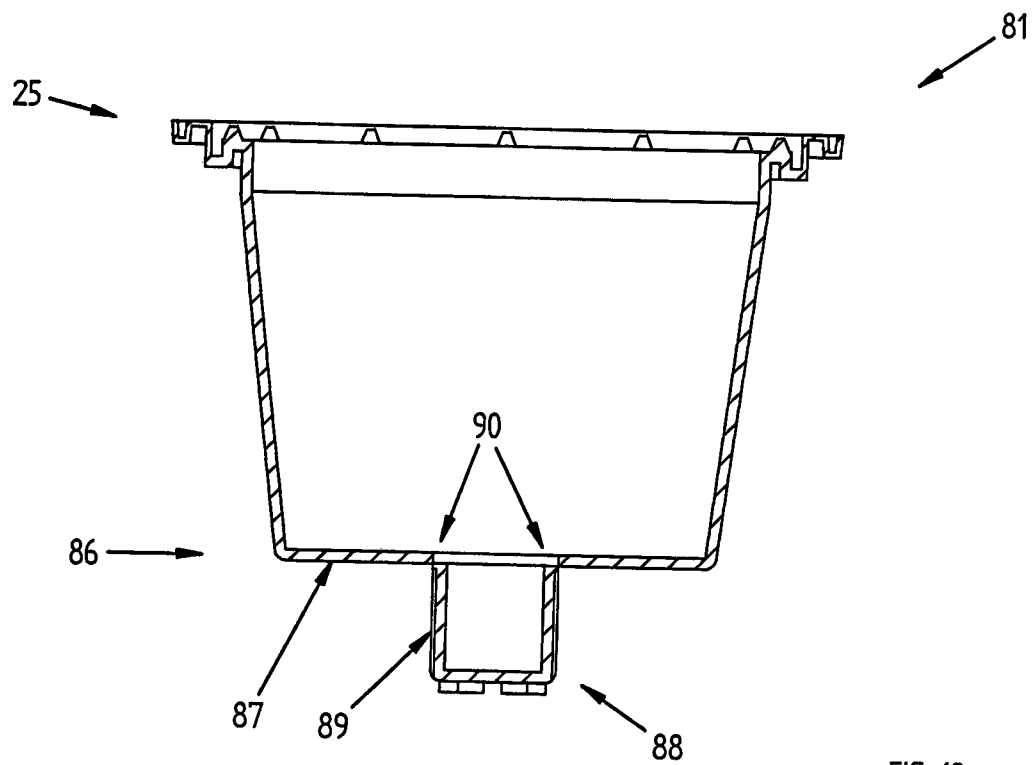


FIG. 17

FIG. 18



SEZ. XVII-XVII

FIG. 19

9/10

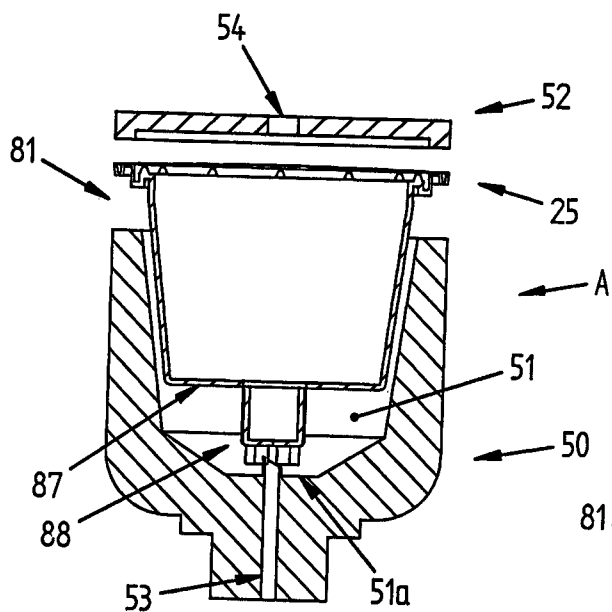


FIG. 20

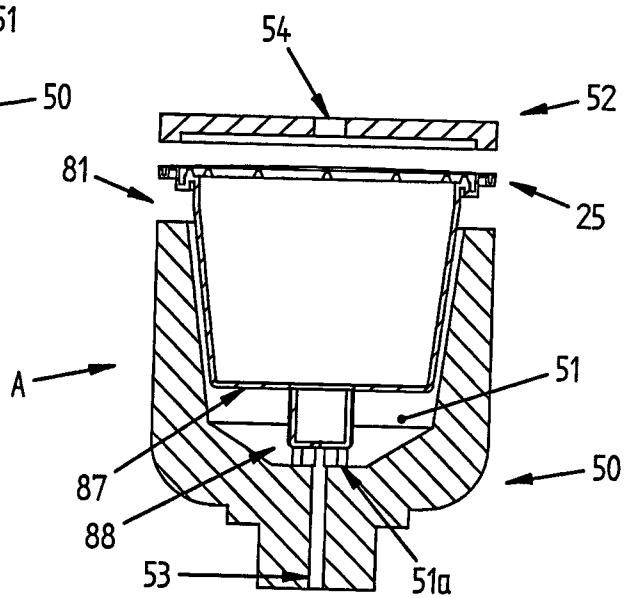


FIG. 21

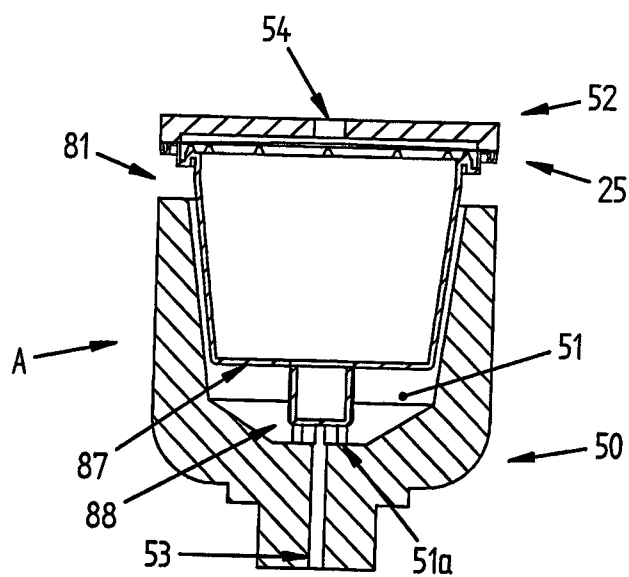


FIG. 22

10/10

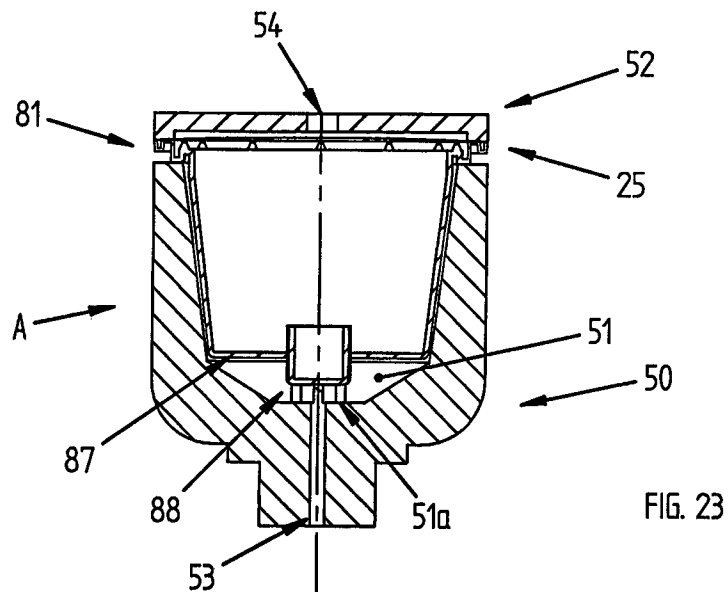


FIG. 23

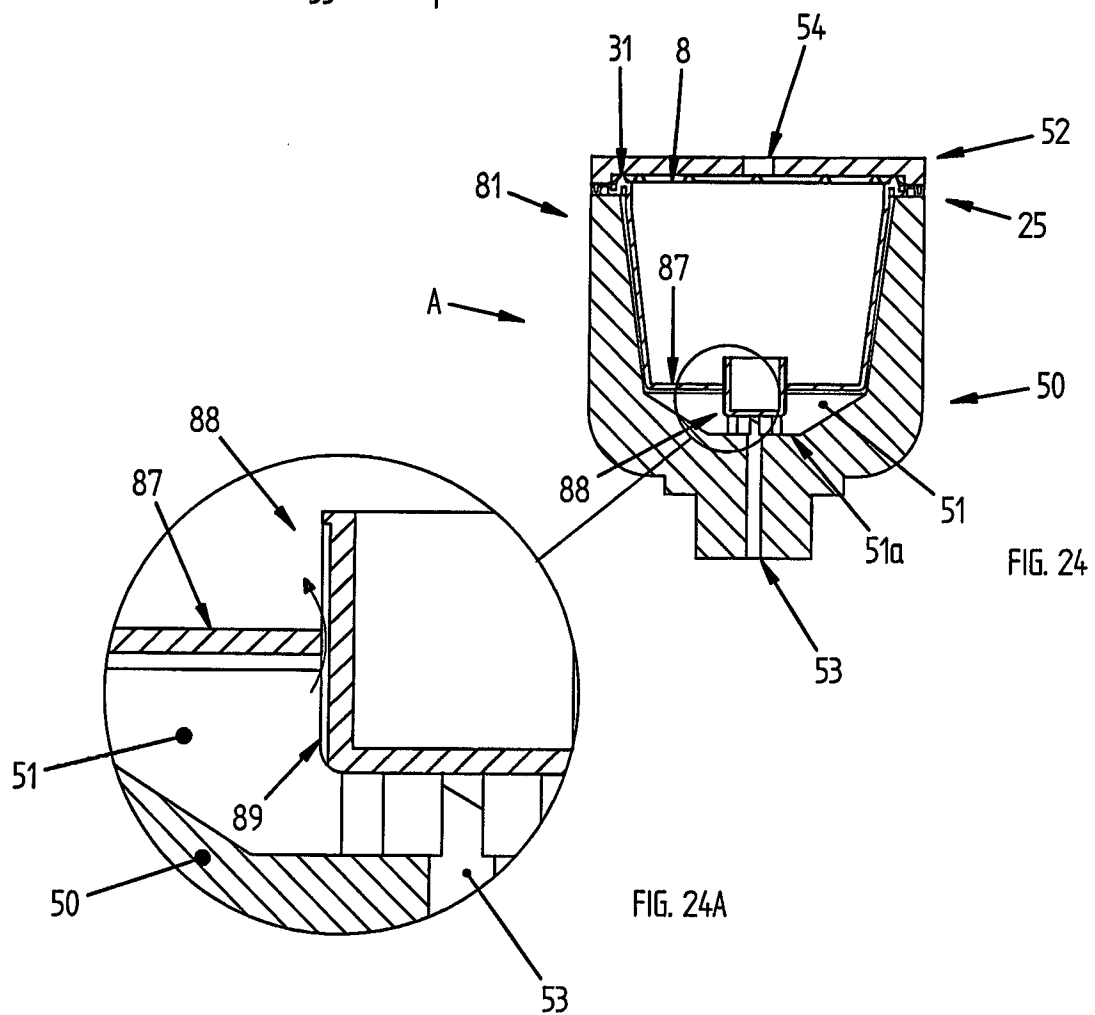


FIG. 24

FIG. 24A

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2012/000634

A. CLASSIFICATION OF SUBJECT MATTER  
INV. B65D85/804  
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)  
B65D

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

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2010/038213 A2 (ETHICAL COFFEE COMPANY SA [CH]; MARILLER ALAIN [CH]) 8 April 2010 (2010-04-08)	1-8,10, 11,14,15
Y	page 3, last paragraph - page 4, line 3; figures 5,6,8	12,13
X	WO 2010/137947 A1 (SARA LEE DE NV [NL]; WONG KON EUAN GERARD [AU]; BRANDT GUIDO [AU]; KOE) 2 December 2010 (2010-12-02)	1-4,10, 11,14,15
Y	sentence 16 - sentence 18; figures 3A,3B,4A,4B	12,13
X	WO 2008/125256 A1 (ROSSI CORP S R L [IT]; ROSSI GIAMPIERO [IT]) 23 October 2008 (2008-10-23) last paragraph; figures 1,2 page 7, line 1	1,2, 10-15
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Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search

13 June 2012

Date of mailing of the international search report

20/06/2012

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## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2012/000634

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2012/000634

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