



(43) International Publication Date
24 April 2014 (24.04.2014)

(10) International Publication Number
WO 2014/061046 A1

(51) International Patent Classification:
B65D 85/804 (2006.01)

(21) International Application Number:
PCT/IT2013/000279

(22) International Filing Date:
10 October 2013 (10.10.2013)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
TO2012A000899 15 October 2012 (15.10.2012) IT

(71) Applicant: **BISIO PROGETTI S.P.A.** [IT/IT]; Viale
Dell'Industria 36, Zona Industriale D/3, I-15100 Aless-
andria (IT).

(72) Inventor: **BISIO, Stefano**; c/o Bisio Progetti S.P.A., Viale
Dell'Industria 36, Zona Industriale D/3, I-15100 Aless-
andria (IT).

(74) Agent: **GARAVELLI, Paolo**; A.BRE.MAR. S.R.L., Via
Servais 27, I-10146 Torino (IT).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

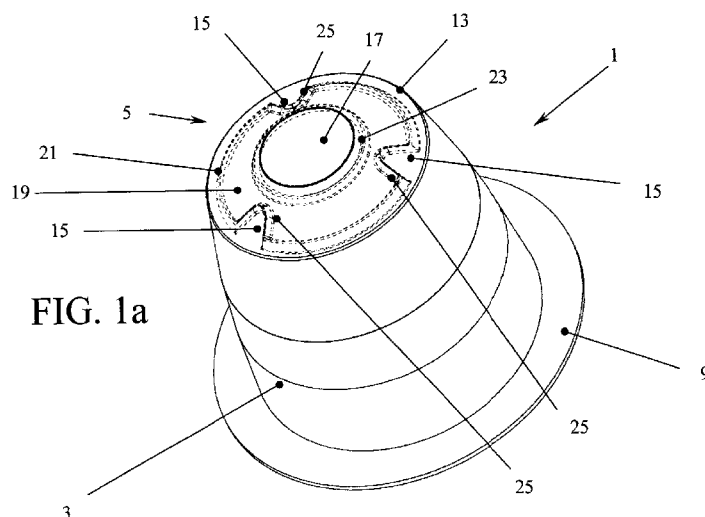
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,
ZW.

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))

(54) Title: CAPSULE FOR PREPARING BEVERAGES



(57) Abstract: A capsule (1) for preparing beverages, in particular coffee, is described, comprising a containing body (3) having a first portion (5), the containing body (3) defining an internal volume adapted to contain a substance to be infused, the first portion (5) being composed of: a first perimeter edge (13); a first central portion (17) onto which at least one external pressing force is applied; a first crown portion (19) collapsible towards inside the containing body (3) under the action of the pressing force exerted at least on the first central portion (17) and/or on the first crown portion (19), the first crown portion (19) being interposed between the first perimeter edge (13) and the first central portion (17), the first crown portion (19) being connected on its perimeter to the first perimeter edge (13) by interposing a first bending line (21) and being connected to the first central portion (17) by interposing a second bending line (23).



WO 2014/061046 A1

CAPSULE FOR PREPARING BEVERAGES

5

The present invention refers to a capsule for preparing beverages.

As known, the art proposes an extreme variety of automatic or semi-automatic machines equipped
10 with a preparing and delivering unit adapted to produce an infusion by passing hot water through a capsule containing the essence to be infused, the as, for example, tea, coffee, tisanes, etc.

In particular, known capsules are with
15 disposable pre-packaged doses of the substance to be infused enclosed inside a container made of plastic material closed by a covering made of plastic or an aluminium foil.

Moreover, there are different types of
20 automatic or semi-automatic preparing machines for preparing beverages, in particular of the infusion type, each one of which using a different type of capsule: in general, however, the operating principle common to the machines provides for a
25 perforation of the base and of the covering of the

a capsule, thereby allowing a flow of hot water to cross the essence to be infused contained therein, the hot water being delivered by an infusing unit of the machine itself and being output as infusion
5 beverage. Typically, therefore, the machines must be equipped with perforating and/or cutting means, usually integrated in the delivering head of the infusing unit, enough pointed and/or sharpened as to perforate and/or tear the base and the covering
10 of the capsule: obviously, to allow a reliable operation in time of the machines, the perforating and/or cutting means must guarantee their efficiency even after a relevant number of uses; it has however been observed that actually the means,
15 in time, are subjected to wear with chamfering and at the same time to a loss of efficiency in the work of perforation and/or tearing of the capsule, consequently causing a bad operation of the related machine for preparing the infusion beverage.

20 Therefore, object of the present invention is solving the above prior art problems by providing a capsule for preparing beverages, in particular coffee, which does not necessarily require the use of a preparing machine equipped with perforating
25 and/or tearing means to allow the water flow to

cross the capsule itself.

The above and other objects and advantages of the invention, as will result from the following description, are obtained by a capsule for
5 preparing beverages as claimed in claim 1. Preferred embodiments and non-trivial variations of the present invention are the subject matter of the dependent claims.

It is intended that all enclosed claims are an
10 integral part of the present description.

It will be immediately obvious that numerous variations and modifications (for example related to shape, sizes, arrangements and parts with equivalent functionality) could be made to what is
15 described, without departing from the scope of the invention, as appears from the enclosed claims.

The present invention will be better described by some preferred embodiments thereof, provided as a non-limiting example, with reference to the
20 enclosed drawings, in which:

- Figure 1a shows a bottom perspective view of a preferred embodiment of the capsule according to the present invention with its first portion in a closed operating position;
- 25 - Figure 1b shows a bottom perspective view of a

preferred embodiment of the capsule of the present invention with its first portion in a delivering operating position;

- Figure 2 shows a perspective longitudinally sectioned view of the capsule of Figure 1b;
5
- Figure 3 shows a bottom plan view of the capsule of the present invention;
- Figure 4a shows a view along section line A-A of Figure 3 of the first portion of the capsule of the present invention in a closed operating position;
10
- Figure 4b shows a view along section line A-A of Figure 3 of the first portion of the capsule of the present invention in a delivering operating position;
15
- Figure 5a shows a bottom perspective view of another preferred embodiment of the capsule of the present invention with its first portion in a closed operating position;
- 20 - Figure 5b shows a bottom perspective view of the capsule of Figure 5a of the present invention with its first portion in a delivering operating position;
- Figure 6a shows a bottom, longitudinally sectioned, perspective view of the capsule of the
25

present invention in the closed operating position of Figure 5a;

- Figure 6b shows a bottom, longitudinally sectioned, perspective view of the capsule of the present invention in the closed operating position of Figure 5b;

- Figure 7 shows a bottom plan view of the capsule of the present invention in Figures 5a and 5b;

10 - Figure 8a shows a view along section line B-B of Figure 7 of the first portion of the capsule of the present invention in a closed operating position;

- Figure 8b shows a vista along section line B-B of the FIG. 7 of the first portion of the capsule of the present invention in a delivering operating position;

- Figure 9a shows a bottom perspective view of another preferred embodiment of the capsule of the present invention with its first portion in a closed operating position;

- Figure 9b shows a bottom perspective view of the capsule of Figure 9a of the present invention with its first portion in a delivering operating position;

- Figure 10 shows a perspective and longitudinally sectioned view of the capsule of the present invention partially disassembled in its closed operating position of Figure 9a;
- 5 - Figure 11 shows a bottom plan view of the capsule of the present invention of Figures 9a and 9b;
- Figure 12a shows a view along section line C-C of Figure 11 of the first portion of the capsule of
10 the present invention in a closed operating position;
- Figure 12b shows a view along section line C-C of Figure 11 of the first portion of the capsule of the present invention in a delivering operating
15 position;
- Figure 13a shows a bottom perspective view of another preferred embodiment of the capsule of the present invention partially disassembled with its first portion in a closed operating position;
- 20 - Figure 13b shows a bottom perspective view of the capsule of Figure 13a of the present invention partially disassembled with its first portion in a delivering operating position;
- Figure 14a shows a perspective and
25 longitudinally sectioned view of the capsule of the

present invention in the closed operating position of Figure 13a;

- Figure 14b shows a perspective and longitudinally section view of the capsule of the present invention in the delivering operating position of Figure 13b;

- Figure 15a shows a perspective and longitudinally sectioned view of the capsule of the FIG. 14a assembled and in the closed operating position;

- Figure 15b shows a perspective and longitudinally sectioned view of the capsule of Figure 14b assembled and in the delivering operating position;

- Figure 16 shows a bottom plan view of the capsule of the present invention in Figures 15a and 15b;

- Figure 17a shows a view along section line D-D of Figure 16 of the first portion of the capsule of the present invention in a closed operating position;

- Figure 17b shows a view along section line D-D of Figure 16 of the first portion of the capsule of the present invention in a delivering operating position;

- Figure 18a shows a bottom perspective view of another preferred embodiment of the capsule of the present invention partially disassembled with the first portion in a closed operating position;
- 5 - Figure 18b shows a bottom perspective view of the capsule of Figure 18a of the present invention partially disassembled with its first portion in a delivering operating position;
- Figure 19a shows a perspective and
10 longitudinally sectioned view of the capsule of the present invention in the closed operating position of Figure 18a;
- Figure 19b shows a perspective and longitudinally sectioned view of the capsule of the
15 present invention in the delivering operating position of Figure 18b;
- Figure 20a shows a perspective and longitudinally sectioned view of the capsule of Figure 19a assembled and in the closed operating
20 position;
- Figure 20b shows a perspective and longitudinally sectioned view of the capsule of Figure 19b assembled and in the delivering operating position;
- 25 - Figure 21 shows a bottom plan view of the

capsule of the present invention in Figures 19a and 19b;

- Figure 22a shows a view along section line E-E of Figure 21 of the first portion of the capsule of the present invention in a closed operating position;

- Figure 22b shows a view along section line E-E of Figure 21 of the first portion of the capsule of the present invention in a delivering operating position;

- Figure 23 shows a top perspective view of a preferred embodiment of the capsule of the present invention with a second portion in a closed operating position;

- Figure 24 shows a perspective and longitudinally sectioned view of the capsule of Figure 23;

- Figure 25 shows a top plan view of the capsule of Figure 23;

- Figure 26a shows a view along section line F-F of Figure 25 of the second portion of the capsule of the present invention in a closed operating position;

- Figure 26b shows a view along section line G-G of Figure 25 of the second portion of the capsule

of the present invention in a closed operating position;

- Figure 26c shows a view along section line H-H of Figure 25 of the second portion of the capsule
5 of the present invention in a closed operating position;

- Figure 27 shows a plan view of another preferred embodiment of the second portion of the capsule of the present invention;

10 - Figure 28 shows a perspective and cross sectional view of the second portion of the capsule of Figure 27;

- Figure 29a shows a cross sectional view of the second portion of the capsule of Figure 27 in the
15 closed operating position;

- Figure 29b shows a cross sectional view of the second portion of the capsule of Figure 27 in the delivering operating position;

- Figure 30a shows a perspective and cross
20 sectional view of the second portion of the capsule of Figure 27 in the closed operating position;

- Figure 30b shows a perspective and cross sectional view of the second portion of the capsule of Figure 27 in the delivering operating position;

25 and

- Figure 31 shows a perspective view of a possible embodiment of the capsule of the present invention.

With reference to the Figures, it is possible to note that the capsule 1 of the present invention for preparing beverages, in particular coffee through infusion, comprises at least one containing body 3 having at least one first portion 5 for introducing at least one fluid, for example infusion water, inside the containing body 3, the containing body 3 defining at least one internal volume adapted to contain at least one substance for preparing the beverage, typically in granular shape or in powder, to be infused.

Advantageously, the first portion 5 is composed of:

- at least one first, substantially rigid perimeter edge 13;
- at least one first central portion 17 onto which at least one external pressing force is adapted to be applied, for example by at least one pressing means (not shown) of a prior art preparing machine, inside which the capsule 1 of the present invention is suitably inserted for preparing a beverage; preferably the first

central portion 17 is of a circular shape coaxial to the longitudinal axis of symmetry of the containing body 3. Moreover, preferably, the pressing force is exerted from outside onto the first central portion 17 by the pressing means along a substantially parallel direction to the longitudinal axis of symmetry and, still more preferably, substantially coincident with the axis;

5

10 - at least one first crown portion 19 collapsible towards inside the containing body 3 to create one or more passageways from outside the capsule 1 towards the internal volume through the first portion 5 under the action of the pressing force exerted by the pressing means at least onto the first central portion 17 and/or onto the first crown portion 19, the first crown portion 19 being interposed between the first perimeter edge 13 and the first central portion 17, the first crown portion 19 being connected on its perimeter to the first perimeter edge 13 by interposing at least one first bending line 21 and being connected to the first central portion 17 by interposing at least one second

15

20

25

bending line 23.

In one of the preferred embodiments of the capsule 1 according to the present invention, like the one shown in particular in Figures 1a to 4b, or 5 18a to 19b, the first perimeter edge 13 is equipped with one or more first opening profiles 15, these first opening profiles 15 being preferably radially arranged along a circumference coaxial with a longitudinal axis of symmetry of the containing 10 body 3; moreover, each of the first opening profiles 15 is connected to the first crown portion 19 by interposing at least one respective first programmed breaking line 25, at least one of the first programmed breaking lines 25 being adapted to 15 be torn when the pressing force exerted by the pressing means at least onto the first central portion 17 and/or onto the first crown portion 19 reaches a predetermined value, separating at least partially at least one of the first opening 20 profiles 15 from the first crown portion 19.

Therefore, starting from the closed operating position of the first portion 5 of the capsule 1 according to the present invention shown in particular in Figures 1, 4a, 18a and 19a, by 25 applying a pressing force through the pressing

means of the preparing machine onto the first central portion 17, the first crown portion 19 is brought to collapse inside the volume of the containing body 3 rotating, related to the first perimeter edge 13 and to the first central portion 17, respectively around the first bending line 21 and the second bending line 23, causing the first programmed breaking lines 25 to be torn, and separating the related first opening profiles 15 from the first crown portion 19 and obtaining the passageways through the first portion 5, consequently taking the first portion 5 of the capsule 1 according to the present invention in its delivering operating position, like the one shown for example in particular in Figures 1b, 2, 4b, 18b and 19b: in fact, the above separation of the first opening profiles 15 from the first crown portion 19 deriving from the collapsing of the first crown portion 19 towards inside the containing body 3 deriving from the pressing force exerted onto the first central portion 17, creates, between at least one of the first profiles 15 and the first crown portion 19, respective first passage openings 26 which communicate the outside of the capsule 1 with the internal volume of the containing body 3, the

first openings 26 consequently enabling the passage of the fluid delivered by the preparing machine in a substantially known way through the internal volume of the containing body 3 itself, and
5 consequently through the substance to be infused contained therein, to go out through the covering, in the modes described below, as infusion beverage.

In addition, as it is possible to note in particular in the embodiment of the capsule 1
10 according to the present invention shown in particular in Figures 18a to 22b, the first portion 5 is covered at least partially and externally by at least one external covering layer 50, made for example as at least one protecting aluminium layer,
15 interposed between the outside of the capsule 1 and at least the first central portion 17 and the first crown portion 19: moreover, at least one of the opening profiles 15 can be equipped with at least one cutting, perforating or breaking profile 54
20 adapted to perforate and/or tear the external covering layer 50 (as shown, for example, in particular in Figures 20b and 22b) when the pressing means of the preparing machine exert the pressing force onto the first central portion 17,
25 obviously by interposing the external covering

layer 50, in order to make the passageways through the first portion 5 and take the first portion 5 of the capsule 1 of the present invention to its delivering operating position, like the one for example shown, in particular, in Figures 1b, 2, 4b, 18b and 19b, in the above described modes. In fact, the creation, between the first profiles 15 and the first crown portion 19, of the first passage openings 26 and the simultaneous perforation and/or tearing of the external covering layer 50 by the first profiles 54 deriving from the collapse of the first crown portion 19 towards inside the containing body 3, communicates the internal volume of the containing body 3 with outside the capsule 1 through the first passage openings 26 and the tearings/perforations made by the first profiles 54 through the external covering layer 50, to consequently allow the passage of the fluid delivered from the preparing machine in a substantially known way, through the perforations/tearings made by the first profiles 54 through the external covering layer 50, the first passage opening(s) 26, and the internal volume of the containing body 3, and consequently through the substance to be infused contained therein, to go

out through the covering, in the below described modes, as infusion beverage.

Preferably, each one of the first opening profiles 15 is supported by a respective stiffening rib 27 adapted to keep the first profile 15 in a substantially fixed position upon applying the pressing force onto the first central portion 17 by the pressing means of the preparing machine and thereby favouring an easier breakage of the first programmed breaking lines 25.

In another of the preferred embodiments of the capsule 1 according to the present invention, like the one shown in particular in Figures 5a to 8b or 9a to 12b, the first portion 5 is equipped with one or more second passage openings 51 which communicate the outside of the capsule 1 with the internal volume of the containing body 3, the second passage openings 51 being preferably radially arranged on the first crown portion 19. Moreover, the capsule 1 of the present invention is equipped with at least one first internal covering layer 52, made for example as at least one protecting aluminium layer, interposed between the first portion 5 and the internal volume of the containing body 3, at least the surface of the

first crown portion 19 facing the internal volume of the containing body 3, and in particular the first internal covering layer 52, being equipped with one or more first breaking means 53, preferably comprising a plurality of tips (like, for example, in the embodiment of the capsule 1 according to the present invention in Figures 5a to 8b) or cutting profiles (like, for example, in the embodiment of the capsule 1 according to the present invention of Figures 9a to 12b), each one of the profiles or the tips being arranged next to a related second passage opening 51, the first breaking means 53 being adapted to perforate and/or tear the first internal covering layer 52 when the pressing force exerted by the pressing means at least onto the first central portion 17 and/or onto the first crown portion 19 reaches a predetermined value to make the passageways through the first portion 5 and take the first portion 5 from its closed operating position, like the one shown in Figures 8a or 12a, towards the delivering operating position, like the one shown in particular in Figure 8b or 12b, communicating the internal volume of the containing body 3 with outside the capsule 1 through the second passage opening(s) 51 and the

perforations/tearings made by the first breaking means 53 through the first internal covering layer 52. Therefore, starting from the closed operating position of the first portion 5 of the capsule 1 according to the present invention shown in particular in Figures 5a, 6a, 8a or 9a, 10, 12a, by applying a pressing force through the pressing means of the preparing machine at least onto the first central portion 17, the first crown portion 19 is taken to collapse inside the volume of the containing body 3 by rotating, relative to the first perimeter edge 13 and the first central portion 17, respectively around the first bending line 21 and the second bending line 23, taking the first breaking means 53 to penetrate through the first internal covering layer 52, reaching the delivering operating position shown in particular in Figures 5b, 6b, 8b or 9b, 12b, in order to consequently allow the passage of the fluid delivered by the preparing machine in a substantially known way through the second passage opening(s) 51, the perforations/tearings made by the first breaking means 53 and the internal volume of the containing body 3, and consequently through the substance to be infused contained therein, to

go out through the covering, in the below described modes, as infusion beverage.

In another of the preferred embodiments of the capsule 1 according to the present invention, like the one shown in particular in Figures 13a to 17b, the first portion 5 is equipped with one or more third passage openings 57, the third passage openings 57 being preferably radially arranged on the first perimeter edge 13; moreover, the first portion 5 is externally covered by the external covering layer 50, interposed between the outside of the capsule 1, the first central portion 17, the first crown portion 19 and the first perimeter edge 13. Moreover, advantageously, the first perimeter edge 13 can be equipped with one or more second cutting, perforating or breaking profiles 56 (arranged, for example, along the first perimeter edge 13 in a position at an interval between the positions of the third passage openings 57), the second profiles 56 being adapted to perforate and/or tear the external covering layer 50 (as shown, for example, in particular in Figures 15b and 17b) when the pressing means of the preparing machine exert the pressing force onto the first central portion 17, obviously by interposing the

external covering layer 50, to obtain the passageways through the first portion 5 and take the first portion 5 of the capsule 1 according to the present invention to its delivering operating position. In fact, starting from the closed operating position of the first portion 5 of the capsule 1 according to the present invention shown in particular in Figures 13a, 14a, 15a and 17a, by applying a pressing force through the pressing means of the preparing machine at least onto the first central portion 17, the first crown portion 19 is taken to collapse inside the volume of the containing body 3, as already previously described, compressing the external covering layer 50 against the second profiles 56, which take care of perforating and/or tearing the layer 50 itself, till the delivering operating position shown in particular in Figures 13b, 14b, 15b and 17b is reached, in order to consequently allow the passage of the fluid delivered from the preparing machine in a substantially known way through the perforations/tearings through the external covering layer 50, the third passage openings 57 and the internal volume of the containing body 3, and consequently through the substance to be infused

contained therein, to go out through the covering,
in the below described modes, as infusion beverage.

Preferably, the first and second bending lines
21, 23, and possibly the first programmed breaking
5 lines 25 are made as striction lines of the
material, typically plastics, composing the first
portion 5 of the capsule 1 of the present
invention.

In addition, the capsule 1 according to the
10 present invention could comprise at least one
opening 6 opposite to the first portion 5 and
adapted to be closed by at least one covering

In a preferred embodiment thereof, like the
one shown for example in Figure 31, the covering
15 comprises at least one layer of film 7 suitable to
be perforated through known means of the preparing
machine, as taught in the prior art, to allow the
flow infusion beverage to go out through the
perforation, the film 7 being welded or glued onto
20 the perimeter edge 9 of the opening 6.

Alternatively or in addition, as it is
possible to note in Figures 23 to 30b, the capsule
1 according to the present invention could comprise
at least one second portion 11 for delivering the
25 beverage from the containing body 3 toward outside,

for example made as a plug inserted through the opening 6 or made integral with the containing body 3 itself, the second portion 11 being composed of:

- at least one second, substantially rigid
5 perimeter edge 33;
- at least one second central portion 37;
- at least one second crown portion 39
collapsible towards outside or inside the
containing body 3 under the action of at least
10 one pressing force, for example exerted by the
above pressing means or by the flow of
infusion beverage created inside the
containing body 3 through the passage therein
of the flow of fluid passing through the first
15 passage openings 26 of the first portion 5 in
its delivering operating position, mentioned
above, to create one or more passageways of
the flow from the internal volume towards
outside the capsule 1 through the second
20 portion 11, the second crown portion 39 being
interposed between the second perimeter edge
33 and the second central portion 37, the
second crown portion 39 being connected on its
perimeter to the second perimeter edge 33 by
25 interposing at least one third bending line 41

and being connected to the second central portion 37 by interposing at least one fourth bending line 43.

In the preferred embodiment of the capsule 1 according to the present invention shown in particular in Figures 23 to 26c, it is possible to note that the second perimeter edge 33 can be equipped with one or more second opening profiles 35, the second opening profiles 35 being preferably radially arranged along a circumference coaxial with a longitudinal axis of symmetry of the containing body 3. Moreover, the second central portion 37 can be equipped on its perimeter with one or more third opening profiles 48, also the third opening profiles 48 being preferably radially arranged along a circumference coaxial with a longitudinal axis of symmetry of the containing body 3. Moreover, each one of the second opening profiles 35 is connected to the second crown portion 39 by interposing at least one respective second programmed breaking line 45, at least one of the second programmed breaking lines 45 being adapted to be torn when the pressing force exerted by the flow of infusion beverage inside the containing body 3 on the second portion 11 reaches

a predetermined value separating at least partially at least one of the second opening profiles 35 from the second crown portion 39. Moreover, if present, each of the third opening profiles 48 is connected
5 to the second crown portion 39 by interposing at least one respective third programmed breaking line 47, also at least one of the third programmed breaking lines 47 being adapted to be torn when the pressing force exerted by the flow of infusion
10 beverage inside the containing body 3 on the second portion 11 reaches a predetermined value, separating at least partially at least one of the third opening profiles 48 from the second crown portion 39.

15 Therefore, starting from the closed operating position of the second portion 11 of the capsule 1 according to the present invention shown in particular in Figures 23 to 26c, the pressing force exerted onto the second portion 11 itself by the
20 flow of infusion beverage being created inside the containing body 3 through the passage therein of the flow of infusion water passing through the first passage openings 26 of the first portion 5 in its delivering operating position, mentioned above,
25 brings the second crown portion 39 to collapse

towards outside the volume of the containing body 3 by rotating, relative to the second perimeter edge 33 and to the second central portion 37, respectively around the third bending line 41 and the fourth bending line 43, tearing the second programmed breaking lines 45, and, if present, the third programmed breaking lines 47, and separating the related second opening profiles 35, and, if present, the related third profiles 51, from the second crown portion 39, creating one or more flow passageways from the internal volume towards outside the capsule 1 through the second portion 11 and consequently taking the second portion 11 of the capsule 1 according to the present invention to a delivering operating position thereof (not shown): in fact, the above separation of the second opening profiles 35, and possibly of the third opening profiles 48, from the second crown portion 39 deriving from the collapse of the second crown portion 39 towards outside the containing body 3 deriving from the pressing force exerted by the flow of infusion beverage, creates, between at least one of the second profiles 35, and possibly of the third profiles 48, and the second crown portion 39, respective third and possibly fourth

passage openings which communicate the internal volume of the containing body 3 with outside the capsule 1, the second portion 11 consequently enabling the passage of the infusion beverage from
5 inside the containing body 3 towards outside the capsule 1, going out through the second and third openings.

In another of the preferred embodiments of the capsule 1 according to the present invention, like
10 the one shown in particular in Figures 27 to 30b, the second portion 11 is equipped with one or more fifth passage openings 61 adapted to communicate the internal volume of the containing body 3 with outside the capsule 1, the fifth passage openings
15 61 being preferably arranged on the second central portion 37. Moreover, the second central portion 37 is externally equipped with at least one abutment means 62, made preferably as one or more fins or at least one circular collet, adapted to abut against
20 the delivery portion 70 of the seat of the preparing machine suitable to house the capsule 1 for preparing the beverage. Moreover, the capsule 1 according to the present invention is equipped with at least one second internal covering layer 63,
25 made for example as at least one protecting

aluminium layer, interposed between the second portion 11 and the internal volume of the containing body 3, at least the surface of the second central portion 37 and possibly the surface of the second crown portion 39 facing towards the internal volume of the containing body 3, and in particular towards the second internal covering layer 63, being equipped with one or more second breaking means 65, preferably comprising a plurality of tips (like, for example, in the embodiment of the capsule 1 according to the present invention of Figures 27 to 30b) or cutting profiles, the second breaking means 65 being adapted to perforate and/or tear the second internal covering layer 63 when the pressing force exerted by the pressing means acting, through the abutment means 62 against the delivery portion 70, at least onto the second perimeter edge 33 reaches a predetermined value to obtain the passageways through the second portion 11 and take the second portion 11 itself from the closed operating position, like the one shown in Figures 28, 29a, 30a, towards the delivering operating position, like the one shown in particular in Figures 29b, 30b, communicating the internal volume of the

containing body 3 with outside the capsule 1 through the fifth passage opening(s) 61 and the perforations/tearings made by the second breaking means 65 through the second internal covering layer 63. Therefore, starting from the closed operating position of the second portion 11 of the capsule 1 according to the present invention, due to the pressing force exerted at least onto the second perimeter edge 33 by the pressing means of the preparing machine and the abutment opposition of the abutment means 62 against the related delivery portion 70 of the related seat inside which the capsule 1 is inserted, the second crown portion 39 is taken to collapse inside the volume of the containing body 3 by rotating, related to the second perimeter edge 33 and to the second central portion 37, respectively around the third bending line 41 and the fourth bending line 43, taking the second breaking means 65 to penetrate through the second internal covering layer 65, reaching the delivering operating position in order to consequently enable the passage of the infusion beverage from the internal volume of the containing body 3 outside the capsule 1 through the perforations/tearings made by the second breaking

means 65 and the fifth passage opening(s) 61.

Also in this case, preferably, the third and fourth bending lines 41, 43 and the second and third programmed breaking lines 45 and 47 are made
5 as striction lines of the material, typically plastics, composing the second portion 11 of the capsule 1 according to the present invention.

As further variation, and to avoid that aromas of the substance to be infused contained in the
10 containing body 3 of the capsule 1 get dispersed, impairing the quality of the beverage, it is possible to provide that the plug 11 itself is also covered by at least one layer of film, welded or glued to the perimeter edge of the opening, the
15 film being then adapted to be removed before using the capsule 1.

CLAIMS

1. Capsule (1) for preparing beverages, in particular coffee, comprising at least one containing body (3) having at least one first
5 portion (5) for introducing at least one fluid, inside said containing body (3), said containing body (3) defining at least one internal volume adapted to contain at least one substance for preparing said beverage, characterised in that said
10 first portion (5) is composed of:

- at least one first perimeter edge (13);
- at least one first central portion (17) onto which at least one external pressing force is applied;
- 15 - at least one first crown portion (19) collapsible towards inside said containing body (3) to create one or more passageways from outside said capsule (1) towards said internal volume through said first portion (5)
20 under an action of said pressing force acting at least onto said first central portion (17) and/or onto said first crown portion (19), said first crown portion (19) being interposed between said first perimeter edge (13) and
25 said first central portion (17), said first

crown portion (19) being connected on its perimeter to said first perimeter edge (13) by interposing at least one first bending line (21) and being connected to said first central portion (17) by interposing at least one second bending line (23).

2. Capsule (1) according to claim 1, characterised in that said first central portion (17) is of a circular shape coaxial with a longitudinal axis of symmetry of said containing body (3).

3. Capsule (1) according to claim 1, characterised in that said first perimeter edge (13) is equipped with one or more first opening profiles (15), each one of said first opening profiles (15) being connected to said first crown portion (19) by interposing at least one respective first programmed breaking line (25), at least one of said first programmed breaking lines (25) being adapted to be torn when said pressing force exerted by at least one pressing means of a preparing machine of said beverage at least onto said first central portion (17) and/or onto said first crown portion (19) reaches a predetermined value separating at least partially at least one of said

first opening profiles (15) from said first crown portion (19), in order to make, between at least one of said first profiles (15) and said first crown portion (19), respective first passage
5 openings (26) adapted to communicate an outside of said capsule (1) with said internal volume of said containing body (3).

4. Capsule (1) according to claim 3, characterised in that said first portion (5) is
10 covered at least partially and externally by at least one external covering layer (50) interposed between the outside of said capsule (1) and at least said first central portion (17) and said first crown portion (19), at least one of said
15 opening profiles (15) being equipped with at least one cutting, perforating or breaking profile (54) adapted to perforate and/or tear said external covering layer (50) when said pressing means of said preparing machine exerts said pressing force
20 onto said first central portion (17), by interposing said external covering layer (50) to communicate the outside of said capsule (1) with said internal volume of said containing body (3) through the perforations / tearings made by said
25 first profiles (54) through said external covering

layer (50) and said first passage openings (26).

5. Capsule (1) according to claim 3 or 4, characterised in that each one of said first opening profiles (15) is supported by a respective
5 stiffening rib (27) adapted to keep said first profile (15) in a substantially fixed position upon applying said pressing force onto said first central portion (17) by said pressing means.

6. Capsule (1) according to claim 1,
10 characterised in that said first portion (5) is equipped with one or more second passage openings (51) adapted to communicate the outside of said capsule (1) with said internal volume of said containing body (3), and in that it is equipped
15 with at least one first internal covering layer (52) interposed between said first portion (5) and said internal volume of said containing body (3), at least one surface of said first crown portion (19) facing towards said internal volume of said
20 containing body (3) being equipped with one or more first breaking means (53) adapted to perforate and/or tear said first internal covering layer (52) when a pressing force exerted by at least one pressing means of a preparing machine of said
25 beverage at least onto said first central portion

(17) and/or onto said first crown portion (19) reaches a predetermined value communicating said internal volume of said containing body (3) with the outside of said capsule (1) through said second
5 passage openings (51) and the perforations/tearings made by said first breaking means (53) through said first internal covering layer (52).

7. Capsule (1) according to the previous claim, characterised in that said second passage openings
10 (51) are radially arranged on said first crown portion (19).

8. Capsule (1) according to claim 6, characterised in that said first breaking means (53) comprise a plurality of tips or cutting
15 profiles, each one of said profiles or of said tips being arranged next to a related second passage opening (51).

9. Capsule (1) according to claim 1, characterised in that said first portion (5) is
20 equipped with one or more third passage openings (57) radially arranged on said first perimeter edge (13), in that said first portion (5) is externally covered by at least one external covering layer (50) interposed between the outside of said capsule
25 (1) and said first central portion (17), said first

crown portion (19) and said first perimeter edge (13), and in that said first perimeter edge (13) is equipped with one or more second cutting, perforating or breaking profiles (56) adapted to
5 perforate and/or tear said external covering layer (50) when by at least one pressing means of a preparing machine of said beverage exerts said pressing force onto said first central portion (17) by interposing said external covering layer (50).

10 10. Capsule (1) according to claim 1, characterised in that it comprises at least one opening (6) opposite to said first portion (5) and adapted to be closed by at least one covering, said covering comprising at least one layer of film (7)
15 adapted to be perforated.

11. Capsule (1) according to any one of the preceding claims, characterised in that it comprises at least one second portion (11) for delivering said beverage from said containing body
20 (3) toward outside, said second portion (11) being composed of:

- at least one second perimeter edge (33);
 - at least one second central portion (37);
 - at least one second crown portion (39)
- 25 collapsible towards outside or inside said

containing body (3) under the action of a pressing force to create one or more passageways of said flow from said internal volume towards outside said capsule (1) through said second portion (11), said second crown portion (39) being interposed between said second perimeter edge (33) and said second central portion (37), said second crown portion (39) being connected on its perimeter to said second perimeter edge (33) by interposing at least one third bending line (41) and being connected to said second central portion (37) by interposing at least one fourth bending line (43).

12. Capsule (1) according to claim 11, characterised in that said second perimeter edge (33) is equipped with one or more second opening profiles (35) and in that each one of said second opening profiles (35) is connected to said second crown portion (39) by interposing at least one respective second programmed breaking line (45), at least one of said second programmed breaking lines (45) being adapted to be torn when said pressing force is exerted by a flow of said infusion beverage from inside said containing body (3) onto

said second portion (11) and reaches a predetermined value, separating at least partially at least one of said second opening profiles (35) from said second crown portion (39) in order to make, between at least one of said second profiles (35) and said second crown portion (39), respective third passage openings adapted to communicate said internal volume of said containing body (3) with the outside of said capsule (1).

10 13. Capsule (1) according to claim 12, characterised in that said second central portion (37) is equipped on its perimeter with one or more third opening profiles (48), each one of said third opening profiles (48) being connected to said
15 second crown portion (39) by interposing at least one respective third programmed breaking line (47), at least one of said third programmed breaking lines (47) being adapted to be torn when said pressing force exerted by said flow of said
20 infusion beverage onto said second portion (11) reaches a predetermined value, separating at least partially at least one of said third opening profiles (48) from said second crown portion (39) in order to make, between at least one of said
25 third profiles (51) and said second crown portion

(39), respective fourth passage openings adapted to communicate said internal volume of said containing body (3) with the outside of said capsule (1).

14. Capsule (1) according to claim 11,
5 characterised in that said second portion (11) is equipped with one or more fifth passage openings (61) adapted to communicate said internal volume of said containing body (3) with the outside of said capsule (1), said second central portion (37) being
10 externally equipped with at least one abutment means (62), adapted to abut against a delivery portion (70) of a seat of said preparing machine suitable to house said capsule (1) for preparing said beverage, and in that it is equipped with at
15 least one second internal covering layer (63) interposed between said second portion (11) and said internal volume of said containing body (3), at least one surface of said second central portion (37) and possibly a surface of said second crown
20 portion (39) facing towards said internal volume of said containing body (3) being equipped with one or more second breaking means (65) adapted to perforate and/or tear said second internal covering layer (63) when said pressing force exerted by
25 pressing means acts, through said abutment means

(62) against said delivery portion (70), at least onto said second perimeter edge (33) communicating said internal volume of said containing body (3) with the outside of said capsule (1) through said
5 fifth passage openings (61) and the perforations/tearings made by said second breaking means (65) through said second internal covering layer (63).

15. Capsule (1) according to the previous claim,
10 characterised in that said fifth passage openings (61) are arranged on said second central portion (37).

16. Capsule (1) according to claim 14,
characterised in that said breaking means (65)
15 comprise a plurality of tips or cutting profiles.

17. Capsule (1) according to claim 3, 12 or 13,
characterised in that said first opening profiles (15) and/or said second opening profiles (35) and/or said third opening profiles (48) are
20 radially arranged along a circumference coaxial with a longitudinal axis of symmetry of said containing body (3).

18. Capsule (1) according to any one of the previous claims, characterised in that said first
25 and/or second and/or third and/or fourth bending

line (21; 23; 41; 43) and said first and/or second
and/or third programmed breaking lines (25; 45; 47)
are striction lines of the material composing
respectively said first portion (5) or said second
5 portion (11).

1/22

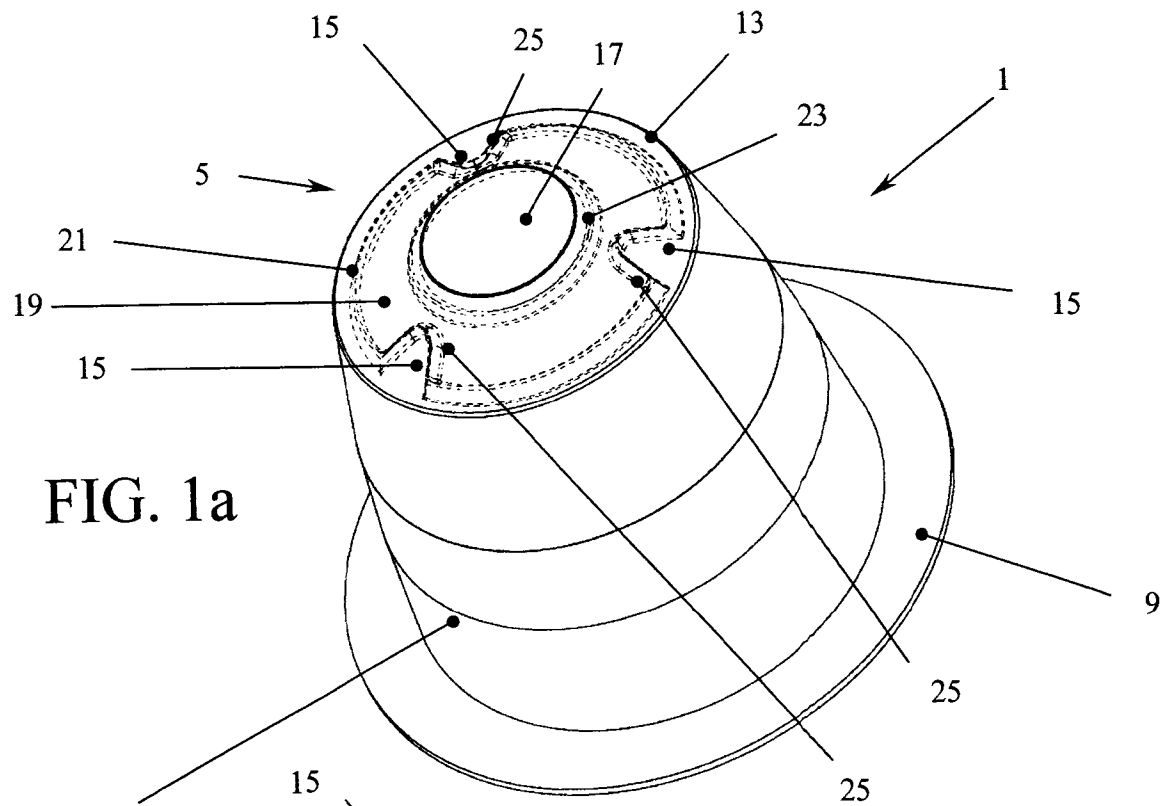


FIG. 1a

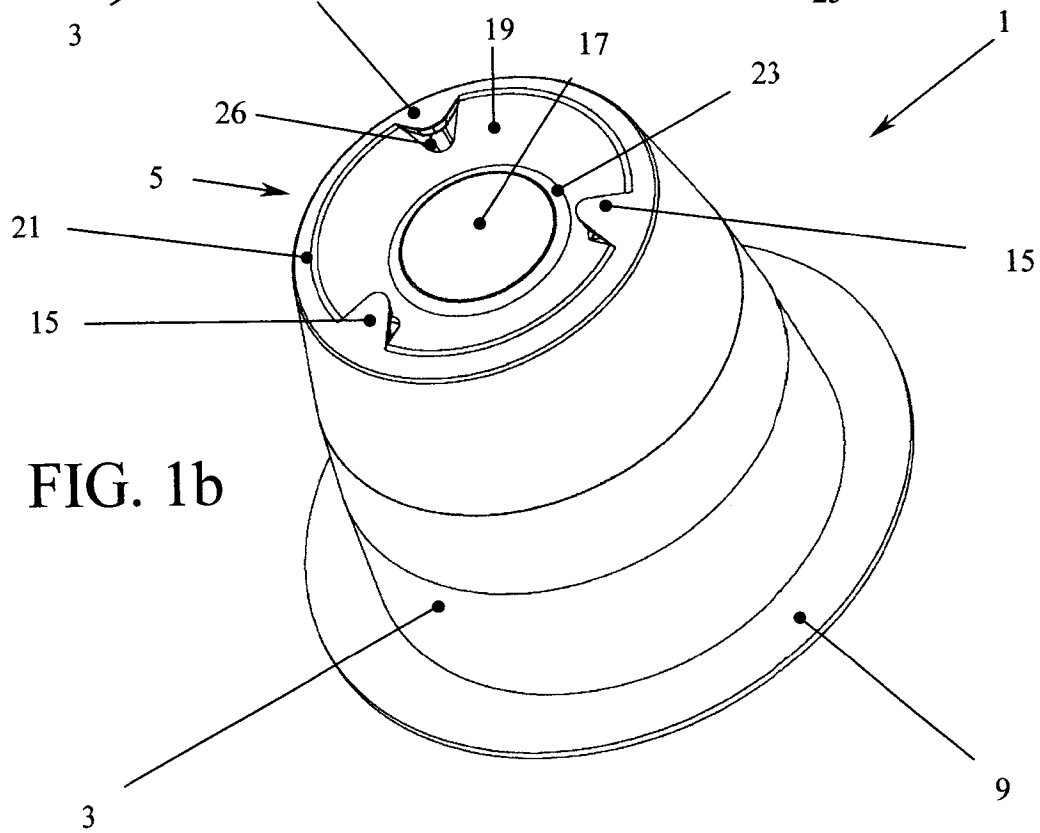
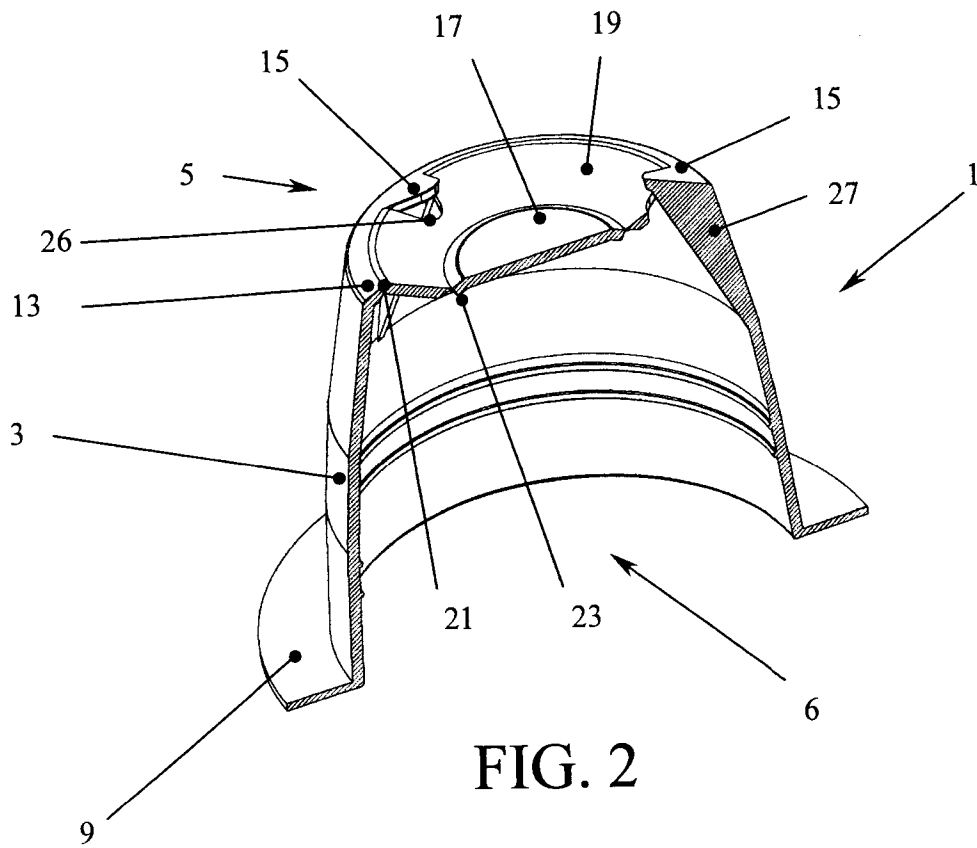
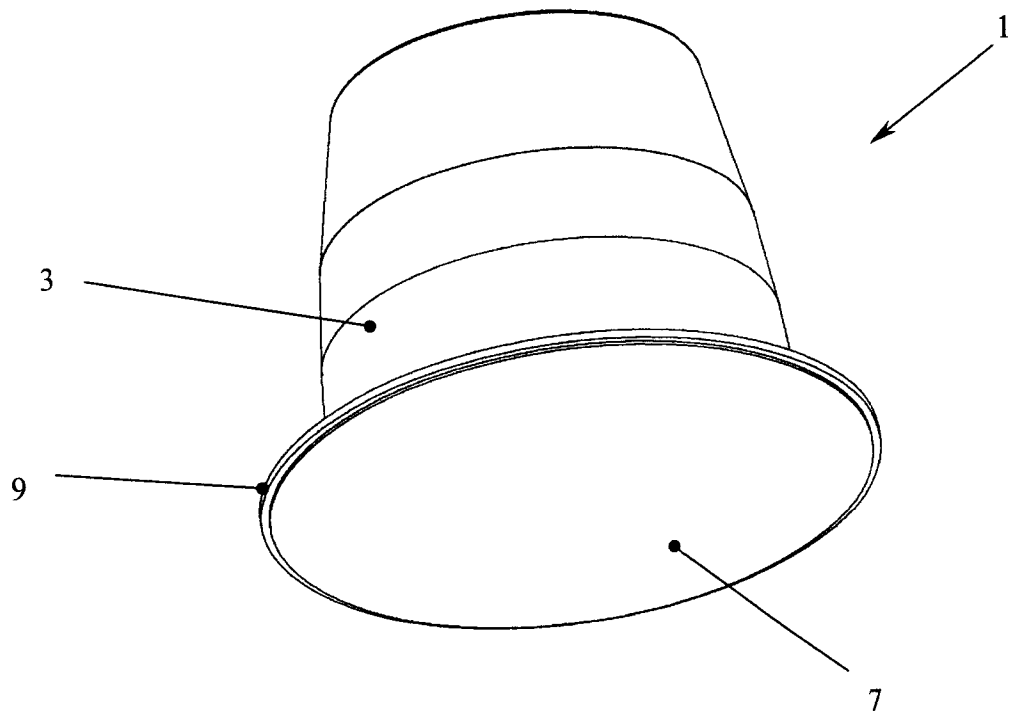


FIG. 1b

2/22



3/22

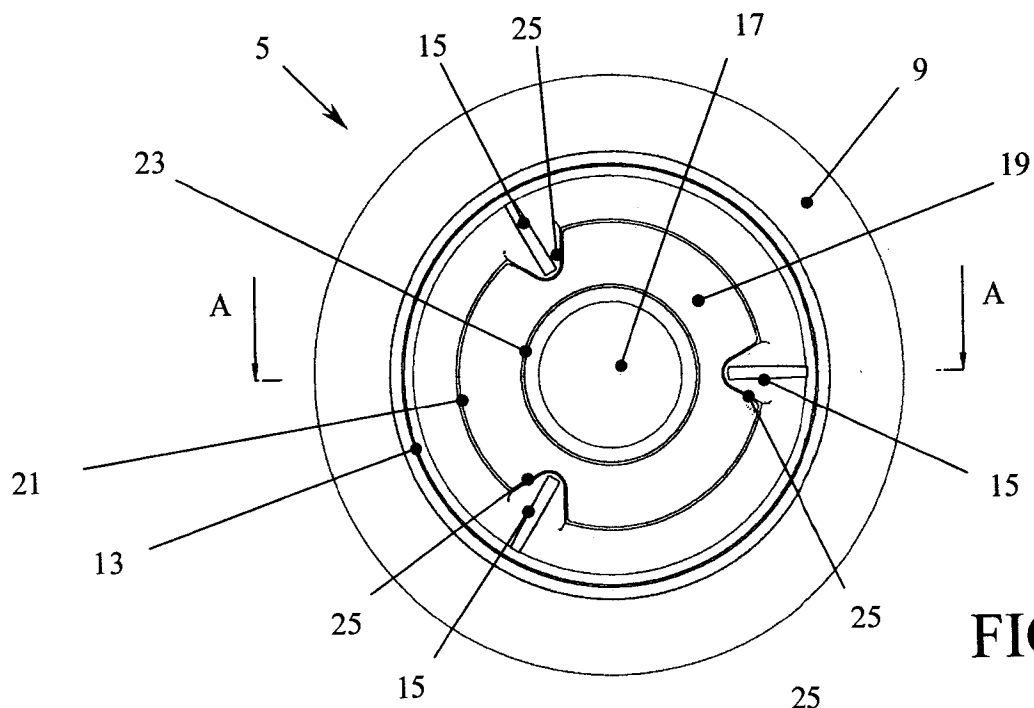


FIG. 3

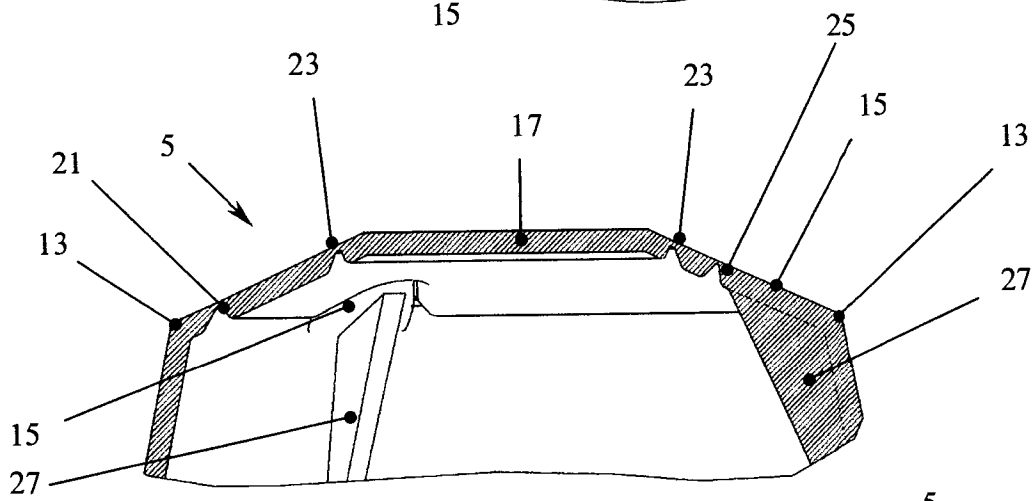


FIG. 4a

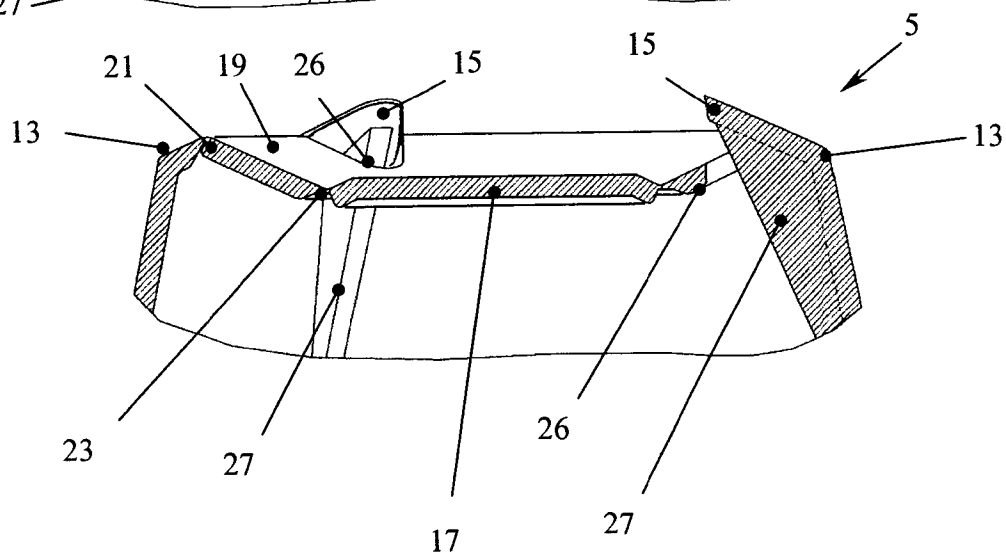
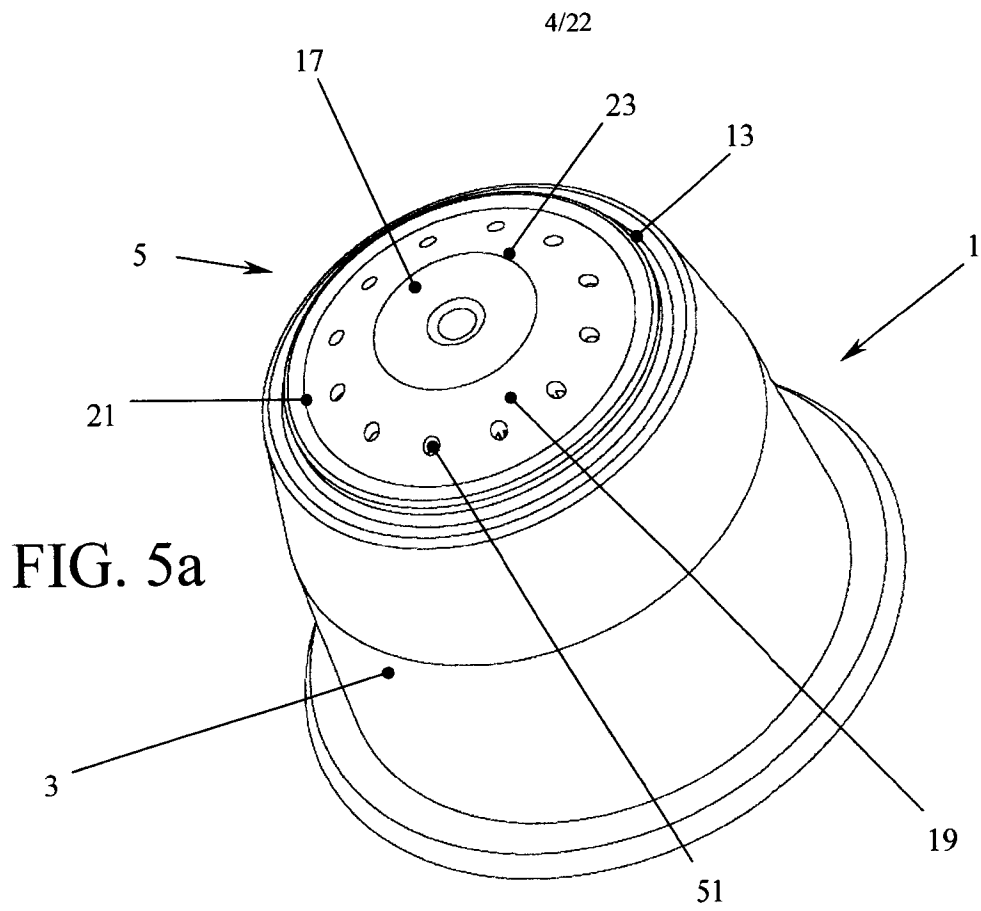
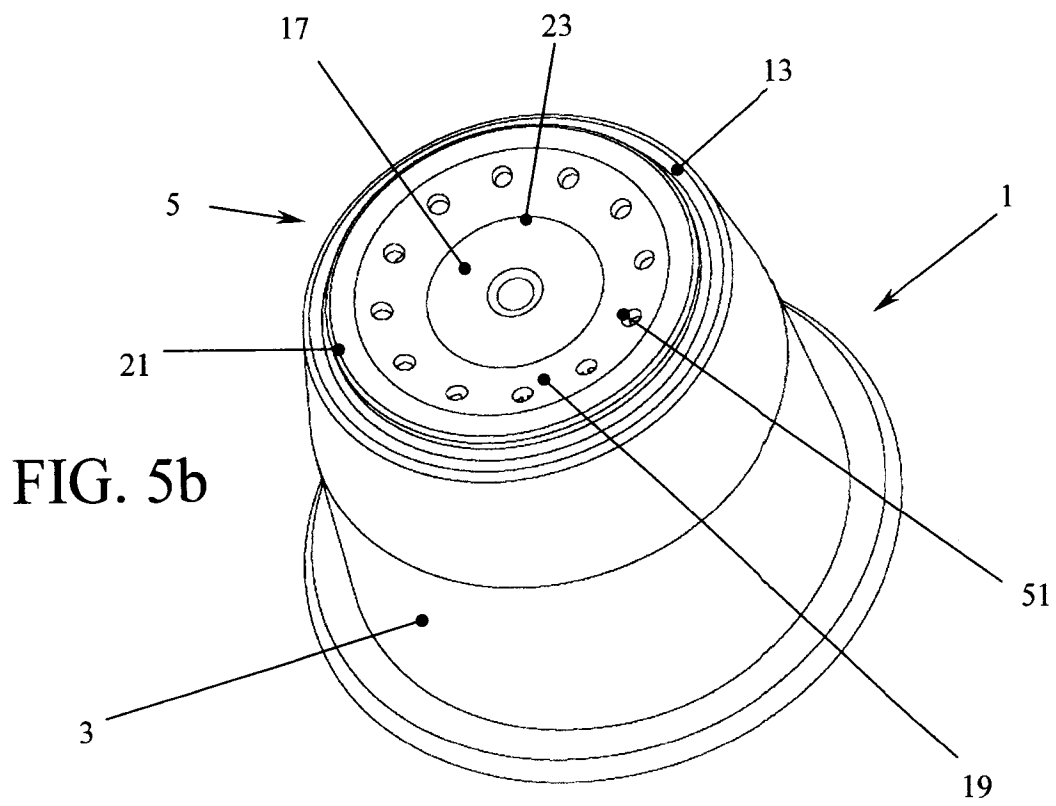


FIG. 4b



5/22

FIG. 6a

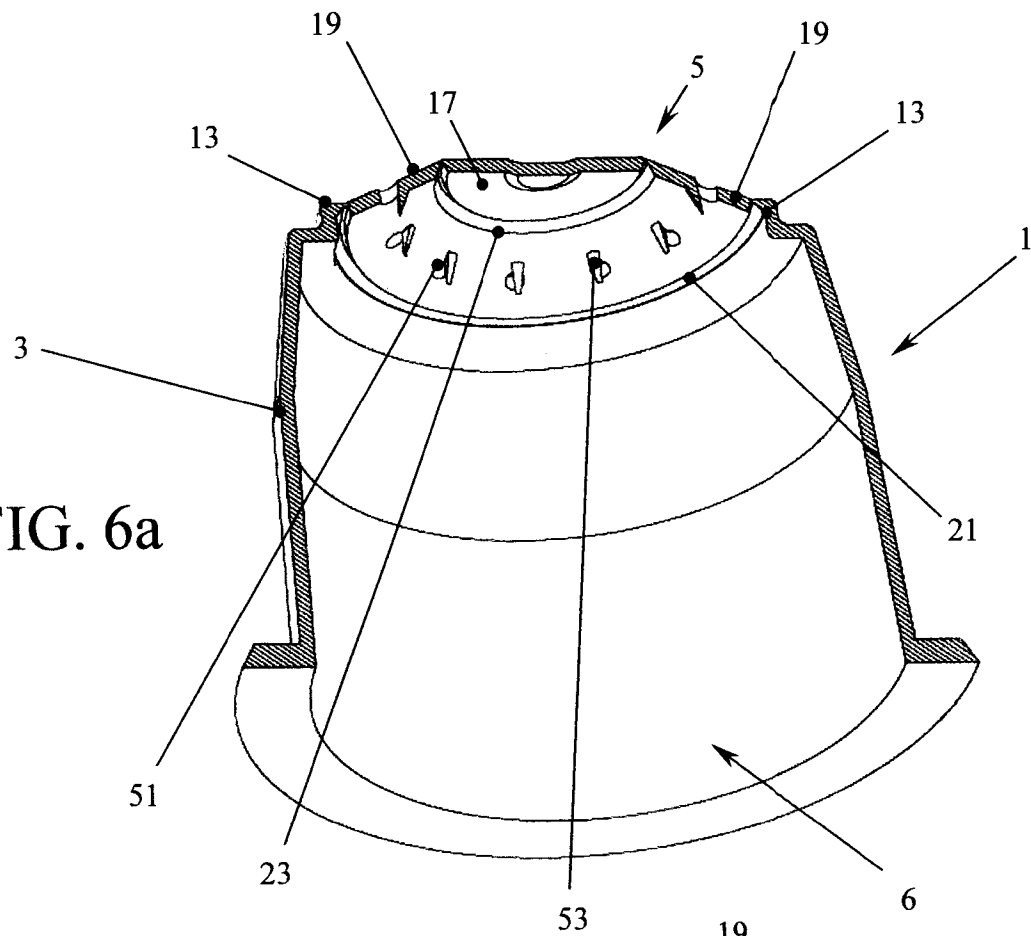
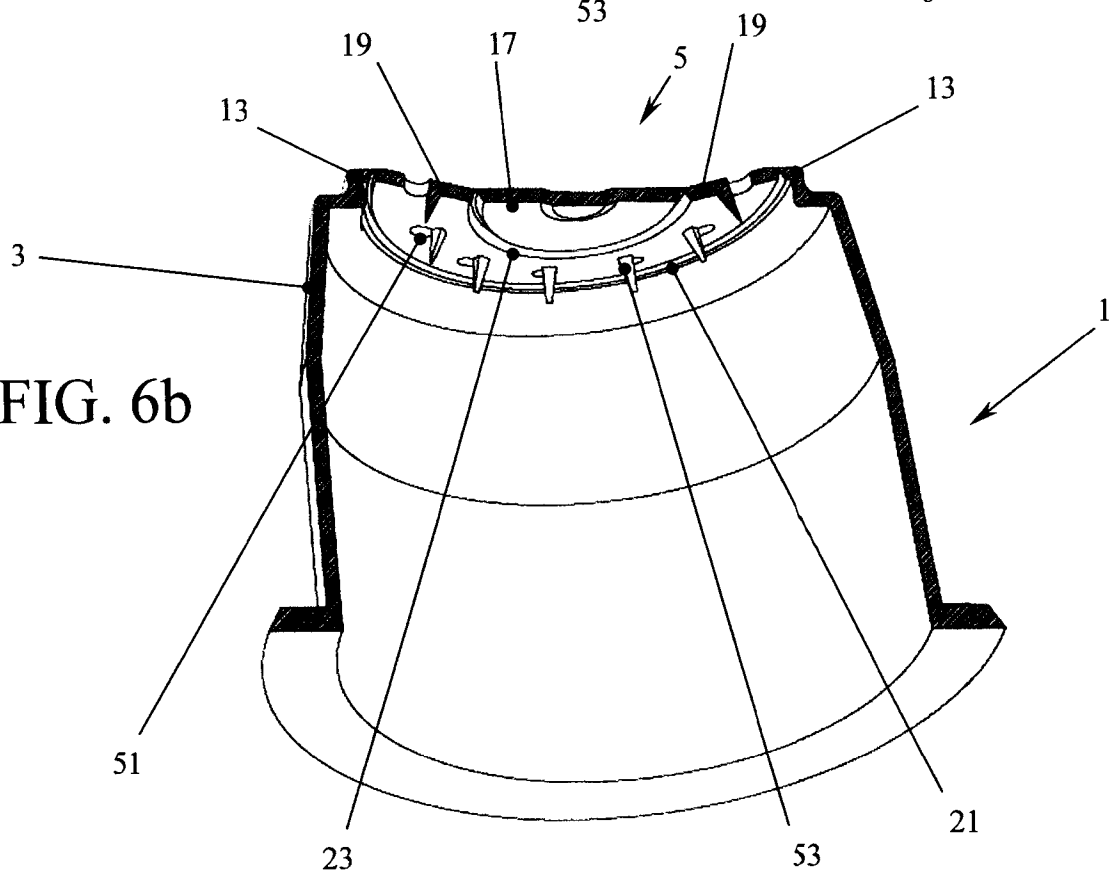


FIG. 6b



6/22

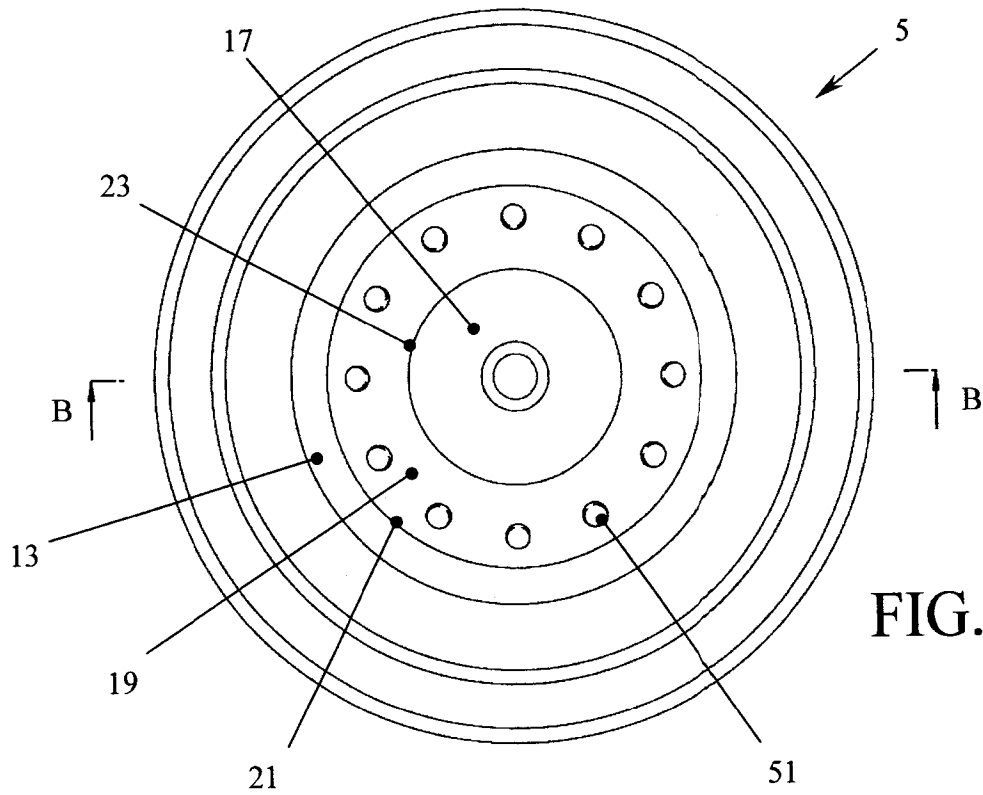


FIG. 7

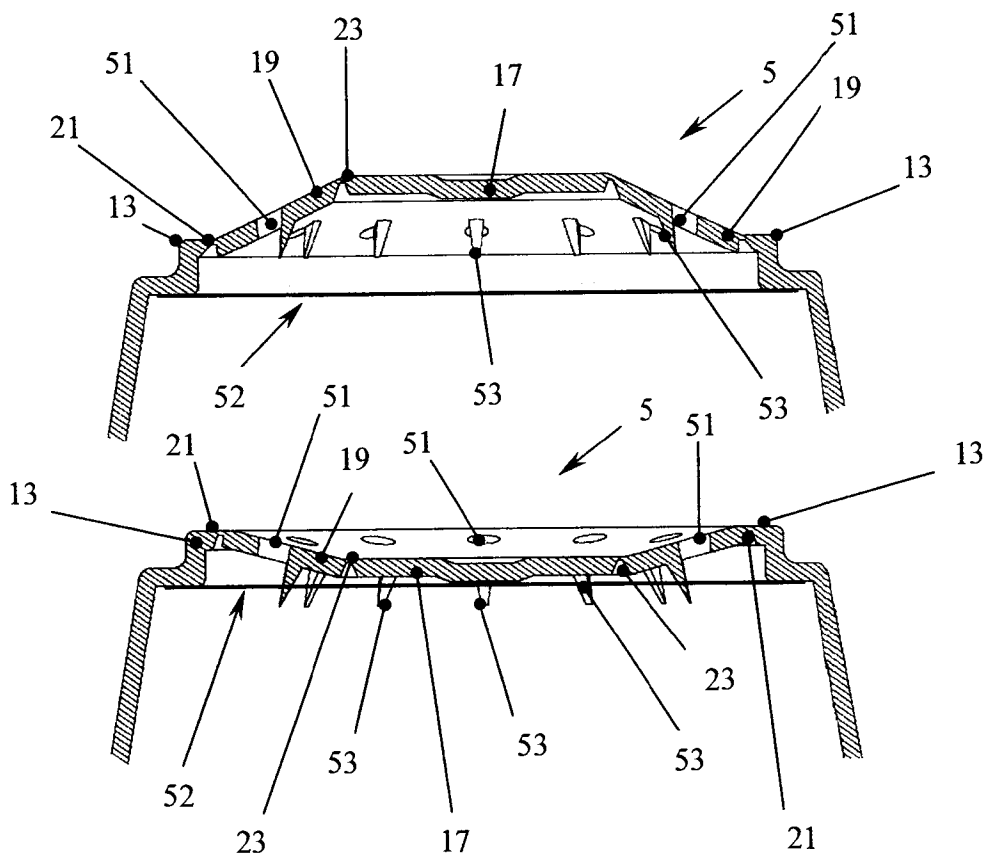
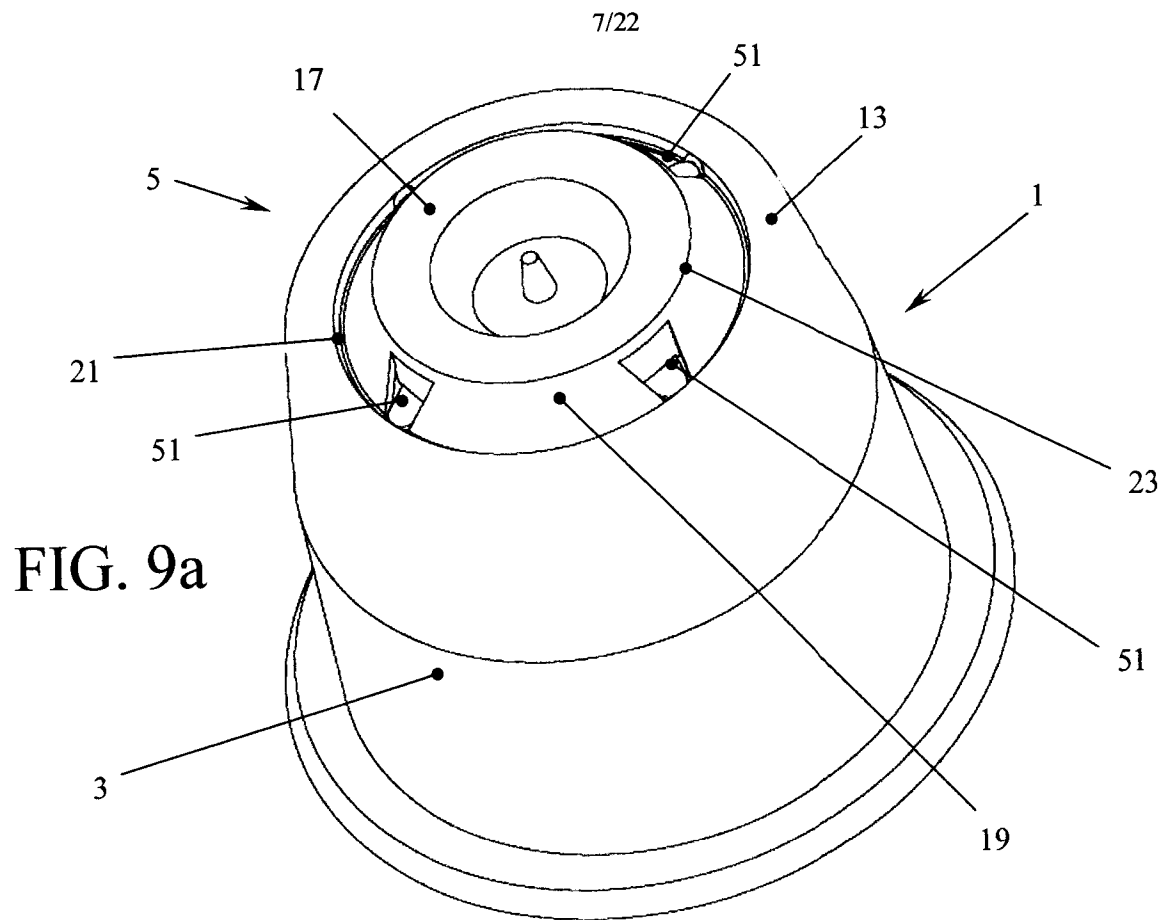
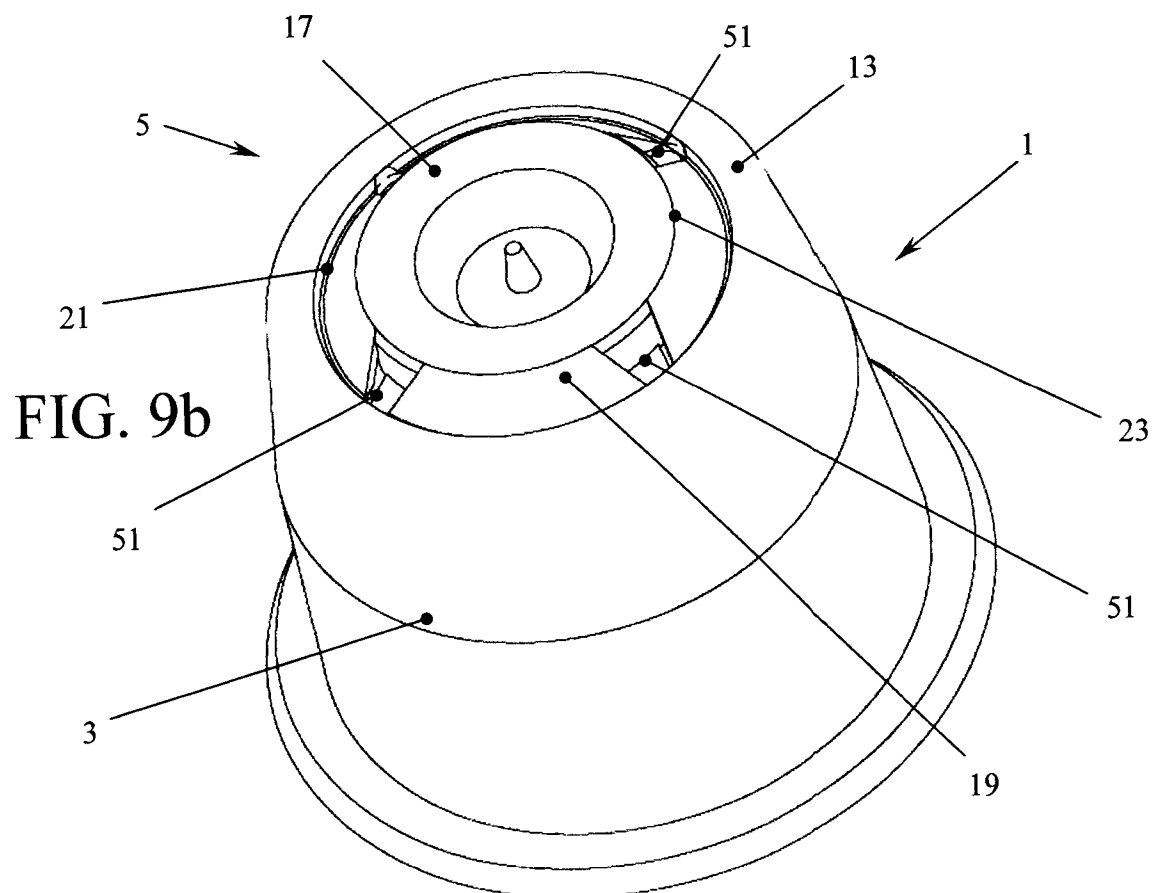
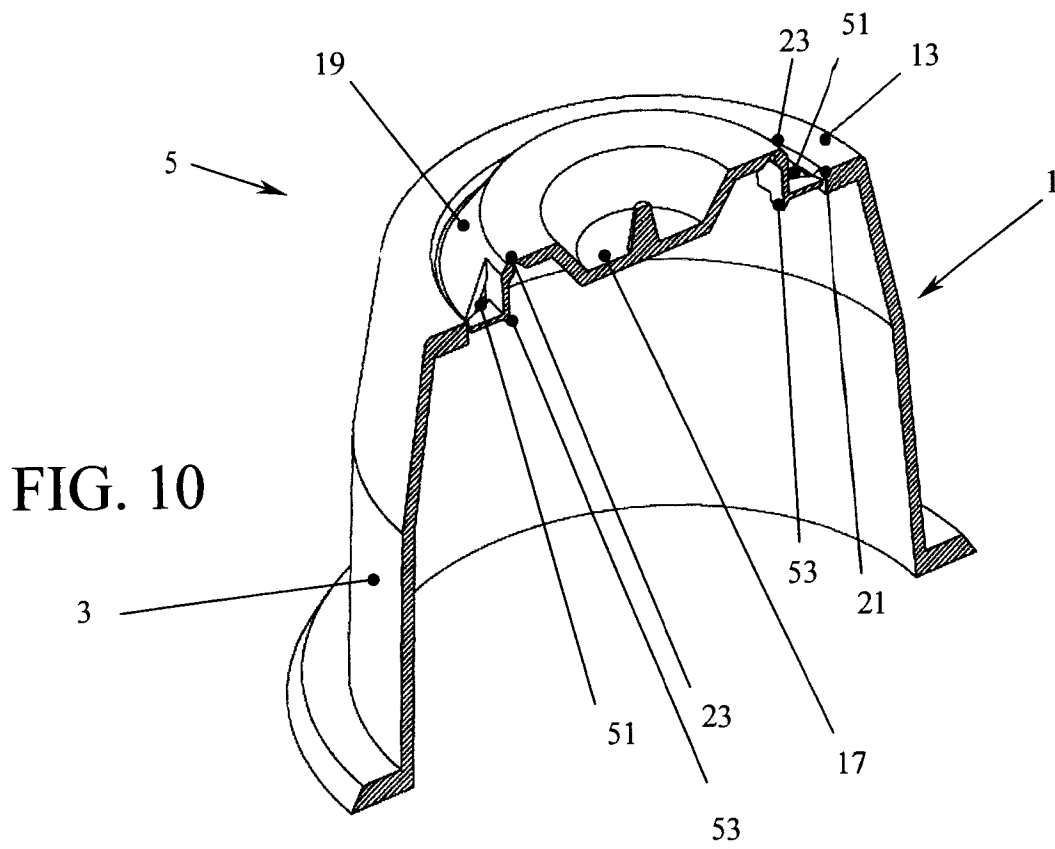


FIG. 8a

FIG. 8b





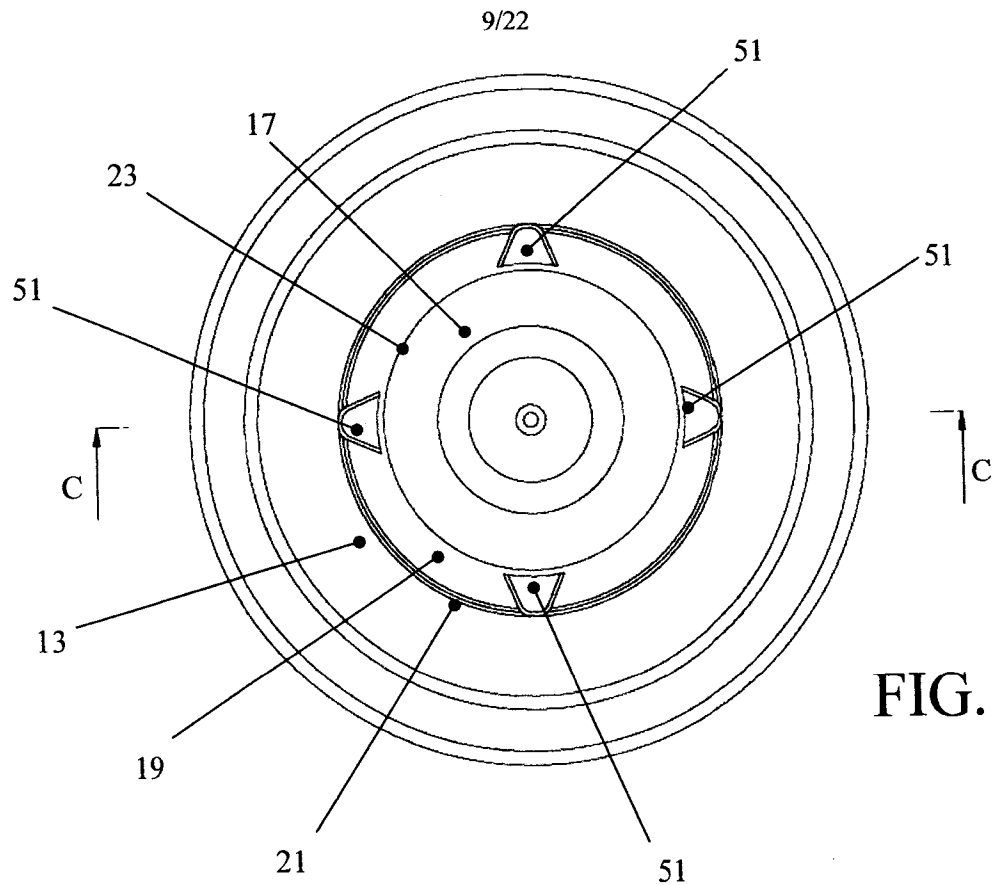


FIG. 11

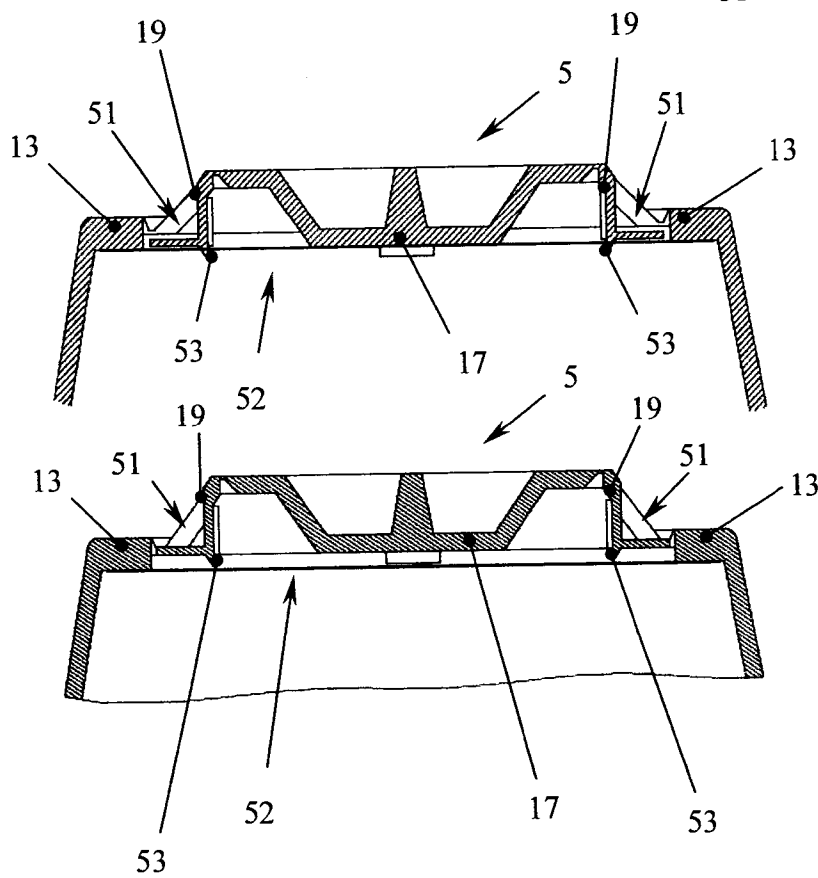


FIG. 12b

FIG. 12a

10/22

FIG. 13a

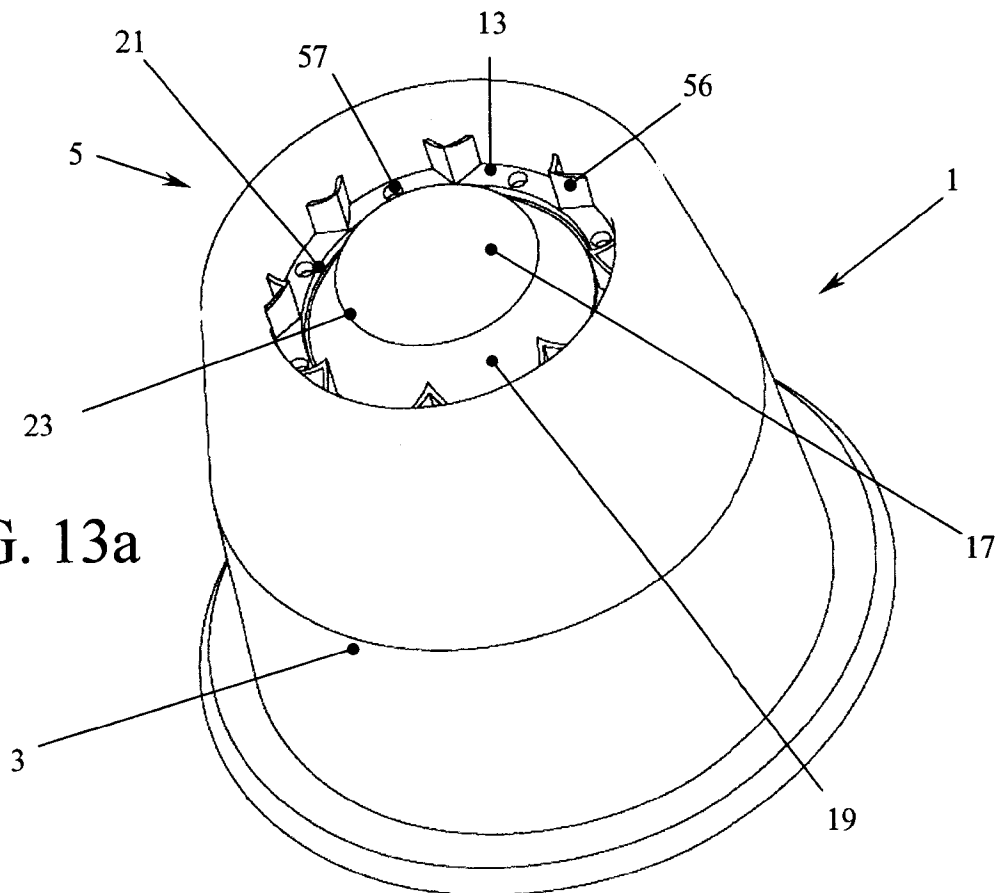
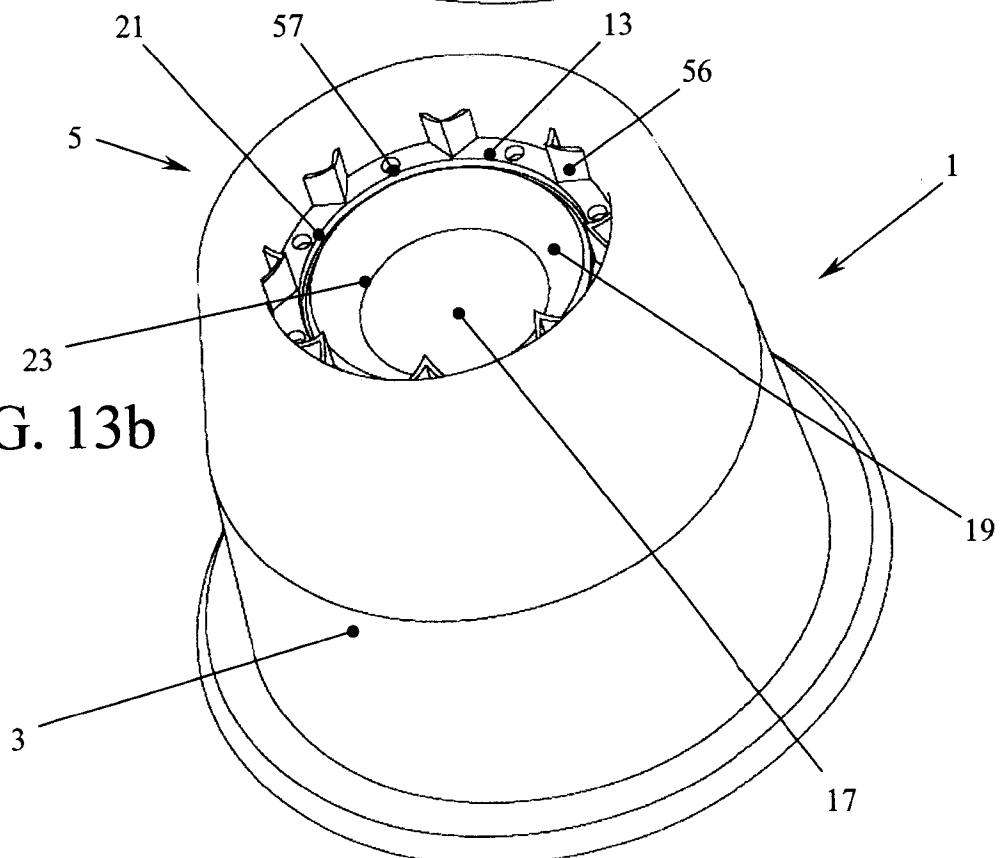


FIG. 13b



11/22

FIG. 14a

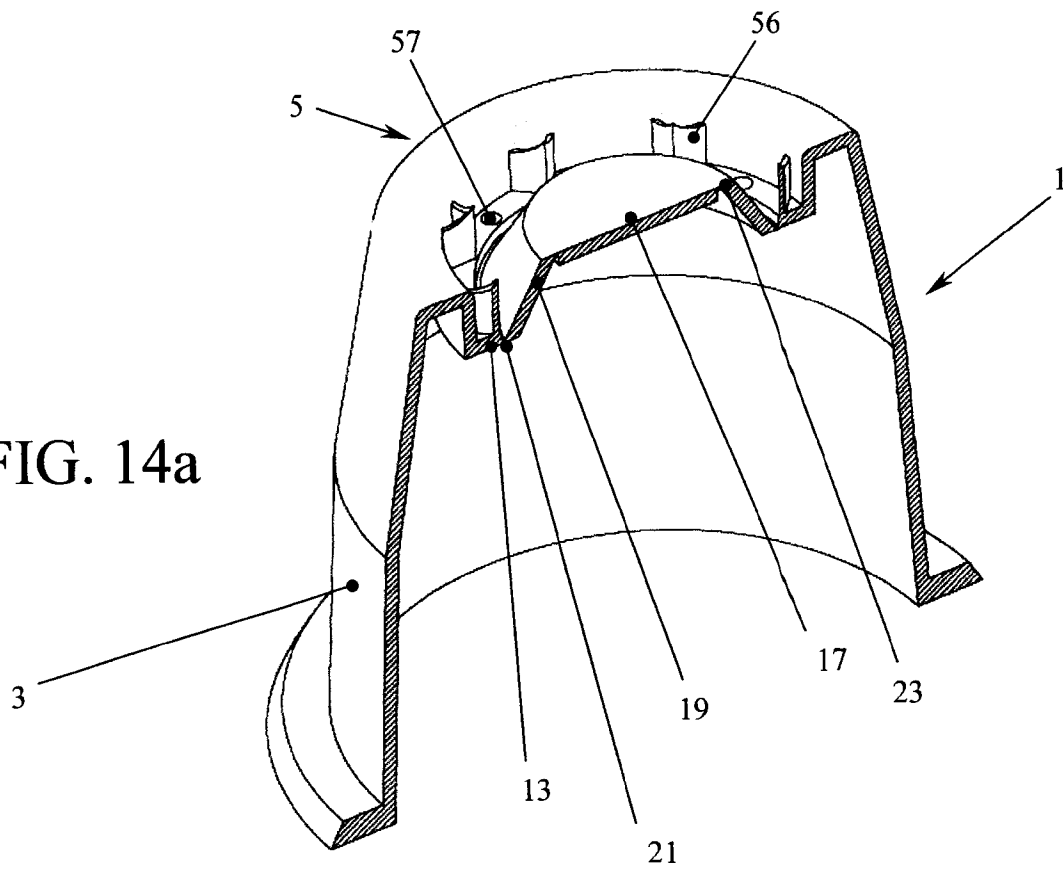
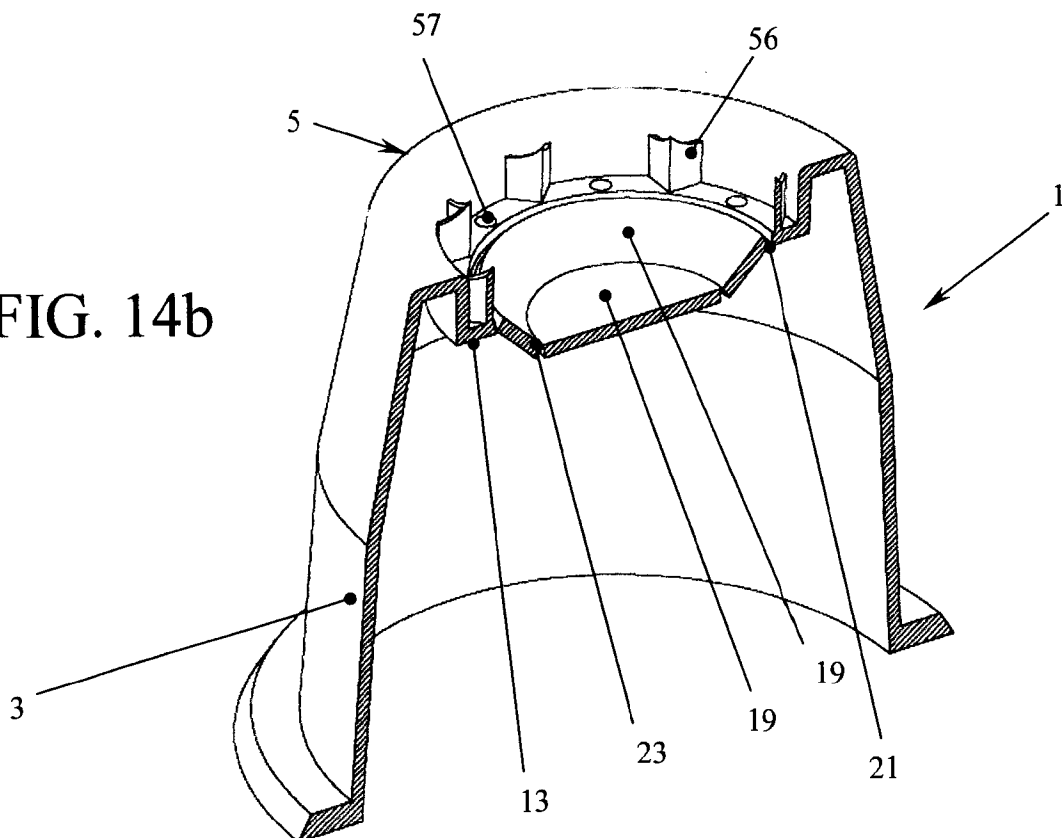
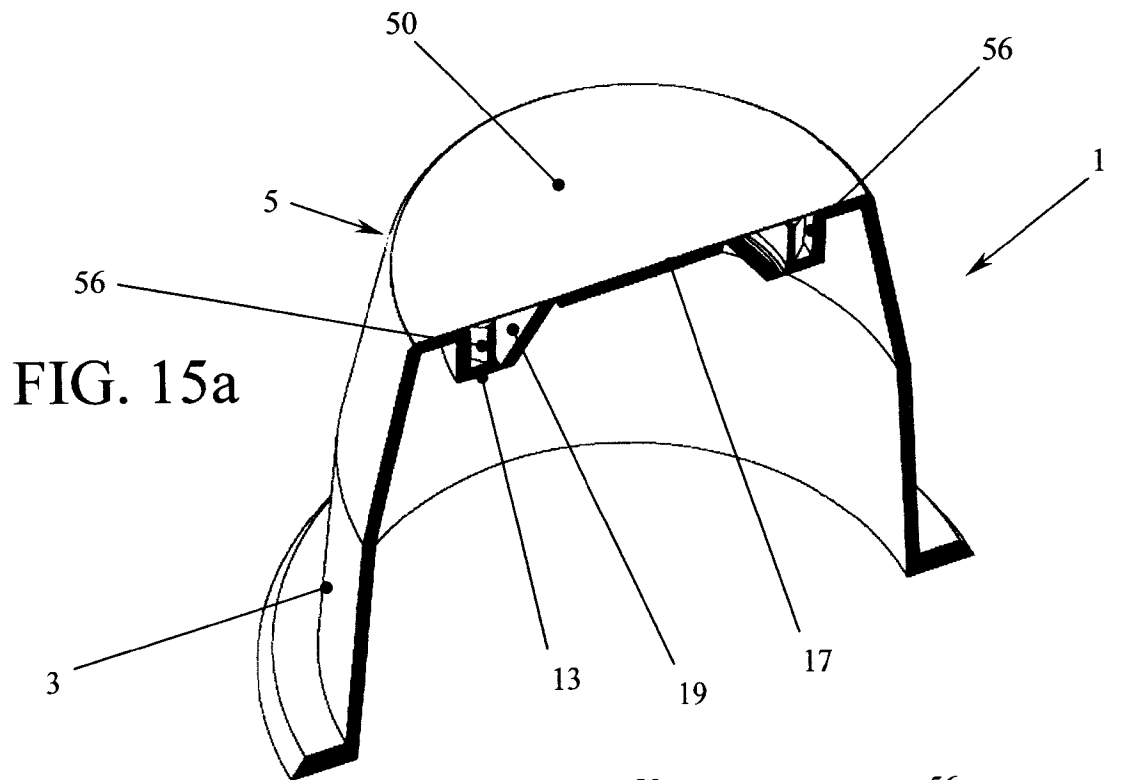
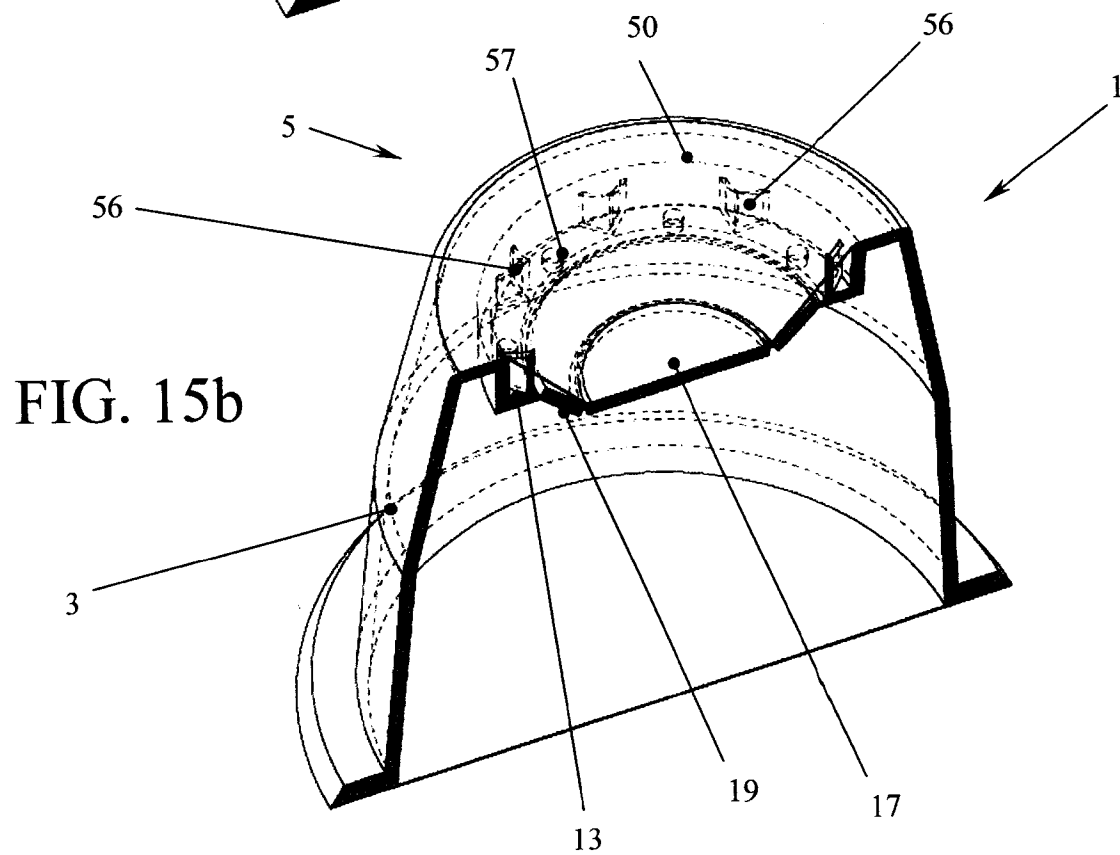


FIG. 14b



12/22



13/22

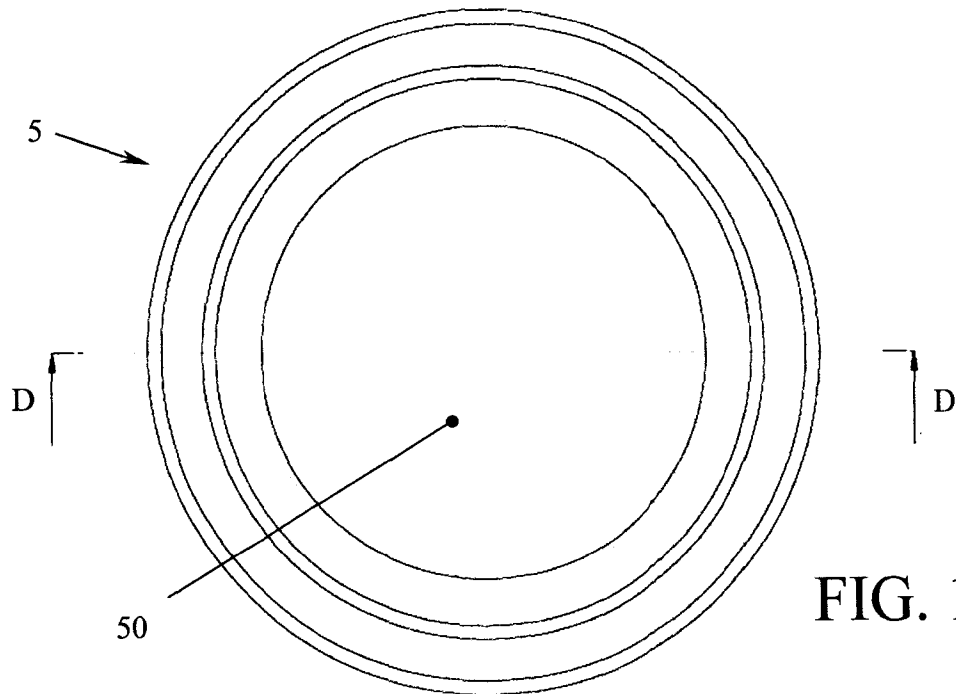


FIG. 16

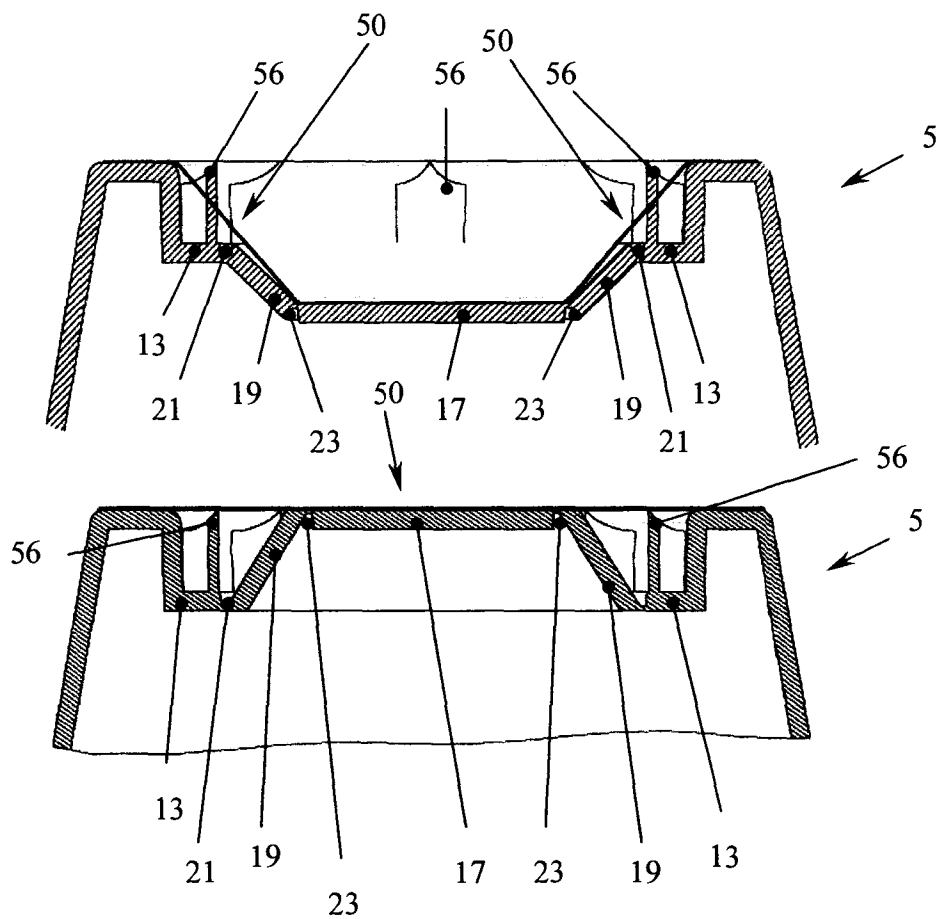


FIG. 17b

FIG. 17a

14/22

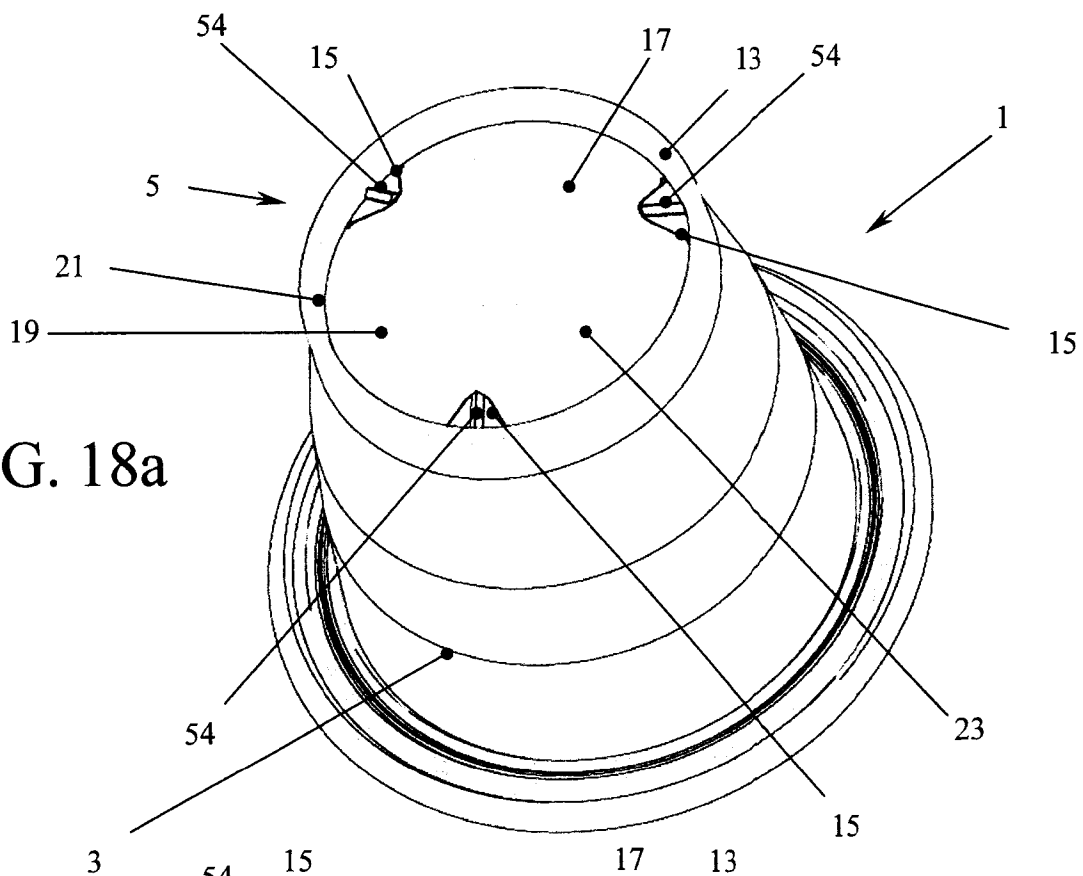


FIG. 18a

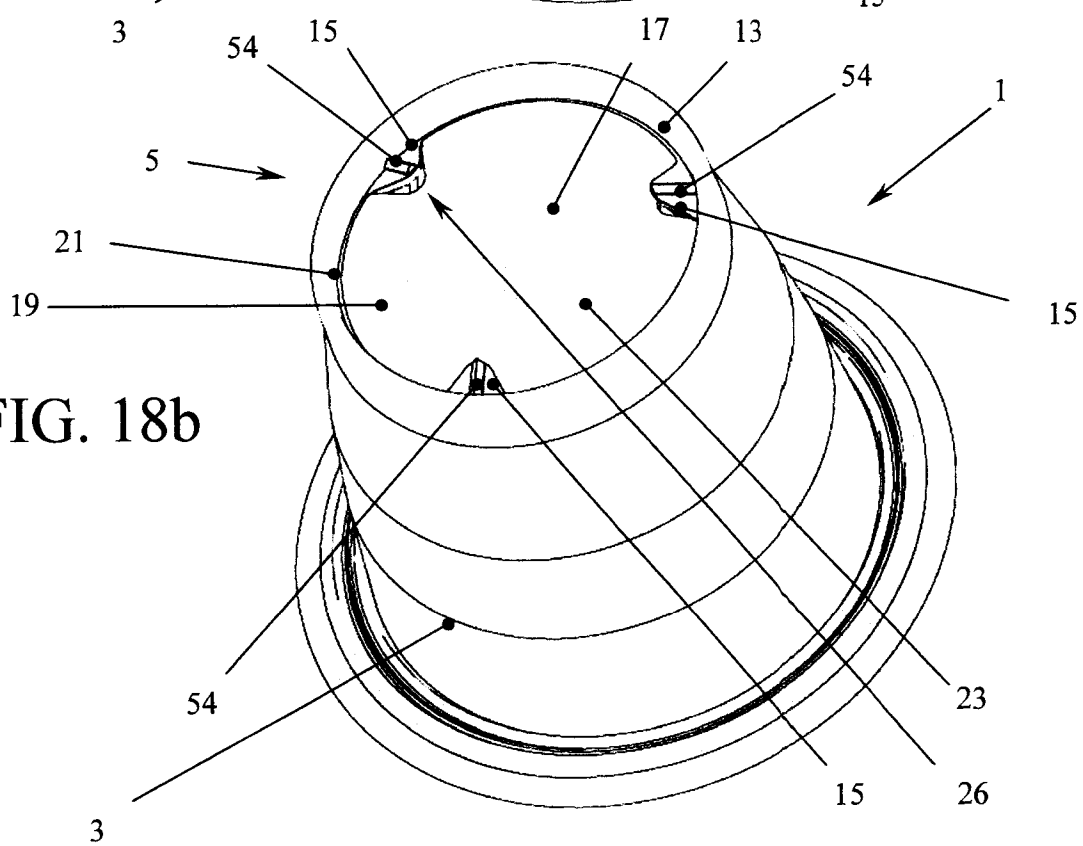
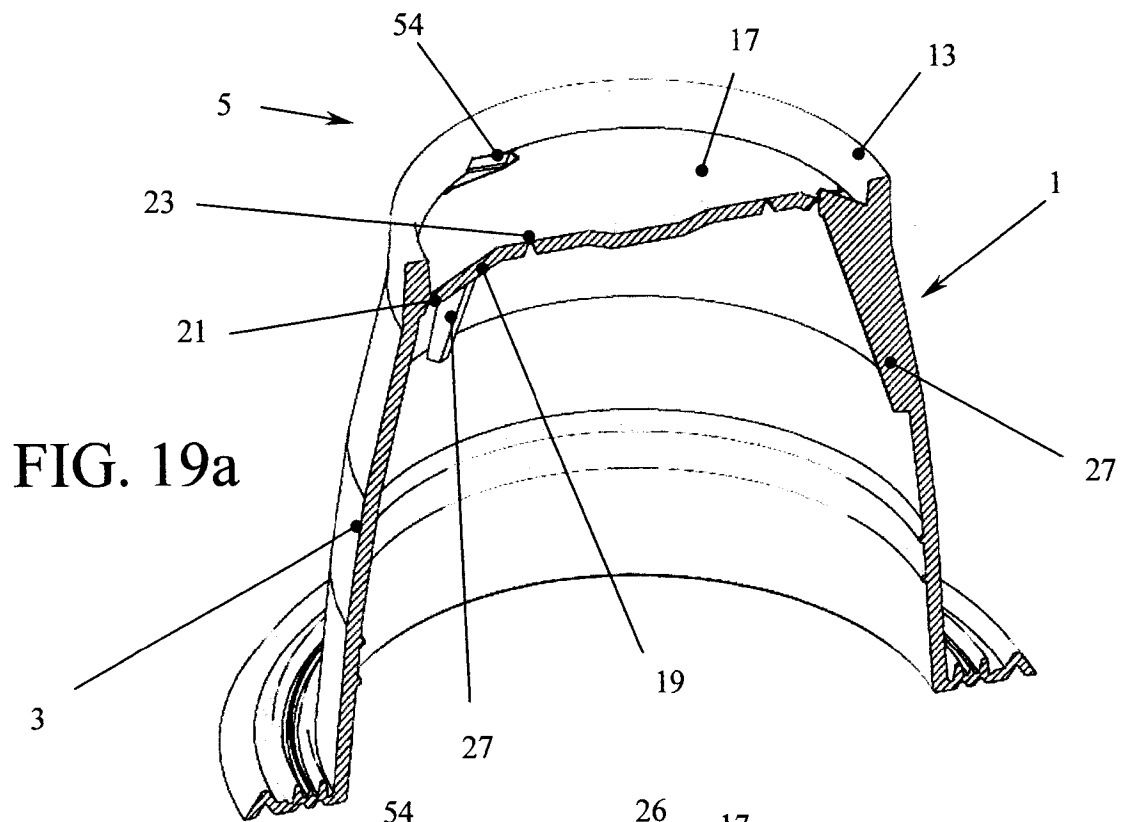
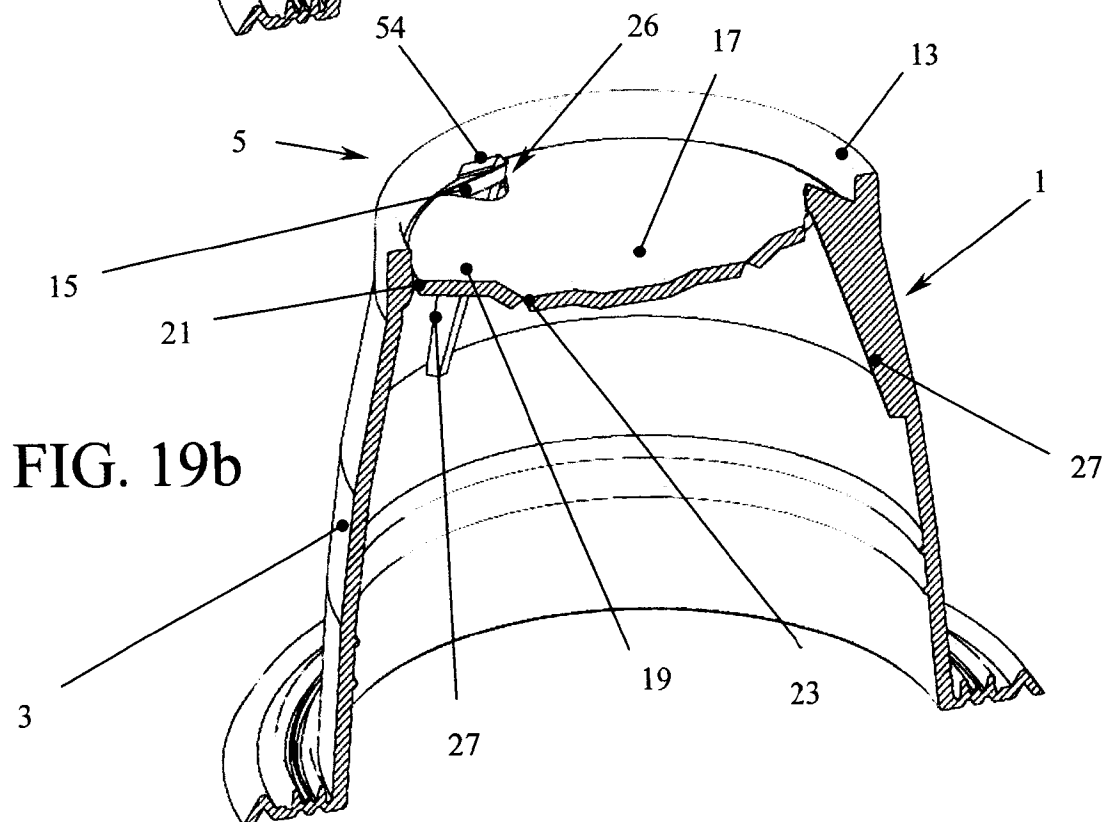
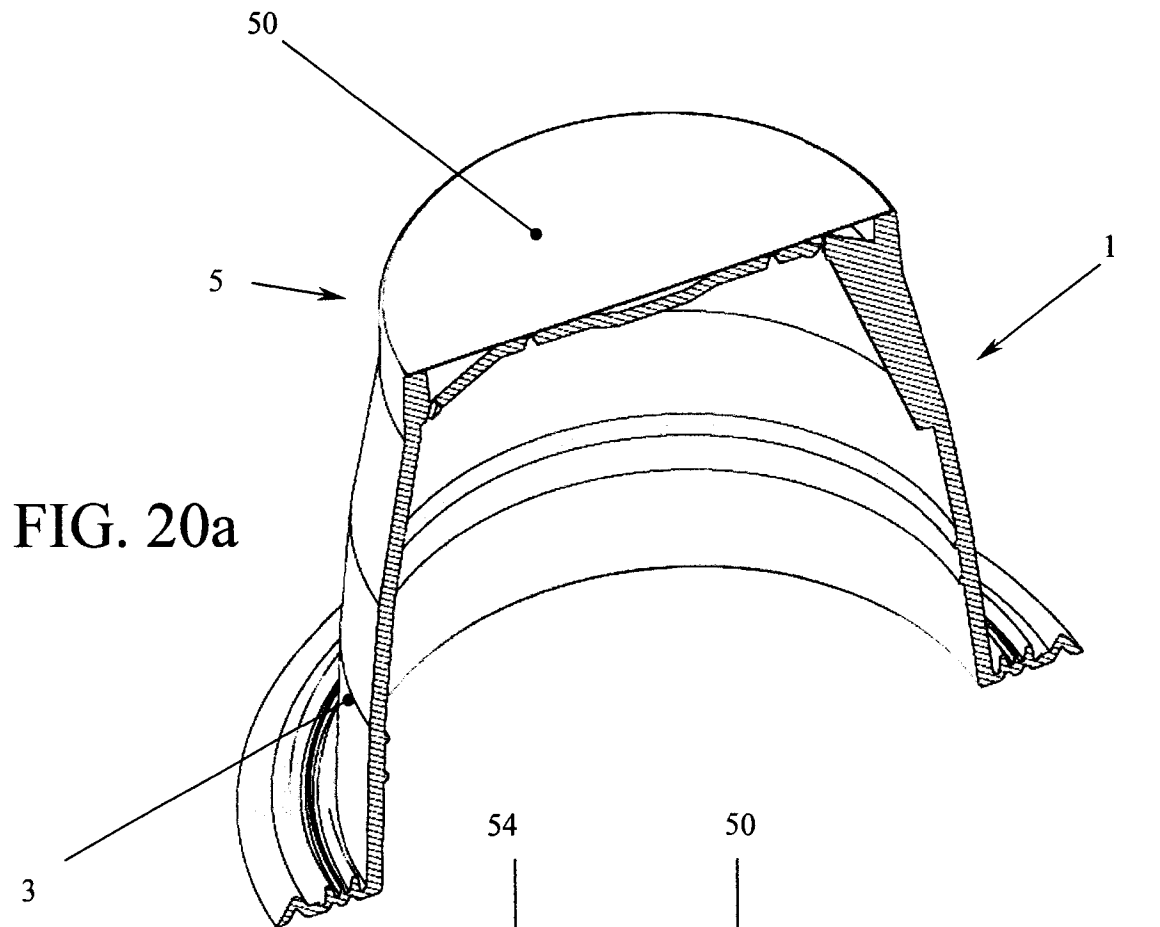
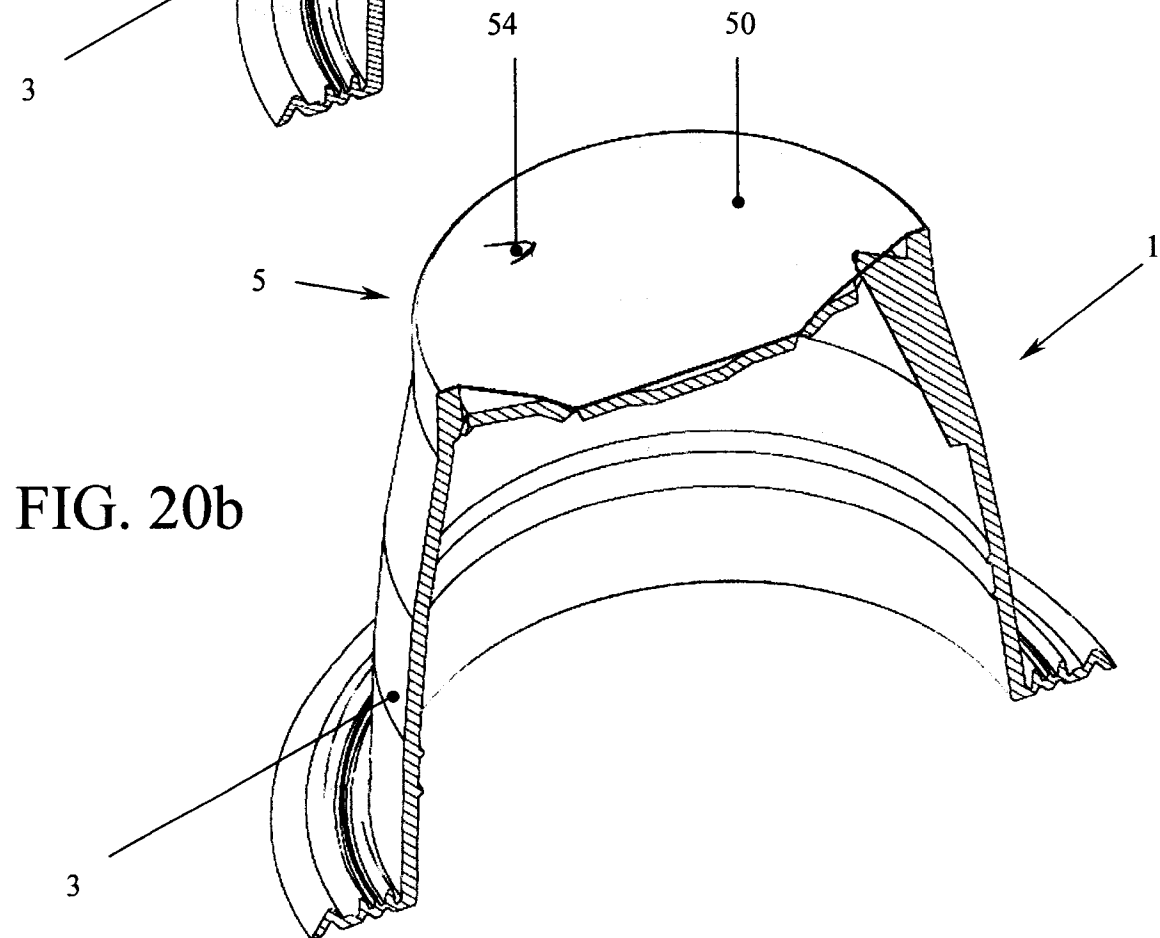


FIG. 18b



16/22



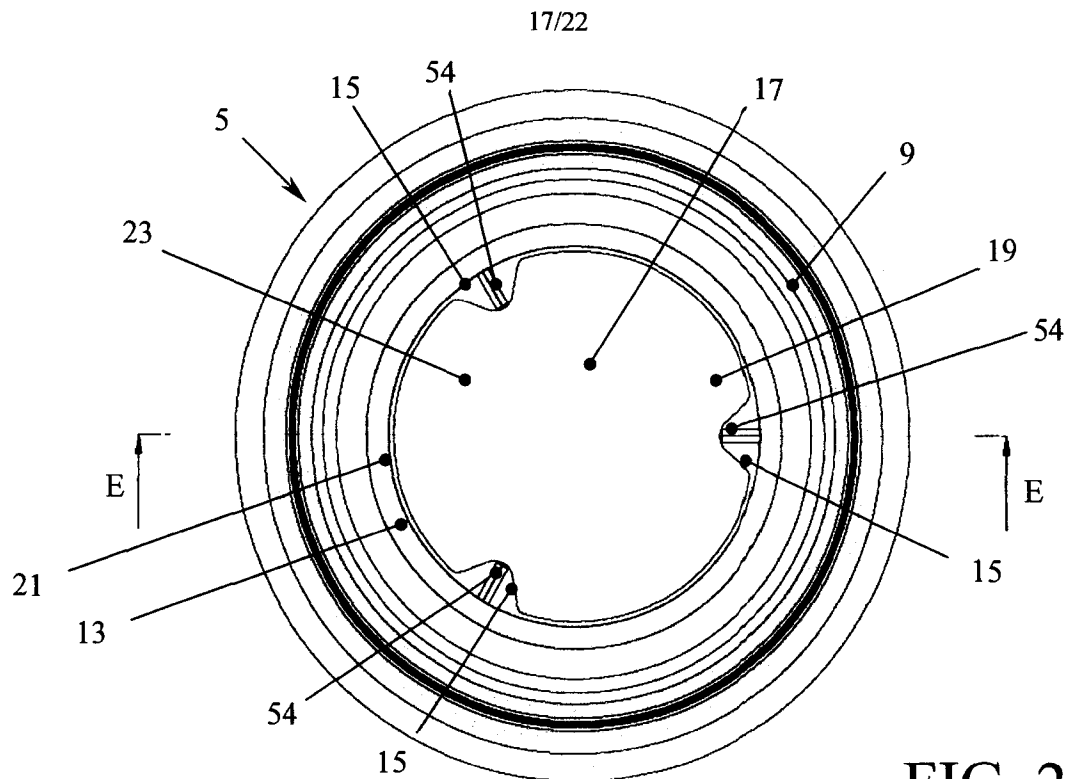


FIG. 21

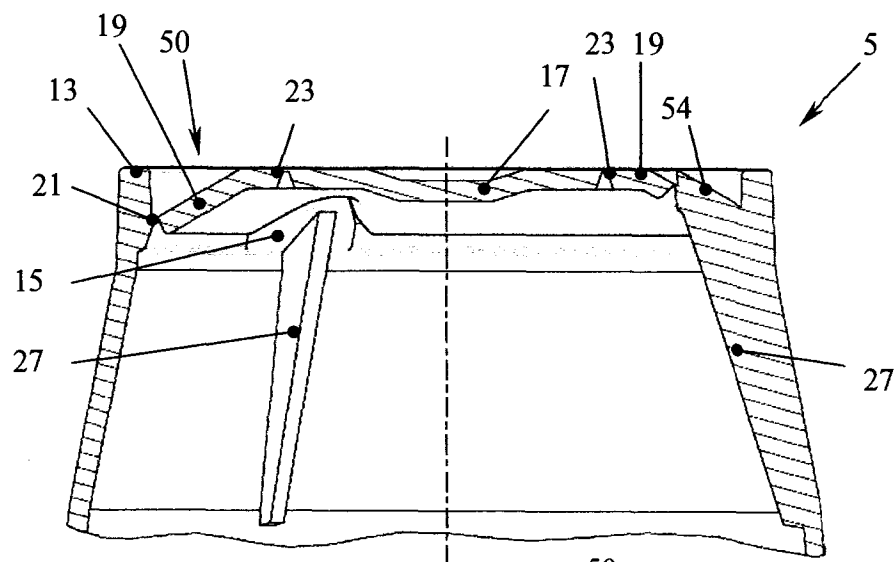


FIG. 22a

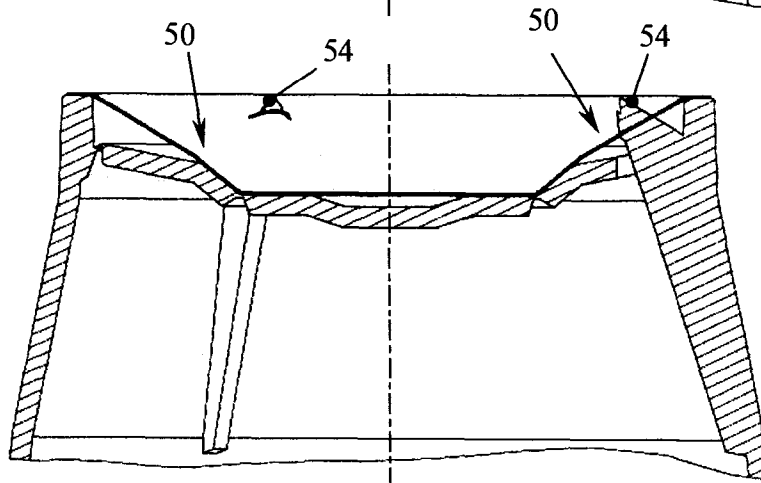


FIG. 22b

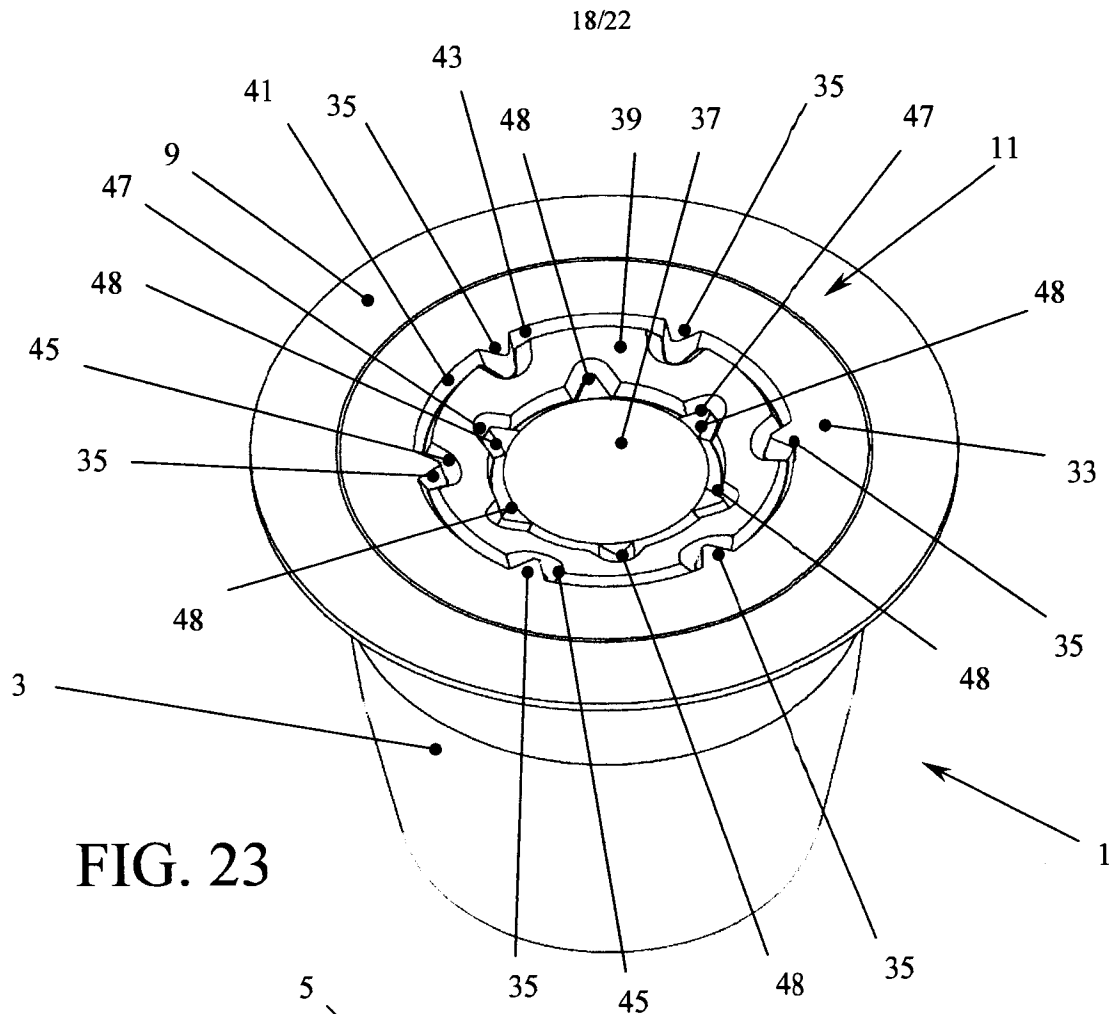


FIG. 23

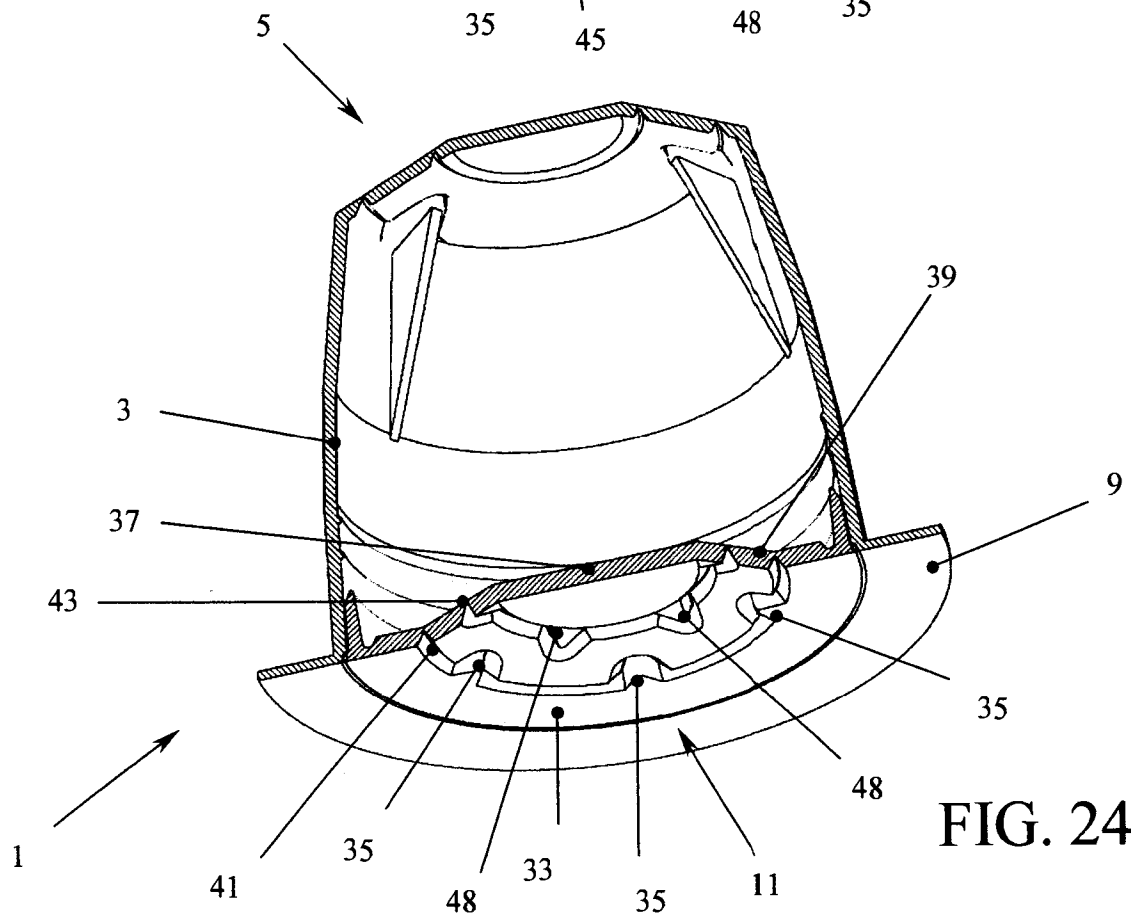


FIG. 24

19/22

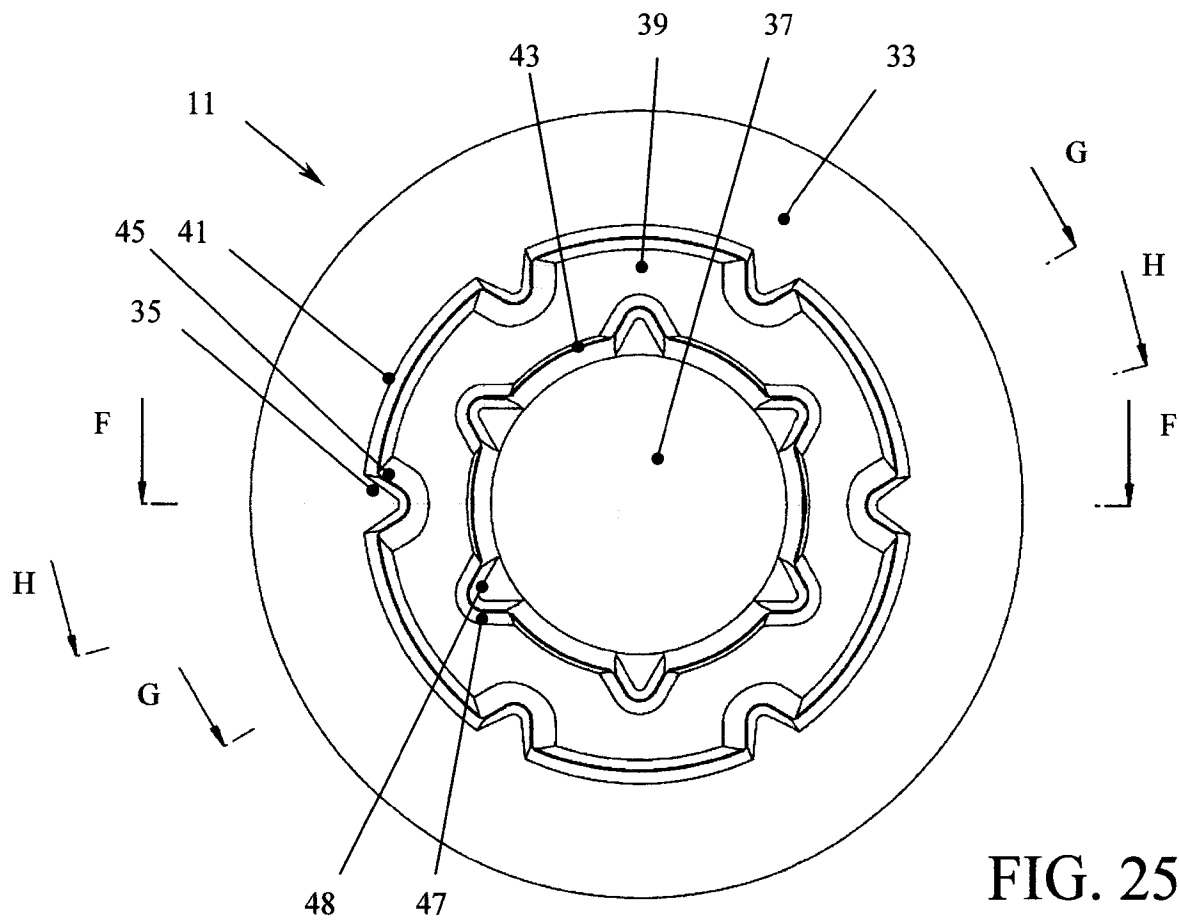


FIG. 25

FIG. 26a

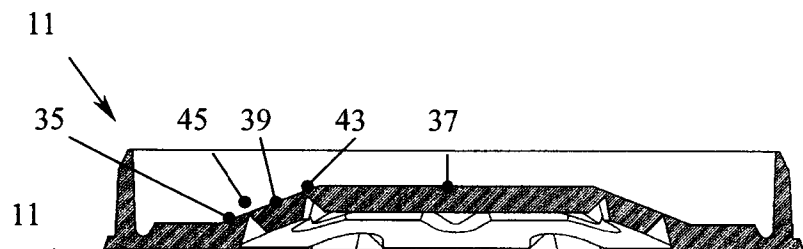


FIG. 26b

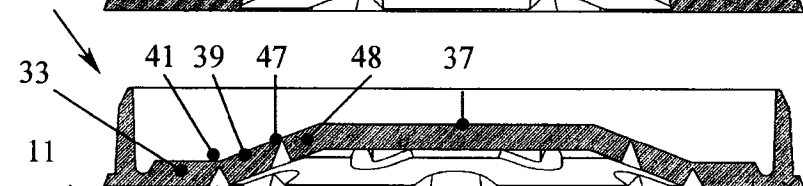
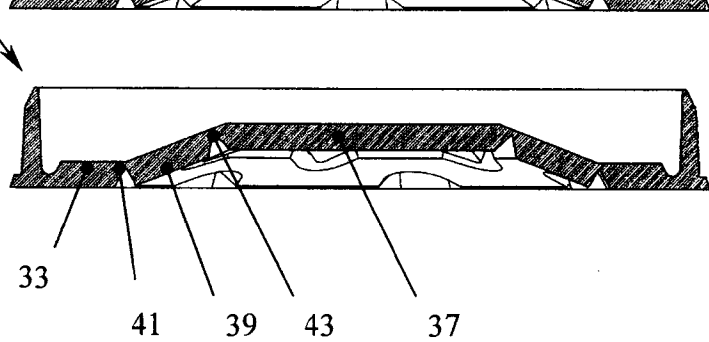


FIG. 26c



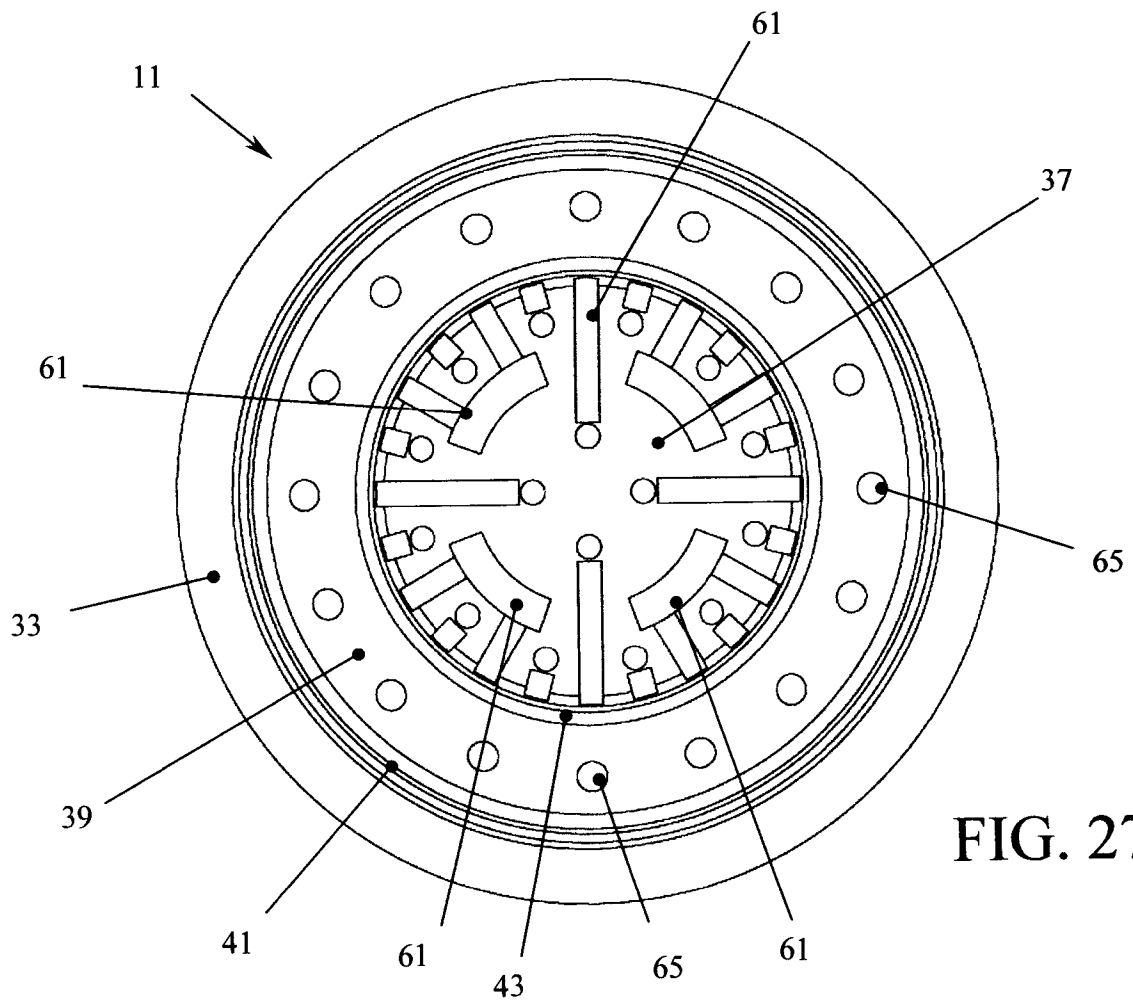


FIG. 27

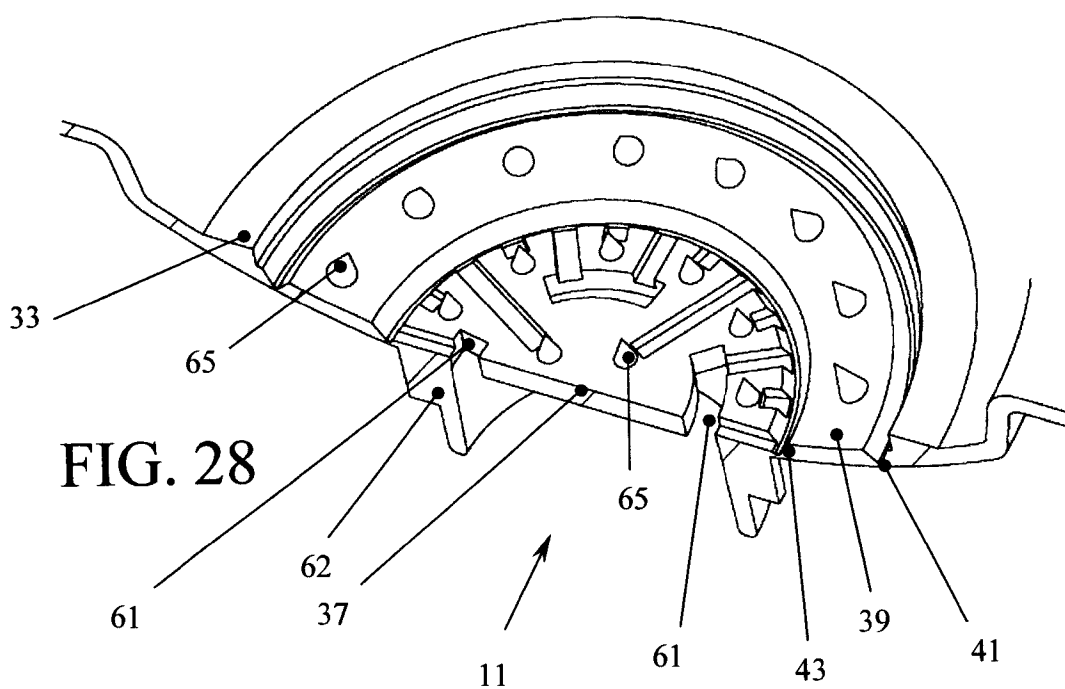


FIG. 28

FIG. 29a

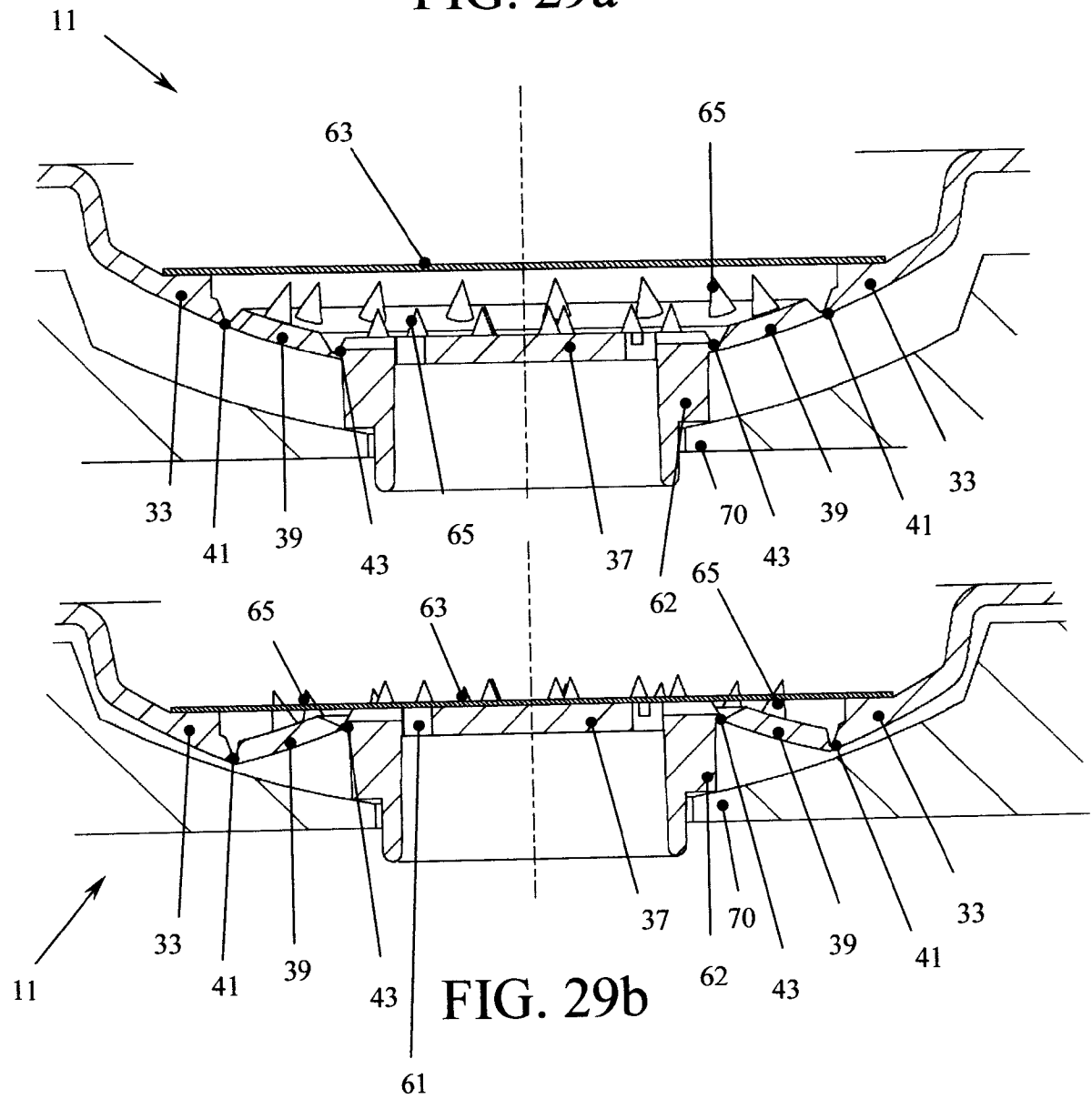


FIG. 30a

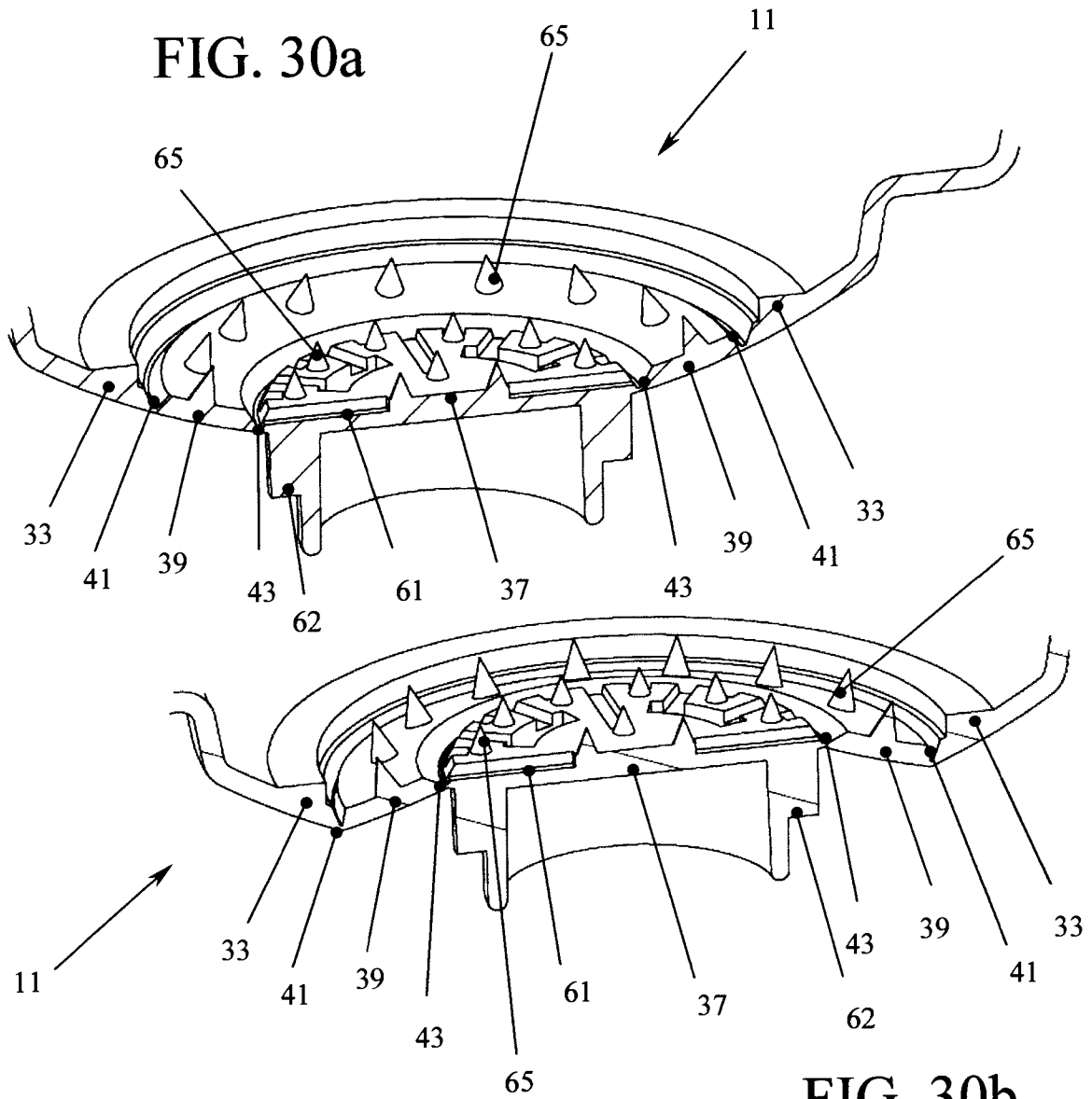
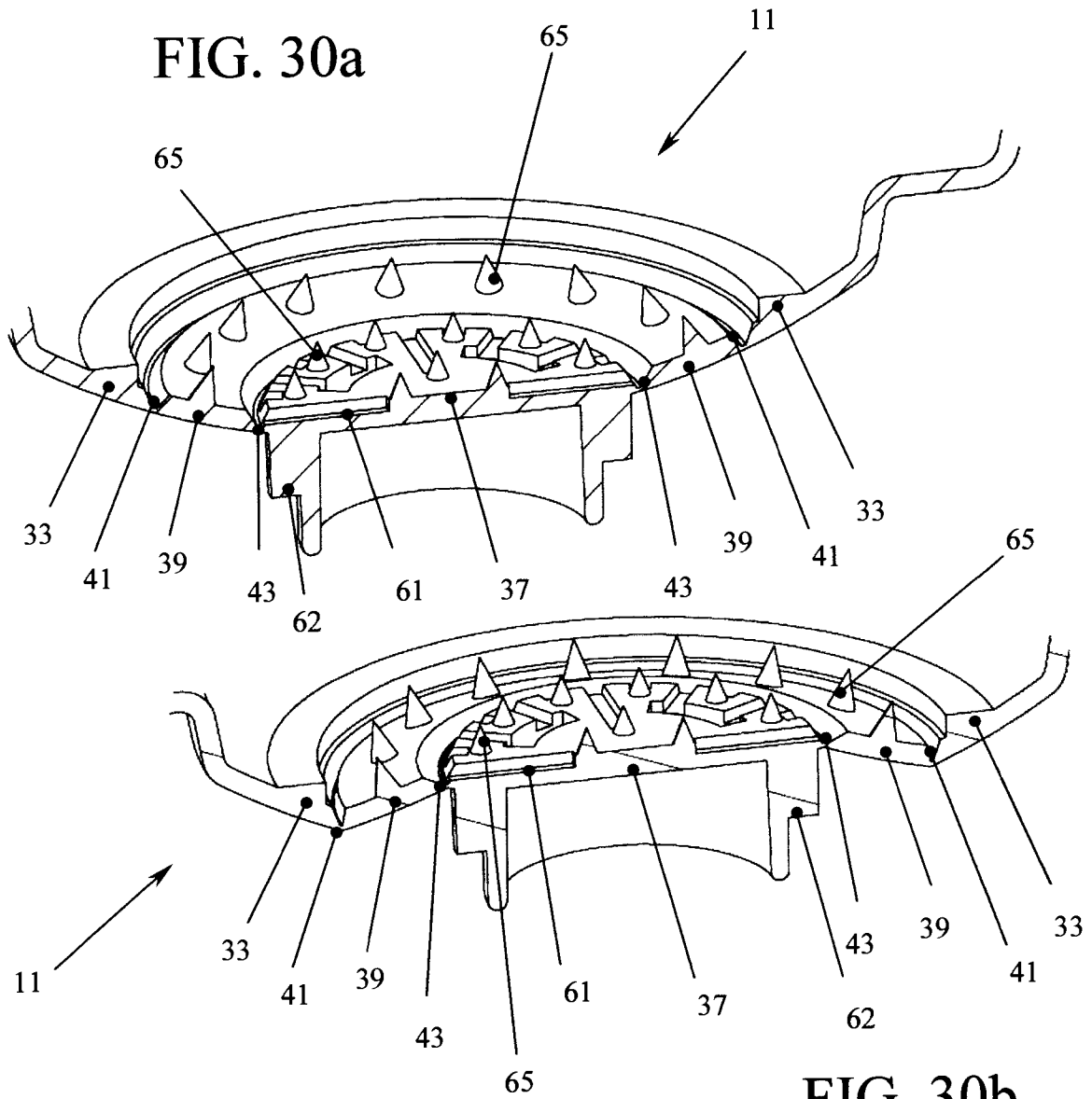


FIG. 30b



INTERNATIONAL SEARCH REPORT

International application No

PCT/IT2013/000279

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.
A	WO 2012/137052 A1 (TAPLAST SRL [IT]; SANTAGIULIANA EVANS [IT]) 11 October 2012 (2012-10-11) the whole document	1-18
A	WO 2010/038213 A2 (ETHICAL COFFEE COMPANY SA [CH]; MARILLER ALAIN [CH]) 8 April 2010 (2010-04-08) the whole document	1-18
A	US 2010/180775 A1 (KOLLEP ALEXANDRE [CH] ET AL) 22 July 2010 (2010-07-22) the whole document	1-18
A	EP 2 287 090 A1 (NESTEC SA [CH]) 23 February 2011 (2011-02-23) the whole document	1-18
	----- -/--	



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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

"&" document member of the same patent family

Date of the actual completion of the international search

19 February 2014

Date of mailing of the international search report

27/02/2014

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Ngo Si Xuyen, G

INTERNATIONAL SEARCH REPORT

International application No

PCT/IT2013/000279

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 2 465 793 A1 (MACCHIAVELLI S R L [IT]) 20 June 2012 (2012-06-20) the whole document	1-18
A	----- WO 2011/159162 A1 (BISERKON HOLDINGS LTD [CY]; ZWEED SANDER GORDON [NL]; ANDREAE JAN [NL]) 22 December 2011 (2011-12-22) the whole document	1-18
A	----- WO 2012/076135 A1 (ESPRESSOCAP S P A [IT]; DORIA ALESSANDRO [IT]) 14 June 2012 (2012-06-14) the whole document	1-18

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IT2013/000279

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2012137052 A1	11-10-2012	EP 2694403 A1 WO 2012137052 A1	12-02-2014 11-10-2012
WO 2010038213 A2	08-04-2010	NONE	
US 2010180775 A1	22-07-2010	CN 101791195 A EP 2210827 A1 ES 2394135 T3 HK 1141773 A1 PT 2210827 E US 2010180775 A1	04-08-2010 28-07-2010 22-01-2013 18-01-2013 21-11-2012 22-07-2010
EP 2287090 A1	23-02-2011	CN 101992907 A EP 2287090 A1 EP 2308776 A1 EP 2592021 A1 ES 2423207 T3 ES 2423294 T3 HK 1153715 A1 PT 2287090 E PT 2308776 E US 2011041702 A1	30-03-2011 23-02-2011 13-04-2011 15-05-2013 18-09-2013 19-09-2013 18-10-2013 23-08-2013 26-08-2013 24-02-2011
EP 2465793 A1	20-06-2012	NONE	
WO 2011159162 A1	22-12-2011	AU 2011265826 A1 AU 2011265827 A1 CA 2802989 A1 CA 2802992 A1 CN 103038144 A CN 103038145 A EP 2582596 A1 EP 2582597 A1 JP 2013533011 A JP 2013533012 A SG 186753 A1 SG 186754 A1 WO 2011159162 A1 WO 2011159163 A1	31-01-2013 31-01-2013 22-12-2011 22-12-2011 10-04-2013 10-04-2013 24-04-2013 24-04-2013 22-08-2013 22-08-2013 28-02-2013 28-02-2013 22-12-2011 22-12-2011
WO 2012076135 A1	14-06-2012	CN 103415235 A EP 2648578 A1 JP 2013544607 A WO 2012076135 A1	27-11-2013 16-10-2013 19-12-2013 14-06-2012