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(54) Title: DELIVERING ELEMENT FOR HOT AND COLD BEVERAGES, CAPSULES FOR COLD BEVERAGES ADAPTED TO BE USED WITH SUCH ELEMENT, AND RELATED PROCESS FOR DELIVERING HOT AND COLD BEVERAGES

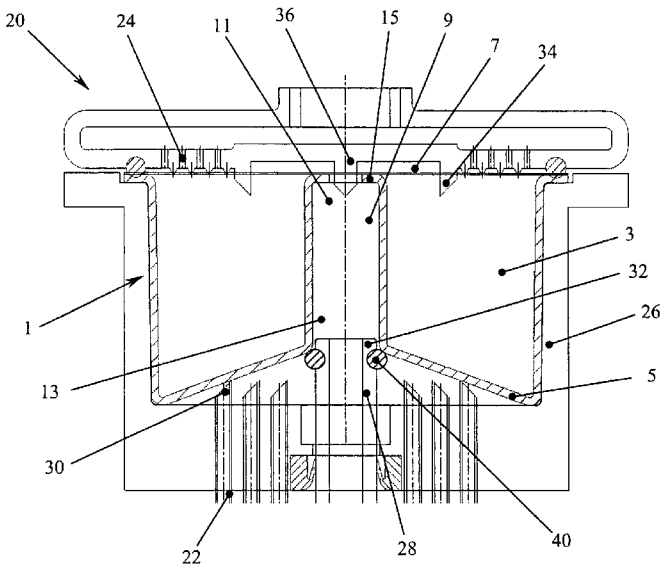

FIG. 1

(57) Abstract: A capsule (1, 1') for cold beverages is described, equipped with a chamber (3) for containing a preparation for beverages, a bottom (5) adapted to be pierced, a covering element (7) adapted to be pierced and at least one element (9) for delivering the beverage, closed on at least one end (11, 13) thereof, and adapted to be opened by piercing upon delivering the beverage. An element (20) for delivering hot and cold beverages is also described, comprising: first connecting means (22) to water supplying ducts; second connecting means (24) to beverage delivering ducts; means for containing (26) a capsule (1, 1') for cold beverages or a capsule (2) for hot beverages; and detecting means (28) of the type of capsule (1, I1, 2). The related process for delivering hot and cold beverages is also described.

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DELIVERING ELEMENT FOR HOT AND COLD BEVERAGES, CAPSULES FOR COLD BEVERAGES ADAPTED TO BE USED WITH SUCH ELEMENT, AND RELATED PROCESS FOR DELIVERING HOT AND COLD BEVERAGES

The present invention refers to a delivering element for hot and cold beverages, to a capsule for cold beverages adapted to be used with such element, and to the related process for delivering hot and cold beverages.

Capsules are known on the market for delivering hot beverages, above all coffee, composed of a case containing a soluble substance, in which such case is equipped with two sides adapted to be pierced, when used, to allow on one side liquid (commonly water) to enter and on the other side the hot beverage to exit, after the liquid has come in contact with the soluble substance contained in the case. In order to operate with such capsules, apparatuses are also known that comprise delivering elements composed of liquid-supplying members, capsule-piercing members, beverage-delivering members and used-capsule-removing members. Such apparatuses however do not allow using capsules for delivering cold beverages: such capsules are not currently very widespreaded and are composed of a single wall adapted to be pierced and a central tube, also equipped

with a wall adapted to be pierced, through which the cold beverage passes upon its delivery.

For the different operations to which they are subjected, such capsules therefore need two apparatuses, two delivering elements and two different processes, with obvious application limitations and with increases in manufacturing, installation, operation and maintenance costs.

Object of the present invention is solving the above prior art problems by providing a delivering element for hot and cold beverages, a capsule for cold beverages adapted to be used with such element, and the related process for delivering hot and cold beverages, whose use allows enormously widening the range of final application solutions, in terms of types of delivered beverages, both hot and cold ones, in terms of reduction of the above mentioned costs and in terms of end users satisfaction.

The above and other objects and advantages of the invention, as will appear from the following description, are obtained with a capsule for cold beverages, with a delivering element for hot and cold beverages, and with a process for delivering hot and cold beverages as claimed in the respective independent claims.

Preferred embodiments and non-trivial variations of the present invention are the subject matter of the dependent claims.

The present invention will be better described by some

preferred embodiments thereof, provided as a non-limiting example, with reference to the enclosed drawings, in which:

- FIG. 1 shows a side sectional view of a first embodiment of the delivering element and of the capsule of the invention in an operating position for delivering cold beverages;
- FIG. 2 shows a side sectional view of an embodiment of the delivering element of the invention and of a capsule in an operating position for delivering hot beverages;;
- FIG. 3 shows a side view of the delivering element of FIG. 1 and 2 in an opening position;
- FIG. 4 to 7 show four side sectional views of as many operating variations of the capsule of the present invention; and
- FIG. 8 shows a side sectional view of a second embodiment of the delivering element and of the capsule of the invention in an operating position for delivering cold beverages.

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 described, without departing from the scope of the invention as appears from the enclosed claims.

With reference to Figure 1, a first preferred, but not limiting embodiment of a capsule 1 for delivering cold beverages according to the invention, is described.

Such capsule 1 is equipped with a chamber 3 for containing

a preparation for beverages, a bottom 5 adapted to be pierced, a covering element 7 adapted to be pierced and at least one beverage-delivering element 9, in which such element 9 is closed in at least one end 11, 13 thereof, and is adapted to be opened by piercing the closed end 11, 13 upon delivering the beverage.

Preferably, such element 9 is of an elongated tubular shape, and is closed at the end 11 oriented towards the capsule 1 interior through a wall 15 adapted to be pierced.

Moreover, the element 9 can be closed at the end 11 oriented towards the capsule 1 interior through a film 7 adapted to be pierced welded as covering element (not shown).

Alternatively, as shown in Figura 5, the element 9 can be closed at the end 11 oriented towards the capsule 1 interior through an aluminium film 7 as covering element, or, as shown in Figure 1, 4, 6 or 7, the element 9 can be closed at the end 11 oriented towards the capsule 1 interior through a wall 15 on which a film 7 adapted to be pierced is laid, also operating as covering element; and finally, as shown in Figure 6 or 7, the element 9 can be closed at the end 13 oriented towards the capsule 1 exterior through a wall 16 adapted to be pierced, or, as shown in Figure 5, the element 9 can be closed at the end 13 oriented towards the capsule 1 exterior through a welded film 18 adapted to be pierced.

Preferably, the element 9 is made in a single piece with

the capsule 1, but obviously the element 9 can also be separately built and be welded to the capsule 1.

With reference to Figure 2, instead, capsules 2 are known for delivering hot beverages, also equipped with a chamber 3 for containing a preparation for beverages, a bottom 5 adapted to be pierced and a covering element 7 adapted to be pierced.

With reference to Figure 8, a second preferred. but not limiting embodiment of a capsule 1' for delivering cold beverages according to the invention, is described. The parts that are identical as regards functionality between the previous capsule 1 and this capsule 1' are provided with the same reference numbers, and their description will be omitted for conciseness.

The capsule 1' is different from the previous capsule 1 in that it has its bottom 5 adapted to be pierced placed in an horizontal rectilinear position (or better a parallel position to the covering element 7 adapted to be pierced), instead of being upwards slanted.

The above described capsules 1, 1', 2 are adapted to operate with a single element 20 for delivering hot and cold beverages, shown in a non-limiting embodiment thereof in Figures 1 to 3, comprising:

- first connecting means 22 to water supplying ducts (not shown);
- second connecting means 24 to beverage delivering ducts (not

shown);

- means for containing 26 the capsule 1, 1' for cold beverages as described above, or a capsule 2 for hot beverages; and
- detecting means 28 of the type of capsule 1, 1', 2.

In particular, the first connecting means 22 are equipped with a plurality of first cutting blades 30 and with at least one first piercing element 32 adapted to pierce the element 9.

Also preferably, the second connecting means 24 are equipped with a plurality of second cutting blades 34 and with at least one second piercing element 36 adapted to pierce the element 9.

Moreover, the detecting means 28 are composed of at least one retractable pin 28 adapted to be pushed in a non-operative position by the capsule 2 for hot beverages so that the second cutting blades 34 pierce the capsule 2 and the first cutting blades 30 pierce the capsule 2 (as can be seen in Figure 2), and adapted not to be pushed by the bottom 5 of the capsule 1 for cold beverages (or, in a not shown embodiment, to push the bottom 5 of the capsule 1 for cold beverages), by penetrating inside (respectively by engaging) the delivering element 9 of the capsule 1, so that the first cutting blades 30 do not pierce the capsule 1, the second cutting blades 34 pierce the capsule 1 (as can be seen in Figure 1), and the first piercing element 32 and/or the second piercing element 36 pierce the delivering element 9.

As further operating variation shown in Fig. 8, the detecting means 28 are equipped with an abutment element 50 placed aligned with the first cutting blades 30 of the first connecting means 22, so that, when the detecting means 28 penetrate inside the delivering element 9 of the capsule 1', the capsule 1' abuts against the abutment element 50 and its bottom 5 is not pierced by the first cutting blades 30.

Always with reference to Figure 1 or 8, the operation of the delivering element 20 when the capsule 1, 1' is in position, can be well understood: after the piercing performed by the second cutting blades 34, the first 32 and/or the second piercing element 36, liquid (water) that enters the delivering element 9 passing through the detecting means 28 (and not going outside the capsule due to the presence of the gaskets 40) goes out through the opening obtained by the second piercing element 36 and penetrates into the body 3 containing the substance to be dissolved in water. After its dissolution, the cold beverage is delivered by passing through the openings made by the second cutting blades 34 and the second delivering means 24.

Instead, in case of delivering a hot beverage through the capsule 2, as shown in Figure 2, piercing traditionally occurs on both sides 5 and 7, since, in this case, the bottom of the capsule 2 abuts against the detecting means 28 and pushes them downwards, thereby allowing the first cutting blades 30 to pierce the bottom 5 of the capsule 2 in order to make hot

liquid enter the capsule 2 and mix it with the substance to be dissolved contained in the capsule 2 itself. Also here, after mixing, the hot beverage is delivered by passing through the openings made by the second cutting blades 34 (that in the meantime had pierced the covering element 7) and the second delivering means 24.

It is obviously possible to design capsules 1, 1', 2 (not shown) in which the flow of water and beverage to be delivered occurs along an opposite direction to the above described one, and by using holes made in the capsules 1, 1', 2 in an opposite way.

With the above described delivering element 20 and capsules 1, 1', 2, a process for delivering hot and cold beverages is performed, that comprises the steps of:

- inserting a capsule 1, 1', 2 inside the element 20;
- detecting, through the detecting means 28, whether the capsule 1, 1', 2 is for cold or hot beverages;
- if the capsule 1, 1', 2 is a capsule 2 for hot beverages, piercing the capsule 2 through the first cutting blades 30 of the first connecting means 22 and the second cutting blades 34 of the second connecting means 24;
- if the capsule 1, 1', 2 is a capsule 1, 1' for cold beverages, piercing the capsule 1, 1' through the second cutting blades 34 of the second connecting means 24 and the first piercing element 32 of the first connecting means 22, or

through the second cutting blades 34 and the second piercing element 36 of the second connecting means 24;

- passing pressurised water into the holes obtained by the cutting blades 30, 34 and by the piercing elements 32, 36 for delivering hot or cold beverages; and

- expelling the capsule 1, 1', 2 containing residual water through the force of gravity.

CLAIMS

1. Capsule (1, 1') for cold beverages, characterised in that it is equipped with a chamber (3) for containing a preparation for beverages, a bottom (5) adapted to be pierced, a covering element (7) adapted to be pierced and at least one element (9) for delivering the beverage, said element (9) being closed on at least one end (11, 13) thereof, and being adapted to be opened by piercing said closed end (11, 13) upon delivering said beverage.

2. Capsule (1, 1') according to claim 1, characterised in that said element (9) is of an elongated tubular shape.

3. Capsule (1, 1') according to claim 1, characterised in that said element (9) is closed at the end (11) oriented towards a capsule (1, 1') interior through a wall (15) adapted to be pierced.

4. Capsule (1, 1') according to claim 1, characterised in that said element (9) is closed at the end (11) oriented towards a capsule (1, 1') interior through a welded film (7) adapted to be pierced.

5. Capsule (1, 1') according to claim 1, characterised in that said element (9) is closed at the end (11) oriented towards a capsule (1, 1') interior through an aluminium film (7).

6. Capsule (1, 1') according to claim 1, characterised in that said element (9) is closed at the end (11) oriented towards a capsule (1, 1') interior through a wall (15) on which a film

(7) adapted to be pierced is laid.

7. Capsule (1, 1') according to claim 1, characterised in that said element (9) is closed at the end (13) oriented towards a capsule (1,1') exterior through a wall (16) adapted to be pierced.

8. Capsule (1,1') according to claim 1, characterised in that said element (9) is closed at the end (13) oriented towards a capsule (1, 1') exterior through a welded film (18) adapted to be pierced.

9. Capsule (1, 1') according to claim 1, characterised in that said element (9) is made in a single piece with said capsule (1, 1').

10. Capsule (1, 1') according to claim 1, characterised in that said element (9) is separately made and is welded to said capsule (1, 1').

11. Capsule (1) according to claim 1, characterised in that said bottom (5) adapted to be pierced is slanted towards a capsule (1) inside with respect to said covering element (7) adapted to be pierced.

12. Capsule (1') according to claim 1, characterised in that said bottom (5) adapted to be pierced is horizontal and parallel to said covering element (7) adapted to be pierced.

13. Element (20) for delivering hot and cold beverages, characterised in that it comprises:

- first connecting means (22) to water supplying ducts;

- second connecting means (24) to beverage delivering ducts;
- means for containing (26) a capsule (1) for cold beverages according to any one of the previous claims, or a capsule (2) for hot beverages; and
- detecting means (28) for a type of capsule (1, 1', 2).

14. Delivering element (20) according to claim 13, characterised in that said first connecting means (22) are equipped with a plurality of first cutting blades (30) and with at least one first piercing element (32) adapted to pierce said element (9).

15. Delivering element (20) according to claim 13, characterised in that said second connecting means (24) are equipped with a plurality of second cutting blades (34) and with at least one second piercing element (36) adapted to pierce said element (9).

16. Delivering element (20) according to claim 13, characterised in that said detecting means (28) are composed of at least one retractable pin (28) adapted to be pushed in a non-operating position by the capsule (2) for hot beverages so that said second cutting blades (34) pierce said capsule (2) and said first cutting blades (30) pierce said capsule (2), and adapted to push said bottom (5) of said capsule (1, 1') for cold beverages, by engaging said delivering element (9) of said capsule (1, 1'), so that said first cutting blades (30) do not pierce said capsule (1, 1'), said second cutting blades (34)

pierce said capsule (1, 1'), and said first piercing element (32) and/or said second piercing element (36) pierce said delivering element (9).

17. Delivering element (20) according to claim 13, characterised in that said detecting means (28) are composed of at least one retractable pin (28) adapted to be pushed in a non-operating position by the capsule (2) for hot beverages so that said second cutting blades (34) pierce said capsule (2) and said first cutting blades (30) pierce said capsule (2), and adapted to penetrate into said bottom (5) of said capsule (1, 1') for cold beverages, by entering inside said delivering element (9) of said capsule (1, 1'), so that said first cutting blades (30) do not pierce said capsule (1, 1'), said second cutting blades (34) pierce said capsule (1, 1'), and said first piercing element (32) and/or said second piercing element (36) pierce said delivering element (9).

18. Delivering element (20) according to claim 17, characterised in that said detecting means (28) are further equipped with at least one abutment element (50) placed aligned with said first cutting blades (30) and adapted to abut against the bottom (5) of said capsule (1') so that said first cutting blades (30) do not pierce said bottom (5) adapted to be pierced.

19. Process for delivering hot and cold beverages using a delivering element (20) according to any one of claims 13 to 18

and a capsule (1, 1') according to any one of claims 1 to 12, characterised in that the process comprises the steps of:

- inserting a capsule (1, 1', 2) into said element (20);
- detecting, through said detecting means (28) whether said capsule (1, 1', 2) is for cold or hot beverages;
- if said capsule (1, 1', 2) is a capsule (2) for hot beverages, piercing the capsule (2) through said first cutting blades (30) of said first connecting means (22) and said second cutting blades (34) of said second connecting means (24);
- if said capsule (1, 1', 2) is a capsule (1, 1') for cold beverages, piercing the capsule (1, 1') through said second cutting blades (34) of said second connecting means (24) and said first piercing element (32) of said first connecting means (22), or through said second cutting blades (34) and said second piercing element (36) of said second connecting means (24);
- passing pressurised water in the holes made by said cutting blades (30, 34) and said piercing elements (32, 36) for delivering hot or cold beverages; and
- expelling said capsule (1, 1', 2) containing residual water through force of gravity.

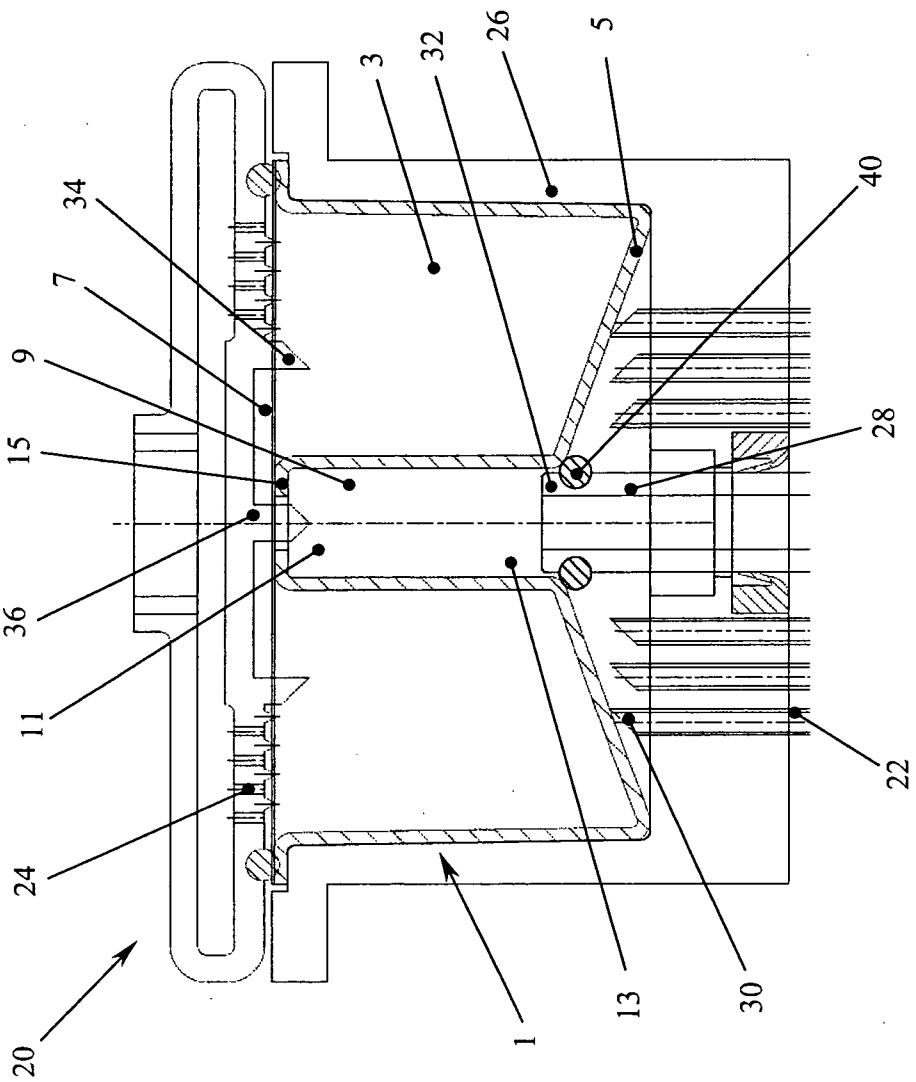

FIG. 1

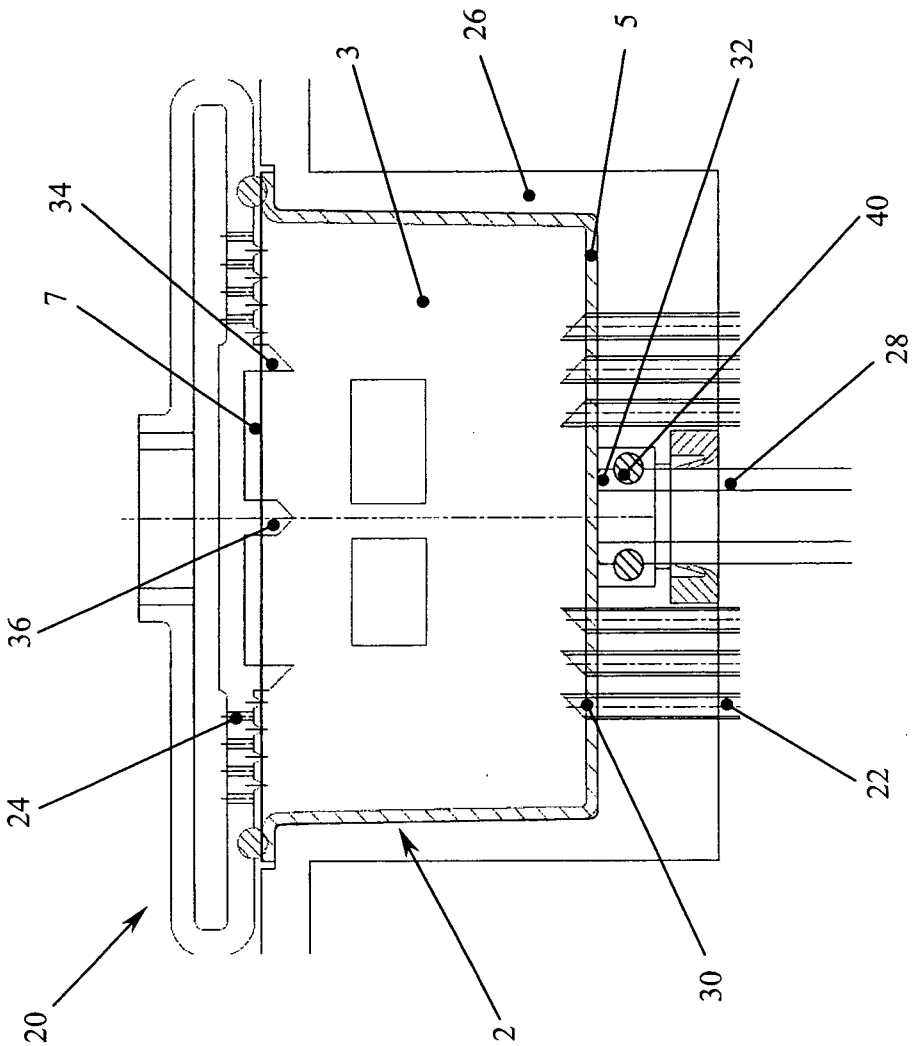

FIG. 2

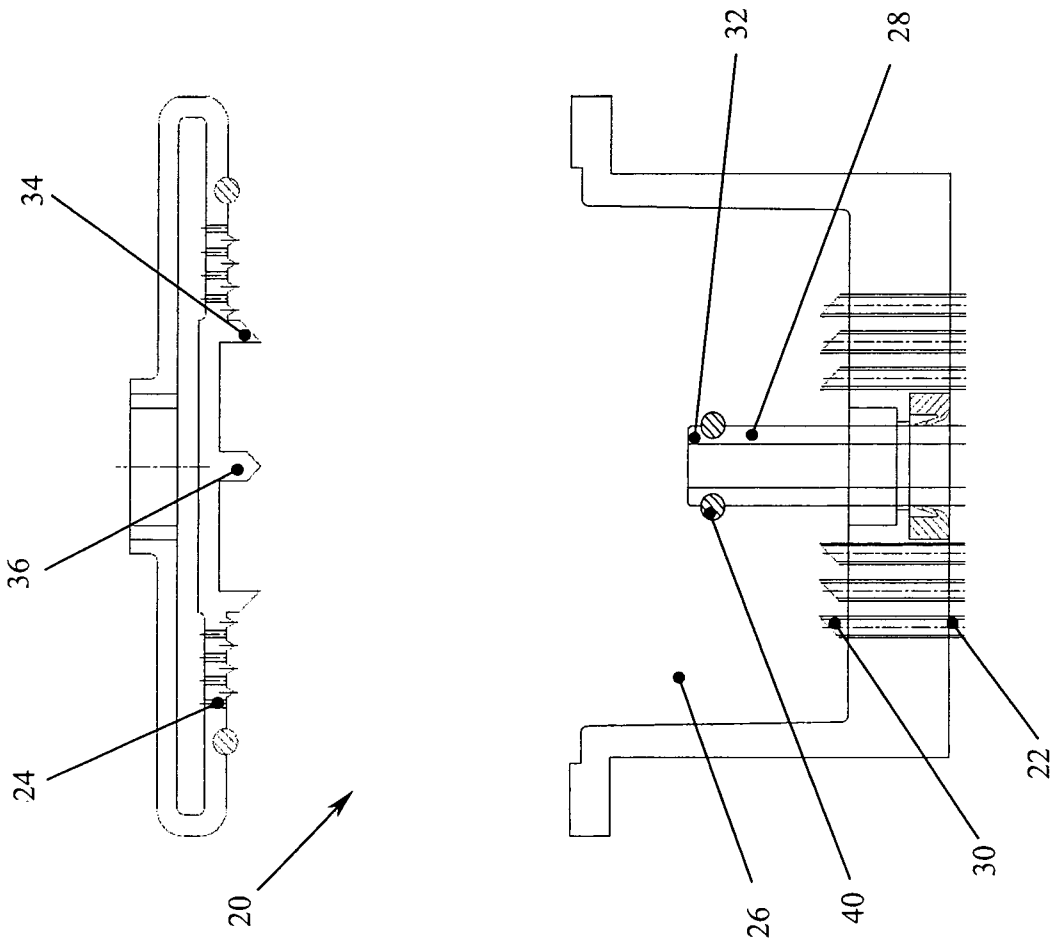

FIG. 3

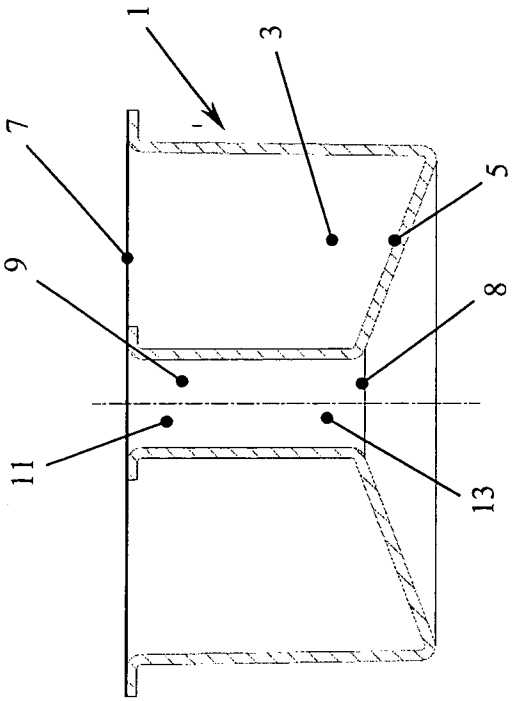

FIG. 5

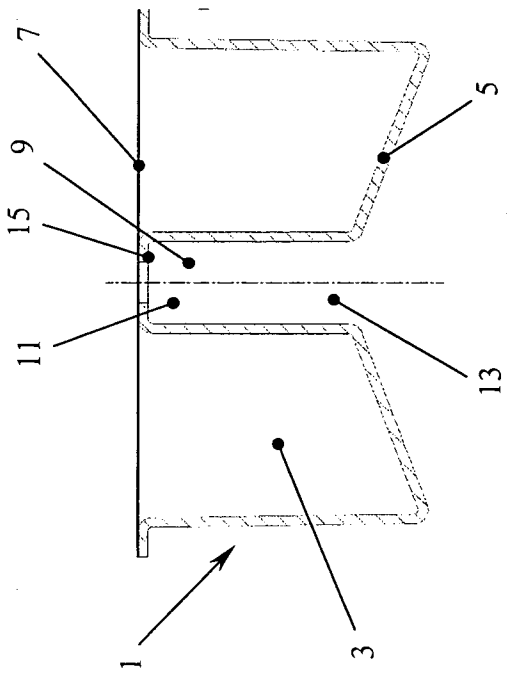

FIG. 4

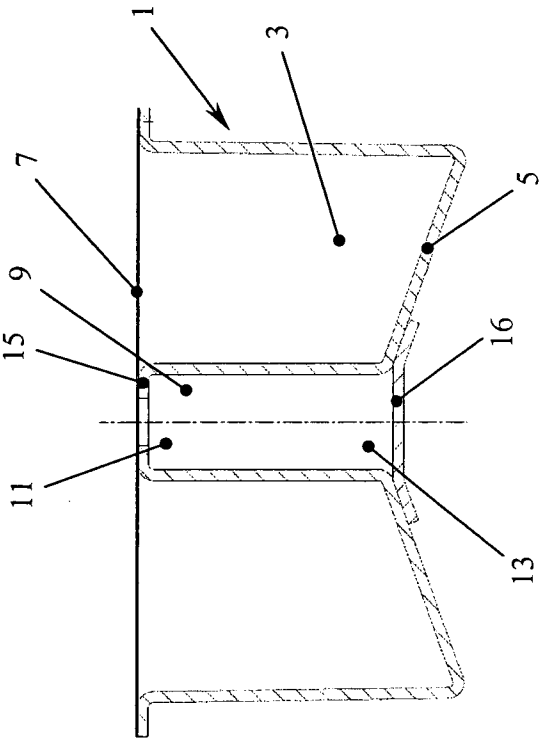

FIG. 7

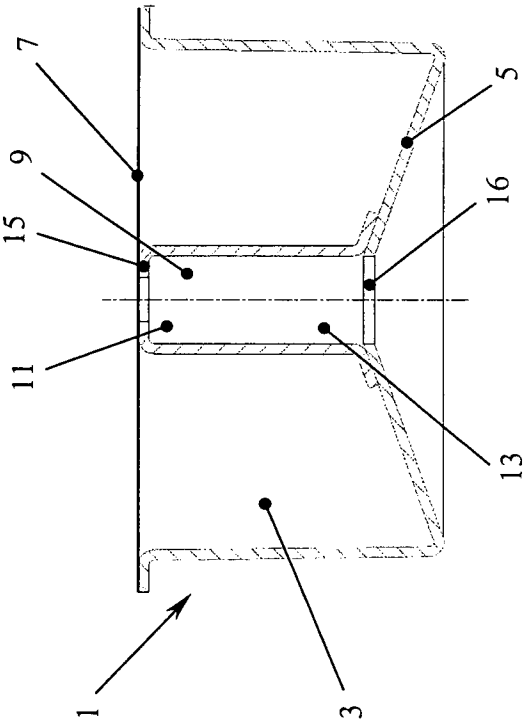

FIG. 6

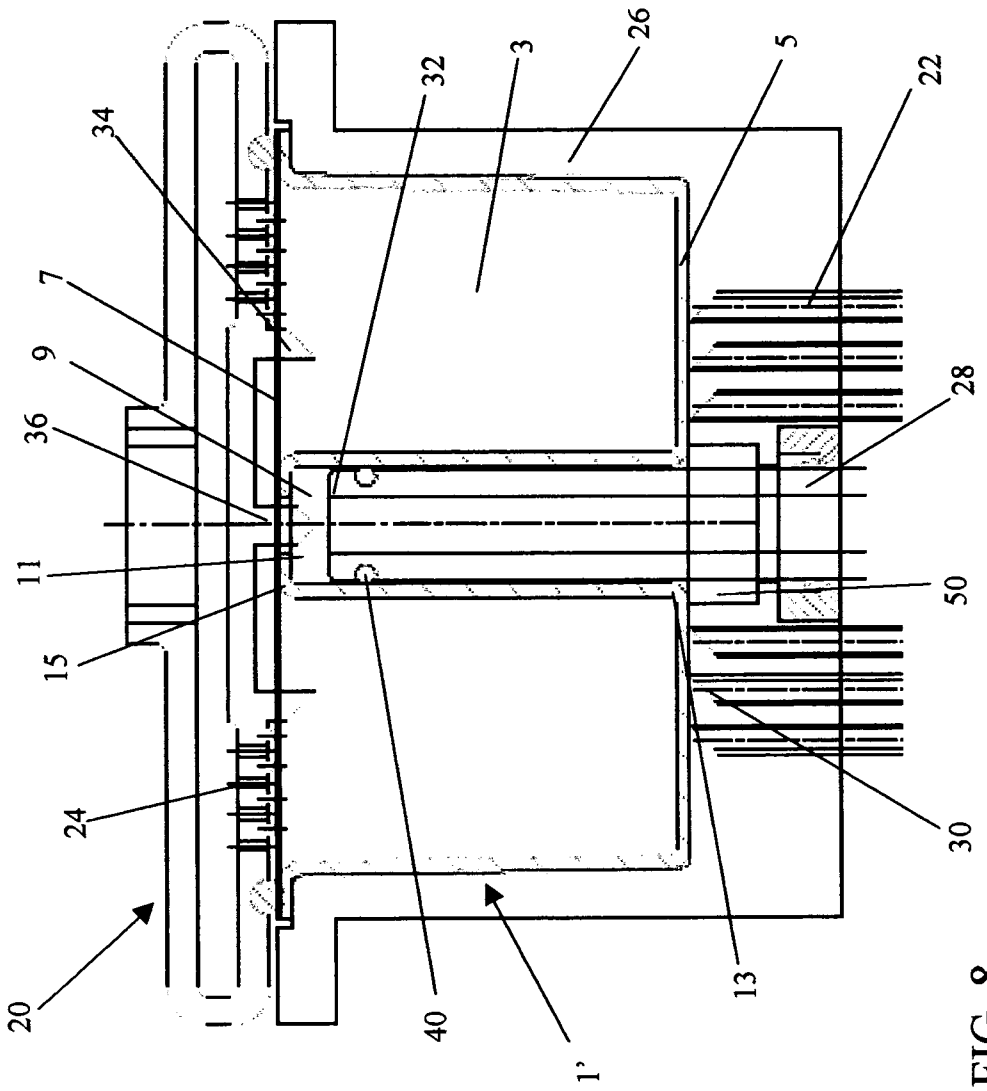

FIG. 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2008/000406

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D85/804 A47J31/36

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 A47J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, 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	EP 1 710 173 A (TCHIBO GMBH [DE]) 11 October 2006 (2006-10-11) paragraph [0030] - paragraph [0033]; figures 4,5	1-12
X	EP 1 555 219 A (SCHIFFERLE RENE [CH] CAFFITA SYSTEM S P A [IT]) 20 July 2005 (2005-07-20) paragraph [0022] - paragraph [0026]; claims 1,2,6-9,13,14; figures 3,4	1-12
Y		13-19
Y	WO 2005/122851 A (SARA LEE DE NV [NL]; KOELING HENDRIK CORNELIS [NL]; BROUWER GUSTAAF FR) 29 December 2005 (2005-12-29) page 6, line 5 - page 7, line 20; figures 1,2	13-19

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[X] Further documents are listed in the continuation of Box C.

[X] 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 document 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	Date of mailing of the international search report
8 May 2009	17/06/2009
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 Vesterholm, Mika

INTERNATIONAL SEARCH REPORT

International application No
PCT/IT2008/000406

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/111807 A (AROMA SYSTEM SRL [IT]; RAPPARINI GINO [IT]) 26 October 2006 (2006-10-26) claims 1-7; figures 5,6	1-12
X	US 2 778 739 A (RODTH JOSEPH J) 22 January 1957 (1957-01-22) column 2, line 9 - column 4, line 7; figures 1,6	1-12
X	EP 1 344 722 A (SCHIFFERLE RENE [CH]) 17 September 2003 (2003-09-17) paragraph [0019] - paragraph [0023]; figure 2	1-12
X	DE 20 2005 021174 U1 (CAFFITA SYSTEM S P A [IT]) 21 June 2007 (2007-06-21) paragraph [0024]; figures 3,4	1-12

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IT2008/000406

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. [X] As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

[X] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12

Capsule for storing a preparation for beverages.

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2. claims: 13-19

Device for detecting the type of a capsule and process for using it.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IT2008/000406

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1710173 A	11-10-2006	DE 102005016297 A1	12-10-2006
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