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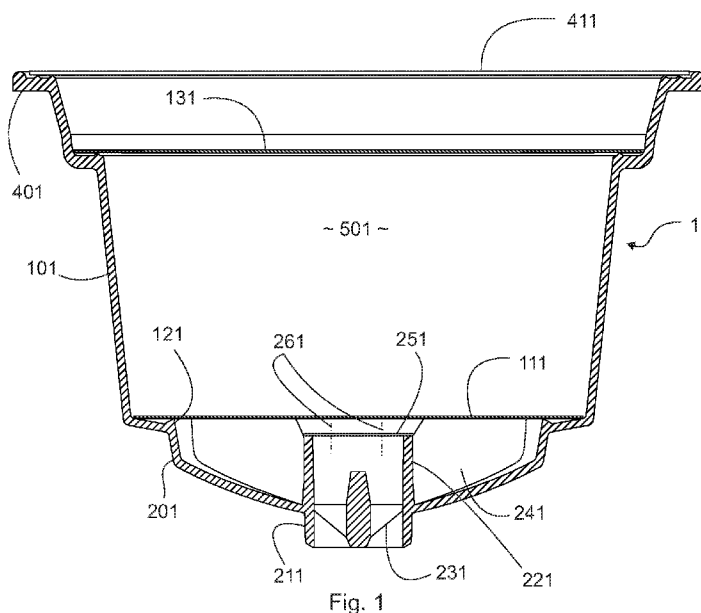
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(54) Title: PREPACKAGED CHARGE OF POWDERED FOOD MATERIAL



(57) Abstract: Prepackaged charge of powdered food material, for the preparation of beverages by infusion or dissolution, comprising a container body (1; 2) provided with a continuous side wall (101; 102), an open end (401; 402) equipped with an appropriate closing plane (411; 412), and a bottom wall (201; 202) communicating with the outside through a delivery spout (211; 212), said delivery spout (211; 212) being in communication with a conduit (221; 222) projecting towards the inside of said container body (1; 2), and being the mouth end of said duct (221; 222), facing the interior of said container body (1; 2), covered by a layer (251; 252) of airtight material having at least one pre-fracture line (261; 262) perpendicular to that of said layer (251; 252).

TITLE OF THE INVENTION

Prepackaged charge of powdered food material

FIELD OF THE INVENTION

The present invention relates to a prepackaged charge of powdered food material; in particular it relates to a prepackaged charge of powdered food material intended for use in machines for the preparation of beverages.

A significant problem in this area is on the conservation of prepackaged charges that normally affects, and much, the organoleptic features of the drink prepared using these charges. Many prepackaged charges are not airtight, and therefore does not provide the best preservation of the product contained therein; particularly in the case of coffee, rancidity of its oils leads to a significant deterioration of the quality of the drink.

For this purpose different types of airtight prepackaged charges have been realized, which, however, have in their turn operating problems. The air-tight capsule must be perforated to enter the water, must be perforated or must explode, at least in part to dispense the beverage.

Another problem is the use of prepackaged charges in the so-called "multi-beverage machine", in which can be prepared tea, coffee, herbal teas, milk and cocoa drinks. Commonly, it is necessary a washing cycle of the dispensing means, which are in contact with the beverage and which then would contaminate the next product. The solution that has been proposed is a capsule with a dispensing means, which discharge the beverage directly in the user's receptacle. The machine can accommodate the next prepackaged charge without any contamination.

In the document EP1472156 is described a capsule for the preparation of beverages by injection of fluid under pressure in a suitable substance, comprising a closed chamber containing a substance for the preparation of a beverage, and means adapted to allow the opening of said capsule at the time of its use to make sure that it comes out the said drink, in which the opening is obtained

through the mutual engagement of the opening means with a retaining wall of the closed chamber, and in which the mutual engagement is performed under the effect the increase of the fluid pressure in the chamber.

This is achieved, among other ways, by providing the bottom wall of the capsule of reliefs and cavities, so that a wall, sufficiently sized to be air-tight, it may tear on these reliefs, so as to allow the beverage to flow through the cavity and towards the delivery means of the capsule. Of course, the construction of the bottom wall must be a balanced compromise between the filter performance and delivery capabilities. Inevitably, the construction of this type of capsules is definitely very complex.

The aim of the present invention is to provide a prepackaged charge that on the one hand present the shelf life given by the hermetic closure, and on the other hand it results simplified in its structure and therefore more easy and inexpensive to manufacture.

The object of the present invention is therefore a prepackaged charge of powdered food material, for the preparation of beverages by infusion or dissolution, comprising a container body provided with a continuous side wall, an open end equipped with an appropriate closing plane, and a bottom wall communicating with the outside through a delivery spout, said delivery spout being in communication with a conduit projecting towards the inside of said container body, and being the mouth end of said duct, facing the interior of said container body, covered by a layer of airtight material having at least one pre-fracturing formed along a plane perpendicular to that of said layer.

The tearing of the layer of air-tight material, which may advantageously be aluminum provided with micro-incisions made by laser, is determined precisely by the pre-fracturing present in the said material.

In a preferred embodiment, the said delivery spout and said conduit are coaxial and are arranged substantially at the center of said bottom wall, frustoconical shaped. Said conduit extends inside said container body for a substantial portion of the depth of the same. Similarly, said conduit

extends for a short distance inside said container body, and it is surrounded by a plurality of radial fins, axially projecting towards the interior of the container body and intended to support a wall of filter material.

Further advantages and features of the prepackaged charge according to the present invention will become apparent from the following description of some embodiments thereof, made, by way of example and not limitative, with reference to the table of the attached drawings, in which:

Figure 1 is a view in longitudinal section of a first embodiment of the prepackaged charge according to the present invention; and

Figure 2 is a view in longitudinal section of a second embodiment of the prepackaged charge according to the present invention.

In figure 1 is illustrated a first embodiment of the prepackaged charge - in this case a prepackaged charge of coffee powder to be extracted - according to the present invention; with 1 is designated the container body, which comprises a continuous side wall 101, substantially frustoconical. At one end of the side wall 101 is joined the flange 401 projecting radially outwards, to which is coupled the closure plan 411, designed to interact with the means for supplying the fluid in a machine for the preparation of beverages. At the other end the side wall connects with the bottom wall 201, which is also frustoconical but formed substantially as a funnel. At the center of said bottom wall is formed a dispensing spout 211, communicating with the interior of the container body by means of the conduit 221, coaxial to the spout 211. Inside the spout 211 is placed the diffuser 231. From conduit 221 are branching a plurality of radial ribs, or fins, 241 that project axially towards the inside of the container body 1. These fins 241 provide the proper support to the layer of filter material 111, which delimits, together with the layer of filter material 131, the containing chamber 501 of the edible material powder, which in this case is coffee powder.

Onto the mouth of the conduit 221 at the end facing the interior of the container body, it is deposited a layer 251 of material impermeable to air, which is provided with pre-fractures formed along the planes 261 perpendicular to that of said layer 251. Advantageously, the air-tight material is aluminum that is pre-fractured with a laser treatment, known in the art and therefore not subject to the present invention. However, the use of this particular material allows to achieve the purposes of the present invention, since it allows to eliminate the opening means of the retaining wall of the prepackaged charge, and therefore allows to realize in a much more easy way the delivery and filtration of the extracted beverage.

At the state of the art, in the document cited above, the retaining wall surface is divided into a plurality of smaller intervals which ensure by one hand the filtration, and from the other hand the control for the actual flow of the beverage toward the dispensing. The breakthrough by the only effect of the pressure of a single wall of air-tight material either involves a considerable reduction of the delivery flow, or a very reduced control ability of the same, since the wall break-through mode would result unpredictable. The use of a pre-fractured wall according to the present invention ensures the control of the breaking of the same, and therefore allows the control of the delivery of the beverage, in a very easy way and constructively very inexpensive.

The coffee powder will be suitably retained by the layer of filtering material, and then the system constituted by the conduit 221, the spout 211 and the wall 251 of air-tight and pre-fractured material only performs the control upon the dispensing of the coffee, and should not to filter it.

In Figure 2 it is illustrated a second embodiment of the prepackaged charge according to the present invention; with 2 is indicated the container body of said charge, which this time is intended for use for the preparation of beverages starting from freeze-dried powder or granules of the beverage to be prepared. The container body 2 comprises a continuous side wall 102, which at one end connects to the radial flange 402, on which is placed the closing plane 412, and the other end connects with the bottom wall 202, which centrally is provided with the dispensing spout 212. Coaxial to the spout 212 is the conduit 222 which extends inside the container body 2 and the

chamber 502 containing the edible material in powder form. At the mouth of the duct 222 it is placed a layer 252 of air-tight material to air that is provided with pre-fracturing along the planes 262 perpendicular to the plane of said layer 252; within the spout 212 is disposed the diffuser 232.

In this case, the only requirement which must to meet this prepackaged charge is to enable the best possible dissolution of the edible material in powder form, specifically a freeze-dried beverage. This object is achieved by providing a conduit 222 that extends inside the chamber 502 of the container body 2, a wall of pre-fractured material being arranged at the mouth of such duct, so as that a given level of pressure could be reached inside the chamber 502. The pre-fracturing then enable the dispensing of the drink by ensuring the right time range of dissolution.

In both the proposed solutions the pre-fractured air-tight material wall allows adequate control upon the dispensing of the drink, without the need to provide complex and costly means for opening, anyway destined to influence the design of the entire prepackaged charge of powder of edible material for the preparation of beverages. Moreover, in both the embodiments as above described, the conduit on which mouth end is positioned the said wall is provided with a cross section which is a sixth or less of the maximum cross section of the said container body, as it clearly appears from the figures 1 and 2 of the appended drawings.

CLAIMS

1. Prepackaged charge of powdered food material, for the preparation of beverages by infusion or dissolution, comprising a container body (1; 2) provided with a continuous side wall (101; 102), an open end (401; 402) equipped with an appropriate closing plane (411; 412), and a bottom wall (201; 202) communicating with the outside through a delivery spout (211; 212), said delivery spout (211; 212) being in communication with a conduit (221; 222) projecting towards the inside of said container body (1; 2), and being the mouth end of said conduit (221; 222), facing the interior of said container body (1; 2), covered by a layer (251; 252) of airtight material having at least one pre-fracturing formed along a plane (261; 262) perpendicular to that of said layer (251; 252).
2. Prepackaged charge according to claim 1, in which the said conduit (221; 222) is provided with a cross section which is a sixth or less of the maximum cross section of the said container body (1; 2).
3. Prepackaged charge according to claim 1 or 2, wherein said delivery spout (211; 212) and said conduit (221; 222) are coaxial and are arranged substantially at the center of said bottom wall (201; 202).
4. Prepackaged charge according to anyone of the preceding claims 1 to 3, wherein said conduit (222) extends inside said container body (2) for a substantial portion of the depth of the same.
5. Prepackaged charge according to anyone of the preceding claims 1 to 3, wherein said conduit (221) extends for a short distance inside said container body (1), and it is surrounded by a plurality of radial fins (241), axially projecting towards the interior of the container body (1) and intended to support a wall (111) of filter material.

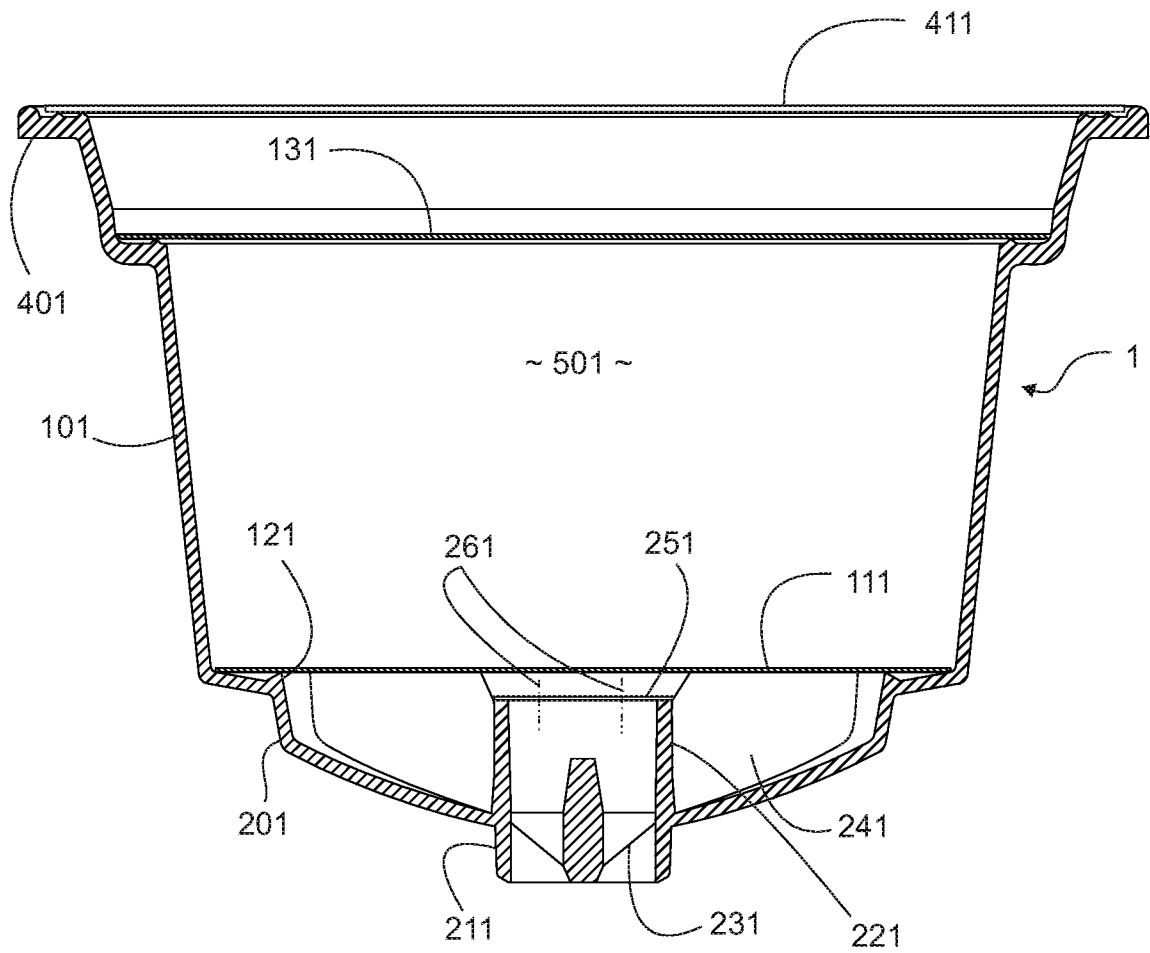


Fig. 1

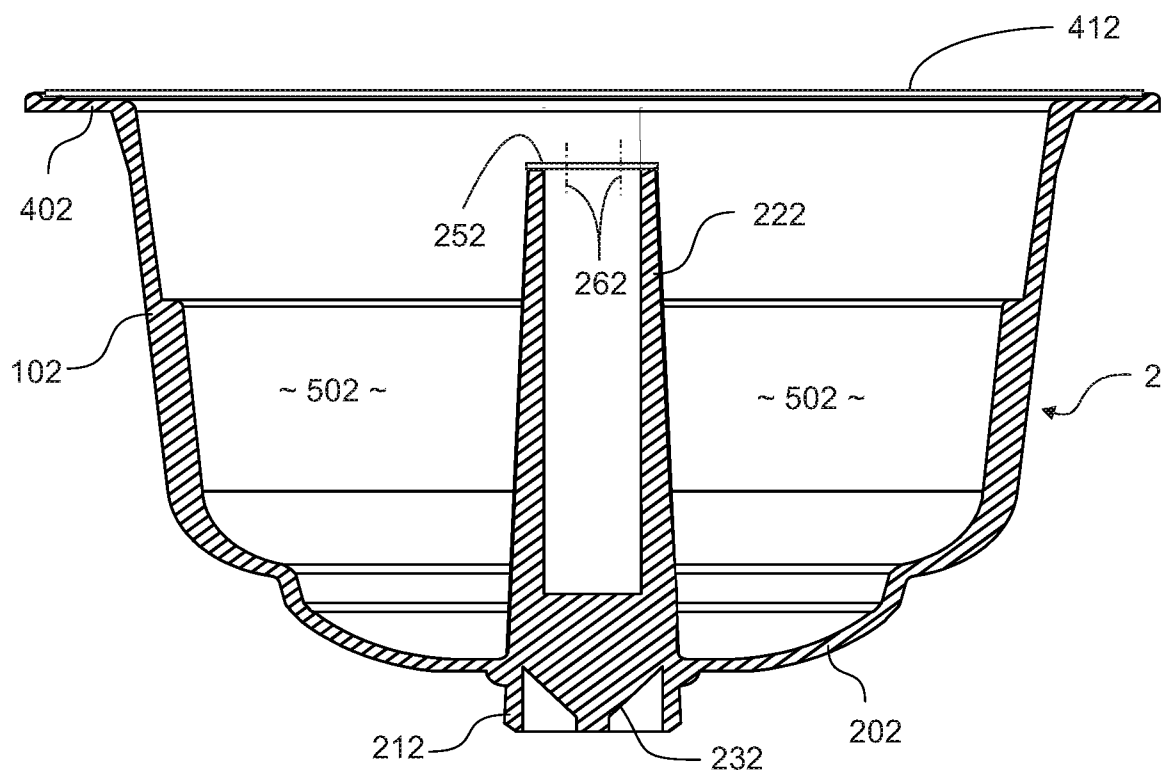


Fig. 2

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2016/054147

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 042 978 A1 (LAVAZZA LUIGI SPA [IT]) 11 October 2000 (2000-10-11) figures 1-2, 5-6 -----	1
A	WO 2015/049270 A1 (DELICA AG [CH]) 9 April 2015 (2015-04-09) figure 5a -----	1
A	EP 0 057 671 A2 (UNOPER SRL [IT]) 11 August 1982 (1982-08-11) figures 1-2 -----	1
A	WO 2011/124990 A1 (RAPPARINI GINO [IT]) 13 October 2011 (2011-10-13) figures ----- -/-	1



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"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

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2014/102701 A1 (SARONG SPA [IT]) 3 July 2014 (2014-07-03) figures -----	1
A	US 2014/161937 A1 (RONDELLI RAFFAELE [IT]) 12 June 2014 (2014-06-12) figures -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2016/054147

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1042978	A1	11-10-2000	AT 219338 T 15-07-2002
		DE 60000217 D1 25-07-2002	
		DE 60000217 T2 07-11-2002	
		DK 1042978 T3 14-10-2002	
		EP 1042978 A1 11-10-2000	
		ES 2174783 T3 16-11-2002	
		IT T0990273 A1 09-10-2000	
		PT 1042978 E 30-09-2002	
WO 2015049270	A1	09-04-2015	CH 708663 A1 15-04-2015
		EP 3052408 A1 10-08-2016	
		WO 2015049270 A1 09-04-2015	
EP 0057671	A2	11-08-1982	DE 3261150 D1 13-12-1984
		EP 0057671 A2 11-08-1982	
		ES 262906 U 01-11-1982	
		IT 1210982 B 29-09-1989	
		US 4471689 A 18-09-1984	
WO 2011124990	A1	13-10-2011	CA 2795511 A1 13-10-2011
		EP 2427393 A1 14-03-2012	
		EP 2910494 A1 26-08-2015	
		ES 2533864 T3 15-04-2015	
		IT 1399318 B1 16-04-2013	
		RU 2012143360 A 20-05-2014	
		US 2012100259 A1 26-04-2012	
		US 2015250353 A1 10-09-2015	
		WO 2011124990 A1 13-10-2011	
WO 2014102701	A1	03-07-2014	CA 2895639 A1 03-07-2014
		CN 104936870 A 23-09-2015	
		EP 2941392 A1 11-11-2015	
		JP 2016505332 A 25-02-2016	
		US 2015344219 A1 03-12-2015	
		WO 2014102701 A1 03-07-2014	
US 2014161937	A1	12-06-2014	NONE