(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
9 June 2016 (09.06.2016)

WIPO | PCT

(10) International Publication Number
WO 2016/089328 A1

(51) International Patent Classification:
A47J 31/18 (2006.01) *B65D 85/804* (2006.01)

(21) International Application Number:
PCT/TR2015/050188

(22) International Filing Date:
20 November 2015 (20.11.2015)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2014/14606 3 December 2014 (03.12.2014) TR

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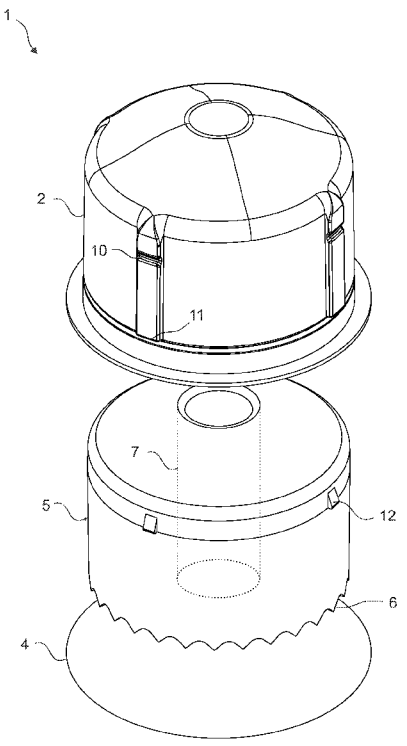
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, 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, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU,

[Continued on next page]

(54) Title: A COFFEE MACHINE AND A CAPSULE SUITABLE TO BE USED IN COFFEE MACHINES

Figure 1



(57) Abstract: The present invention relates to a capsule (1) that is suitable to be used in coffee machines and that comprises a body (2) wherein the coffee to be brewed is stored, an opening (3) that is arranged on the lower surface of the body (2), a folio (4) that provides the covering of the opening (3), and a cutting apparatus (5) that is disposed inside the body (2) concentrically, that has at least one cutter thread (6) arranged along its lower side and that cuts the folio (4) so that the coffee is poured from the body (2) into the coffee machine to be brewed.

WO 2016/089328 A1

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))*

DESCRIPTION

A COFFEE MACHINE AND A CAPSULE SUITABLE TO BE USED IN COFFEE MACHINES

The present invention relates to a capsule suitable to be used in coffee machines and wherein the coffee raw material is stored.

In coffee machines, the usage of the single use capsule wherein the coffee raw material is stored is known. The capsules are generally used for preparing coffee types such as espresso, etc. by piercing through the top of the capsule and passing high pressure hot water therethrough or for preparing beverages such Turkish coffee, etc. wherein the beverage raw material is poured into a brewing chamber or a cup. In the state of the art, coffee machines are known, providing that some portion of the folio covering the capsule is torn/cut and as the folio opens like a lid, the ingredients in the capsule are poured or emptied by turning the capsule upside down. One of the problems encountered in the capsules suitable to be used in this type of machines is that the coffee raw material cannot be discharged completely from the capsule since the folio covering the capsule cannot be completely opened. The powder coffee raw material such as Turkish coffee having thin particles remains inside the capsule or on the folio due to reasons like the folio not opening entirely or folding. In this case, the coffee raw material that cannot be discharged pours onto the heater of the coffee machine while taking the capsule out of the coffee machine and odor of burnt beverage raw material dissipates into the environment, thus decreasing customer satisfaction. This case may also cause fire and create safety threat. Moreover, the burnt coffee raw material creating a layer on the heater adversely affects the performance of the coffee machine.

In the state of the art International Patent Application No. WO2011007266, a coffee machine and a capsule comprising the blades that cut the folio are disclosed.

In the state of the art International Patent Application No. WO2011154866, a capsule is disclosed which is turned upside down by the arm on the coffee machine pushing thereon, thus pouring the contents therein.

The aim of the present invention is the realization of a capsule suitable to be used in coffee machines and where the coffee raw material therein is enabled to be discharged properly.

Another aim of the present invention is the realization of a coffee machine comprising an opening mechanism that enables the capsule to be efficiently opened.

The capsule realized in order to attain the aim of the present invention, explicated in the claims comprises a channel that extends longitudinally from almost the center of the folio cutting apparatus enabling the opening of the folio that covers the capsule towards the body opening and wherein the folio is gathered when the folio is cut all around by the cutter threads on the folio cutting apparatus. The coffee raw material residues on the folio entering the channel are scraped by the channel and thus, the coffee raw material in the capsule is almost completely discharged and moreover, pieces of the folio are prevented from falling into the brewing chamber or the glass.

In an embodiment of the present invention, the channel can be in cylindrical form matching the structure of the capsule or can have side walls with square cross-sections.

In an embodiment of the present invention, the capsule comprises at least one flap that partially closes the inlet port of the channel, that opens into the channel preferably in a one-directional manner and that prevents the folio from leaving the channel once the former enters the latter. The flap opens into the channel in a one-directional manner and allows the folio to enter the channel through the inlet port. When the user desires to take the used capsule out, the folio cannot be taken out of the channel since the former is trapped in the channel by means of the flap.

In another embodiment of the present invention, an upper protrusion is provided, that is disposed on the inner surface of the capsule body and that prevents the movement of the folio cutting apparatus before the opening of the capsule; in a version of this embodiment, a lower protrusion is provided, that prevents the folio cutting apparatus from getting out of the body after opening of the capsule and in another embodiment of the present invention, a claw is provided, that is disposed on the folio cutting apparatus and that engages with the upper protrusion and the lower protrusion to limit the

movement of the folio cutting apparatus. When the folio cutting apparatus is placed into the body, the claw is seated onto the upper protrusion and thus, by preventing the movement of the folio cutting apparatus, the cutter threads arranged on the side of the folio cutting apparatus are prevented from cutting the folio without the desire of the user. In the case the folio cutting apparatus moves out of the body as the capsule opens, the claw engages with the lower protrusion and prevents the folio cutting apparatus from completely getting out of the body.

The coffee machine of the present invention comprises a capsule housing wherein the capsule is placed, a brewing chamber wherein the coffee in the capsule is transferred to be brewed and an opening mechanism that enables the capsule placed into the capsule housing to be opened and the coffee raw material therein to be poured into the brewing chamber.

The coffee machine of the present invention comprise an opening mechanism that has an upright member that enables the folio cut by the folio cutting apparatus to be pushed into the channel and a pusher that applies pressure onto the capsule from above so that the folio cutting apparatus moves inside the body and cuts the folio.

By means of the channel of the present invention, the folio is enabled to be gathered into the channel and trapped by means of the flap after the capsule is opened. The coffee raw material hanging onto the folio is scraped by the channel port while the folio is being pushed into the channel, and is transferred into the brewing chamber. Thus, almost all the coffee raw material is transferred and with the folio being concealed into the channel, the quality perception of the user is improved.

The capsule realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 – is the exploded view of a capsule.

Figure 2 – is the perspective view of the cross-section of the cutting apparatus related to an embodiment of the present invention.

Figure 3 – is the schematic view of the capsule placed into the opening mechanism related to an embodiment of the present invention.

Figure 4a – is the cross-sectional view of the capsule placed into the opening mechanism related to an embodiment of the present invention.

Figure 4b – is the cross-sectional view of the upright member in the channel while the capsule is being opened related to another embodiment of the present invention.

The elements illustrated in the figures are numbered as follows:

1. Capsule
2. Body
3. Opening
4. Folio
5. Cutting apparatus
6. Cutter thread
7. Channel
8. Inlet port
9. Flap
10. Upper protrusion
11. Lower protrusion
12. Claw
13. Capsule housing
14. Brewing chamber
15. Opening mechanism
16. Upright element
17. Pusher

The capsule (1) is suitable to be used in coffee machines (not shown) and comprises a body (2) wherein the coffee to be brewed is stored, an opening (3) that is arranged on the lower surface of the body (2), a folio (4) that provides the covering of the opening

(3), and a cutting apparatus (5) that is disposed inside the body (2) concentrically, that has at least one cutter thread (6) arranged along its lower side and that cuts the folio (4) so that the coffee is poured from the body (2) into the coffee machine to be brewed. The folio (4) is preferably produced from aluminum or tin. The coffee in the body (2) can be particularly Turkish coffee or instant coffee. The folio (4) is attached on the sides surrounding the body (2) opening (3) so that the cutting apparatus (5) remains inside the body (2). The capsule (1) opens as the cutting apparatus (5) cuts the folio (4) by means of the cutter threads (6) by moving along the body (2) when force is applied on the body (2).

The capsule (1) of the present invention comprises a channel (7) that extends from the ceiling of the cutting apparatus (5) towards the opening (3), that has an inlet port (8) at the lower end thereof, and wherein the folio (4) cut all around by the cutting apparatus (5) enters through the inlet port (8) to be gathered therein. The channel (7) extends from the ceiling towards the opening (3) so as to be situated almost at the center of the cutting apparatus (5) and as the folio (4) is cut along the opening (3), the folio (4) enters through the inlet port (8) to be gathered in the channel (7). By providing that the folio (4) is separated from the body (2) completely by being cut all around so as to be gathered in the channel (7), the folio (4) is prevented from folding and obviating the transfer of the coffee into the coffee machine while the capsule (1) is being emptied. When the capsule (1) is placed into the coffee machine and opened, the folio (4) is gathered into the channel (7) and the sides (7) of the channel scrape the coffee particles remaining on the folio (4) so that the scraped coffee particles are poured into the coffee machine to be brewed.

In an embodiment of the present invention, the channel (7) can be in cylindrical form or can have side walls with square cross-sections. In this embodiment, the channel (7) is configured so as to match the configuration of coffee machine.

In an embodiment of the present invention, the capsule (1) comprises at least one flap (9) that extends from the side of the inlet port (8) towards the center thereof, that covers the inlet port (8) in an openable-closable manner and that prevents the folio (4) gathered in the channel (7) from getting out of the channel (7). The flap (9) covers the

inlet port (8) of the channel, opens into the channel (7) to allow the folio (4) to enter the channel (7) and then closes to provide the trapping of the folio (4) in the channel (7). Thus, the coffee particles remaining on the folio (4) are trapped in the channel (7) and the coffee particles are prevented from pouring out while the capsule (1) is taken out of the coffee machine. With the closing of the flap (9), the user is prevented from seeing the opened folio (4) and the quality perception of the user is improved. Moreover, in this embodiment, with the closing of the inlet of the channel (7) by the flap (9), the coffee particles are prevented from entering the channel (7) before the capsule (1) is used.

In another embodiment of the present invention, the capsule (1) comprises at least one upper protrusion (10) that is disposed at the upper side of the body (2) side wall, that extends towards the inner regions of the body (2) and that prevents the cutting apparatus (5) from moving inside the body (2) and from cutting the folio (4) before the brewing process, during the storing and while the capsule (1) is being placed into the coffee machine. By means of the upper protrusion (10), the cutting apparatus (5) is kept inside the body (2) and the movement thereof is restricted, thus preventing the undesired cutting of the folio (4). When the capsule (1) is desired to be opened, the cutting apparatus (5) is enabled to go over the upper protrusion (10) and cut the folio (4).

In an embodiment of the present invention, the capsule (1) comprises at least one lower protrusion (11) that is disposed at the lower side of the body (2) side wall, that extends towards the inner region of the body (2) and that prevents the cutting apparatus (5), that moves downwards inside the body (2) by going over the upper protrusion (10) with the force applied from the upper surface of the body (2) while the capsule (1) is being placed into the coffee machine and the brewing process is started and that cuts the folio (4), from getting out of the body (2). The cutting apparatus (5) can move inside the body (2) and along the body (2) side wall and preferably has a width smaller than the width of the body (2). To this end, in order that the cutting apparatus (5) does not get out of the body (2) after the folio (4) is cut, the lower protrusion (11) is used. The lower protrusion (11) is produced so as not to be passed over the cutting apparatus (5).

In an embodiment of the present invention, the capsule (1) comprises at least one claw (12) that is disposed in the vicinity of the side wall of the cutting apparatus (5), that extends towards the inner surface of the body (2) and that is seated onto the upper protrusions (10) before the cutting apparatus (5) cuts the folio (4) and onto the lower protrusions (11) after the folio (4) is cut. Before the capsule (1) is used, the claw (12) presses onto the upper protrusion (1) and prevents the folio (4) from being cut by the cutter threads (6) unintentionally. The claw (12) restricts the movement of the cutting apparatus (5) inside the body (2). The claw (12) is seated onto the upper protrusion (10) so as to prevent the capsule (1) from being opened unintentionally and seated onto the lower protrusion (11) so as to prevent the cutting apparatus (5) from leaving the body (2).

The coffee machine of the present invention comprises a capsule housing (13) wherein the above-described capsule (1) is placed, a brewing chamber (14) wherein the brewing process is realized and an opening mechanism (15) that opens the capsule (1) in the capsule housing (13) so as to enable the coffee in the capsule (1) to pour into the brewing chamber (14). The capsule (1) is seated onto the capsule housing (13) and opened by means of the opening mechanism (15). With the trapping of the folio (4) in the channel (7), the coffee in the body (2) is poured into the brewing chamber (14) through the opening (3).

In an embodiment of the present invention, the opening mechanism (15) comprises an upright member (16) that extends upwards from the base of the capsule housing (13) and that enters the channel (7) when the opening mechanism (15) is operated to enable the folio (4) wrapped therearound to be gathered in the channel (7). The folio (4) cut around the opening (3) by the cutting apparatus (5) is gathered in the channel (7) by means of the upright member (16).

In another embodiment of the present invention, the opening mechanism (15) comprises a pusher (17) that applies pressure from the upper surface of the body (2), thus enabling the cutting apparatus (5) inside the capsule (1) to move downwards and to cut the folio (4). When the capsule (1) is placed into the capsule housing (13), the pusher (17) applies pressure onto the body (2) and enables the body (2) to stretch

inwards and enables the cutting apparatus (5) to be pushed out of the body (2). The cutting apparatus (5) pushed out of the body (2) goes over the upper protrusion (10) with the force of the pusher (17) and enables the folio (4) to be cut by means of the cutter threads (6).

The coffee machine of the present invention is a Turkish coffee machine in an embodiment of the present invention.

In the capsule (1) of the present invention, by enabling the folio (4) that is cut/torn/ripped along the opening (3) to be gathered in the channel (7), the coffee raw material remaining on the folio (4) is scraped and almost all the capsule (1) is enabled to be emptied. Moreover, by gathering the folio (4) in the channel (7), the folio (4) pieces are prevented from falling into the brewing chamber (14) wherein the coffee raw material is transferred and the quality perception of the user is improved by preventing the user from seeing the folio (4) after the capsule (1) is used.

CLAIMS

1 - A capsule (1) suitable to be used in coffee machines and **comprising** a body (2) wherein the coffee to be brewed is stored, an opening (3) that is arranged on the lower surface of the body (2), a folio (4) that provides the covering of the opening (3), and a cutting apparatus (5) that is disposed inside the body (2) concentrically, that has at least one cutter thread (6) arranged along its lower side and that cuts the folio (4) so that the coffee is poured from the body (2) into the coffee machine to be brewed, **characterized by** a channel (7) that extends from the ceiling of the cutting apparatus (5) towards the opening (3), that has an inlet port (8) at the lower end thereof, and wherein the folio (4) cut all around by the cutting apparatus (5) enters through the inlet port (8) to be gathered therein.

2 - A capsule (1) as in Claim 1, **characterized by** the channel (7) that is in cylindrical form or has side walls with square cross-sections.

3 - A capsule (1) as in any one of the above claims, **characterized by** at least one flap (9) that extends from the side of the inlet port (8) towards the center thereof, that covers the inlet port (8) in an openable-closable manner and that prevents the folio (4) gathered in the channel (7) from getting out of the channel (7).

4 - A capsule (1) as in any one of the above claims, **characterized by** at least one upper protrusion (10) that is disposed at the upper side of the body (2) side wall, that extends towards the inner regions of the body (2) and that prevents the cutting apparatus (5) from moving inside the body (2) and from cutting the folio (4) before the brewing process.

5 - A capsule (1) as in any one of the above claims, **characterized by** at least one lower protrusion (11) that is disposed at the lower side of the body (2) side wall, that extends towards the inner region of the body (2) and that prevents the cutting apparatus (5) that moves downwards inside the body (2) by going over the upper protrusion (10) with the force applied from the upper surface of the body (2) from getting out of the body (2).

6 - A capsule (1) as in Claim 4 or 5, **characterized by** at least one claw (12) that is disposed in the vicinity of the side wall of the cutting apparatus (5), that extends towards the inner surface of the body (2) and that is seated onto the upper protrusions (10) before the cutting apparatus (5) cuts the folio (4) and onto the lower protrusions (11) after the folio (4) is cut.

7 - A coffee machine **characterized by** a capsule housing (13) wherein a capsule (1) as in any one of the above claims is placed, a brewing chamber (14) wherein the brewing process is realized and an opening mechanism (15) that opens the capsule (1) in the capsule housing (13) so as to enable the coffee in the capsule (1) to pour into the brewing chamber (14).

8 - A coffee machine as in Claim 7, **characterized by** the opening mechanism (15) that has an upright member (16) that extends upwards from the base of the capsule housing (13) and that enters the channel (7) when the opening mechanism (15) is operated to enable the folio (4) wrapped therearound to be gathered in the channel (7).

9 - A coffee machine as Claim 7 or 8, **characterized by** the opening mechanism (15) that has a pusher (17) that applies pressure from the upper surface of the body (2), thus enabling the cutting apparatus (5) inside the capsule (1) to move downwards and to cut the folio (4).

Figure 1

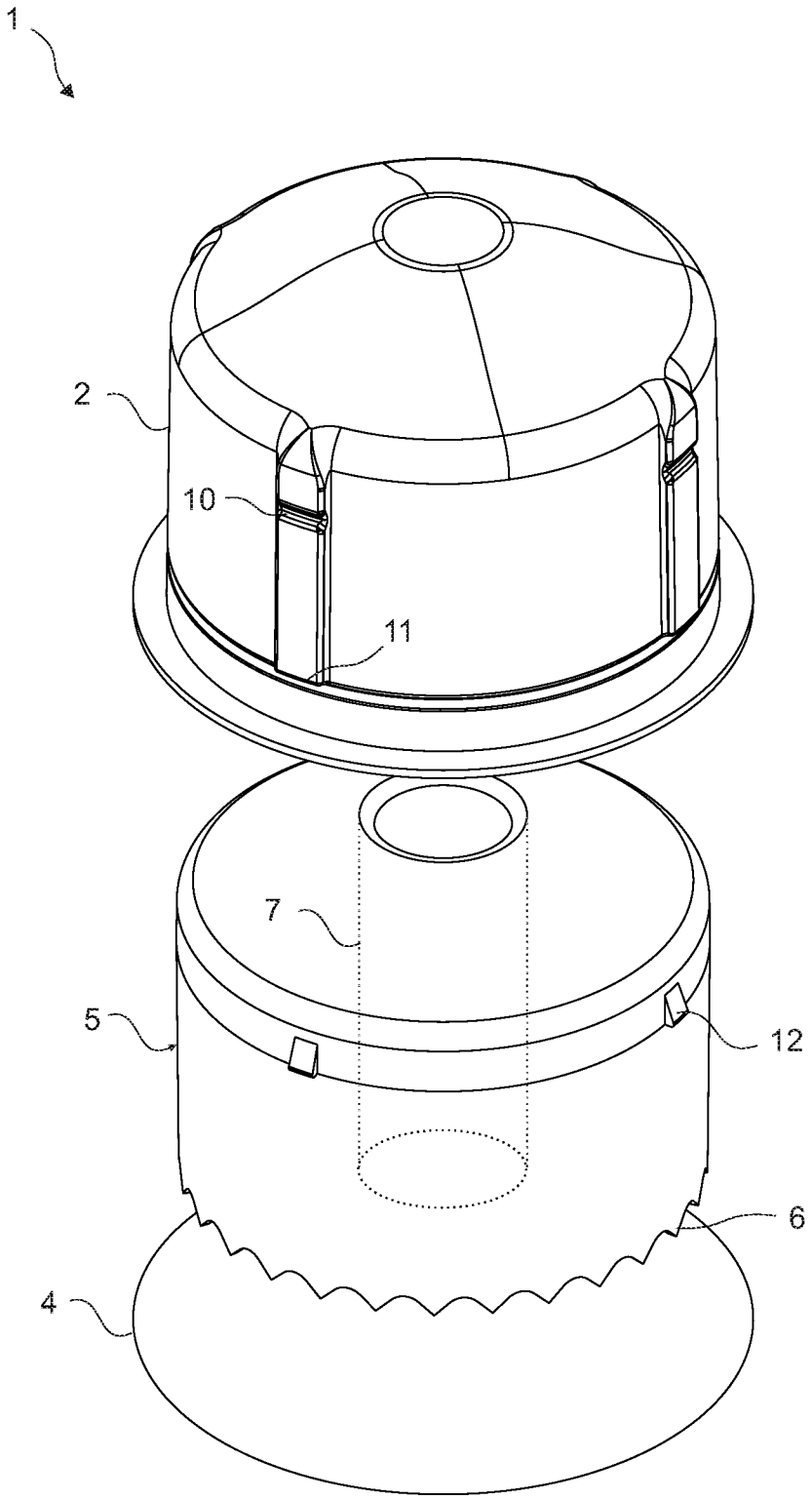


Figure 2

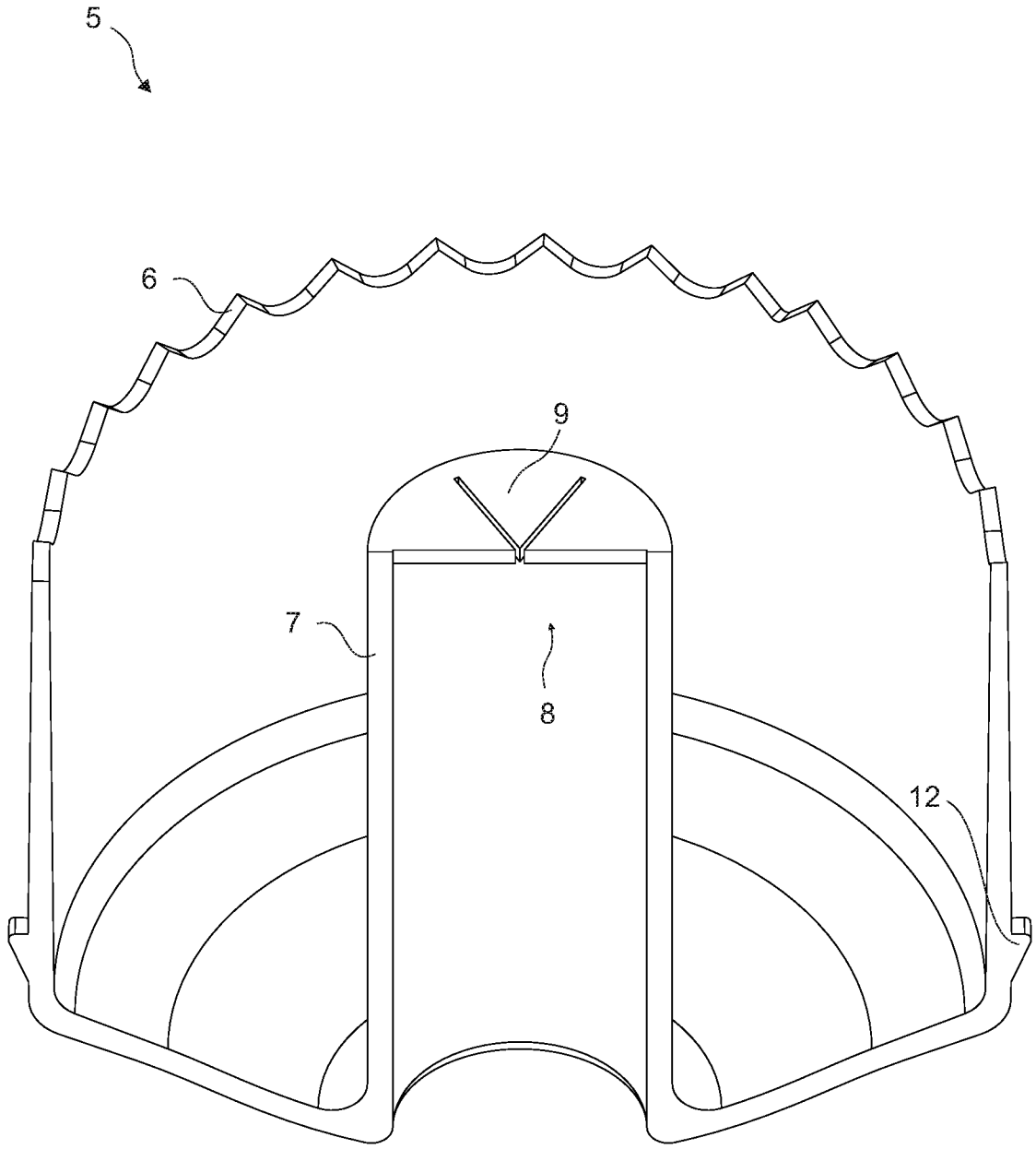


Figure 3

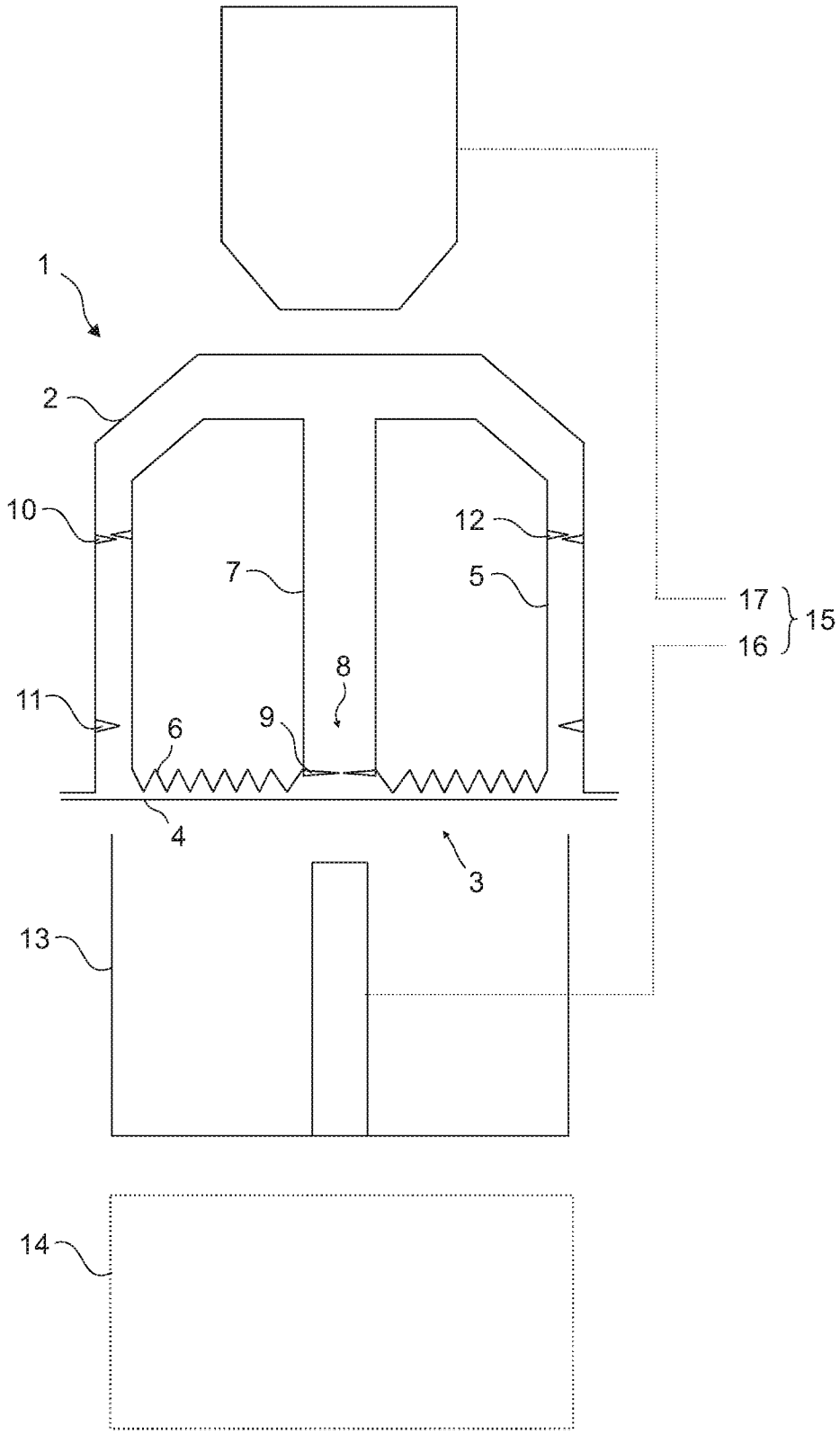


Figure 4a

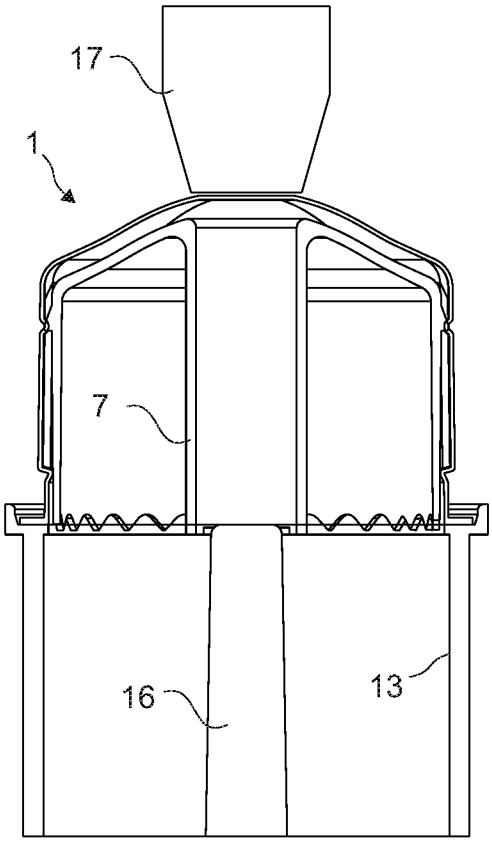
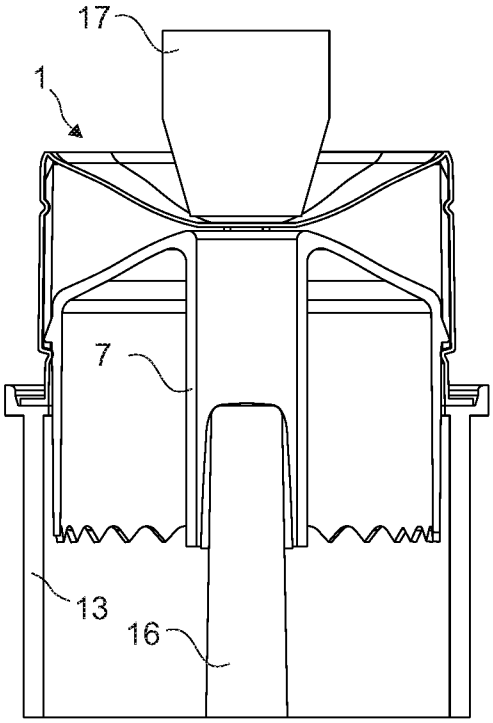


Figure 4b



INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2015/050188

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47J31/18 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)
A47J 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.
X	WO 2011/007266 A1 (HAREMLIK GIDA DEKORASYON VE EKIPMANLARI TICARET SANAYI LTD SIRKETI [TR]) 20 January 2011 (2011-01-20) cited in the application	1,2,7,9
A	abstract; figures 5,6,7 page 4, line 2 - line 3	3-6,8
X	WO 2012/125032 A2 (CUPSYSTEM COMPANY B V [NL]; VERBEEK ROLAND WALDEMAR [NL]) 20 September 2012 (2012-09-20)	7,9
A	abstract; figures 6,7,8a page 13, line 4 - line 7 page 7, line 15 - line 25	1-6,8
A	JP 2000 217885 A (FUKOKU KK) 8 August 2000 (2000-08-08) abstract; figures 3-5	1-6

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

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
18 March 2016	29/03/2016

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Schnitzhofer, Markus

1

INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2015/050188

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 316 312 A1 (RES INVEST & DEV S A L HOLDING [LB]) 4 May 2011 (2011-05-04)	7,9
A	the whole document	1-6,8

X	DE 10 2006 002511 A1 (EBERT SEBASTIAN [DE]; CALISKAN VEDAT [DE]) 19 July 2007 (2007-07-19)	7,9
A	abstract; figures 2,3,5	1-6,8

A	EP 2 732 738 A1 (EKSEN MAKINA SANAYI VE TICARET AS [TR]) 21 May 2014 (2014-05-21) the whole document	1-9

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/TR2015/050188

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011007266 A1	20-01-2011	DK 2453777 T3	22-07-2013
		EP 2453777 A1	23-05-2012
		HR P20130676 T1	30-09-2013
		MA 33529 B1	01-08-2012
		SI 2453777 T1	30-09-2013
		TR 200905555 A1	21-02-2011
		US 2012180669 A1	19-07-2012
		WO 2011007266 A1	20-01-2011
WO 2012125032 A2	20-09-2012	EP 2712295 A2	02-04-2014
		TR 201202636 U	22-10-2012
		US 2014123859 A1	08-05-2014
		WO 2012125032 A2	20-09-2012
JP 2000217885 A	08-08-2000	NONE	
EP 2316312 A1	04-05-2011	EP 2316312 A1	04-05-2011
		HR P20140791 T1	10-10-2014
		RS 53437 B	31-12-2014
		SI 2316312 T1	30-09-2014
DE 102006002511 A1	19-07-2007	DE 102006002511 A1	19-07-2007
		WO 2007080532 A1	19-07-2007
EP 2732738 A1	21-05-2014	EP 2732738 A1	21-05-2014
		US 2015289713 A1	15-10-2015
		WO 2014076192 A2	22-05-2014