

BEVERAGE CUP LID

Field

[0001] The invention relates to beverage cup lids, to barriers for shielding drinking apertures of beverage cup lids, the hygienic supply of beverage cup lids, and the application of barriers to lids during a manufacturing process and prior to delivery to a café or the like.

Background

[0002] Beverages such as coffee, tea or the like are often sold in disposable cups provided with lids.

[0003] Some lids include a drinking aperture through which a product located therein may be consumed whilst the lid remains in place. Some lids include a projecting spout terminating in the drinking aperture and about which the consumer's lips may be pursed. The latter form of lid is sometimes referred to as a "sipper cup lid".

[0004] Cafes, restaurants and the like are often busy and cramped. Often the lids and cups are stored separately and the lids applied to the cups by the barista or other staff.

[0005] Baristas and staff are typically faced with coordinating a multitude of tasks under time pressure. Beyond operation of a coffee machine, for example, they must also handle milk cartons, money, food items, dirty dish cloths and other potentially unsanitary items. Within this challenging work environment it is unsurprising that a barista's hands may be unsanitary.

[0006] These potentially unsanitary hands then routinely come into contact with the drinking apertures of the lids when applying the lids to the cups, particularly in the case of sipper cups with their projecting drinking apertures. Typically, a barista would place the lid on a cup and using his/her hand push the lid down onto a cup rim with the palm pushing down and coming in contact with the aperture and spout. It is of course the drinking aperture and spout which is brought into intimate contact with the consumer's mouth causing a health risk if the surfaces are dirty.

[0007] There is a need to address these health risks in a simple, easy and inexpensive way.

Object

[0008] It is an object of the present invention to substantially overcome or at least ameliorate one or more of the disadvantages of the prior art, or to at least provide a useful alternative.

Summary of Invention

[0009] There is disclosed herein a beverage cup lid having a generally planar central portion and a rim surrounding and extending away from said central portion;

at least one drinking aperture located substantially adjacent said rim and adapted to permit liquid to flow through said lid;

a barrier member overlying said drinking aperture;

the barrier member being applied to the lid during a manufacturing process and removable by an end user to permit drinking via the drinking aperture.

[0010] Preferably, the barrier member overlies a region, about the drinking aperture where a consumer's lips contact the lid whilst drinking.

[0011] Preferably, the barrier member is a sticker, the sticker having a tab to peel said sticker away from at least a portion of said lid to expose said drinking aperture.

[0012] Preferably, the barrier member extends at least partly over the drinking apertures, rim and central portion.

[0013] There is further disclosed herein a method of producing a beverage cup lid including:

forming a portion shaped to fit a cup;

forming a drinking aperture in said shaped portion;

applying a barrier member to the shaped portion to shield the drinking aperture;

wherein during said method the drinking aperture is not touched by human hands.

[0014] Preferably, including the step of selecting the barrier from a supply of barriers.

[0015] Preferably, including the step of applying a vacuum to the barrier to urge the barrier into contact with said shaped portion.

[0016] Preferably, the step of applying the barrier to said shaped portion includes pressing the barrier against the shaped portion.

[0017] Preferably, the step of forming the shaped portion includes thermoforming a portion of a sheet of material.

[0018] Preferably, including the step of severing the shaped portion from the sheet of material.

[0019] Preferably, further including the step of, after applying the barrier to a shaped portion, stacking a plurality of lids and shaped portions to form a transportable stack.

[0020] Preferably, including the step of sealingly packaging said stack as a single unit.

Brief Description of Drawings

[0021] Figures 1a, 1b to 4a,b show production steps producing a lid for a beverage cup of an embodiment of the present invention;

[0022] Figures 5a and 6a show barrier members of the present invention; and

[0023] Figures 5b and 6b show the barrier members of 5a, 6a, applied to a lid.

Description of Embodiments

[0024] In the illustrated examples, shielded lids 1 (see Figures 5b, 6b) are produced during a manufacturing process (see Figures 1a, 1b to 4a, 4b) and prior to delivery to a café or the like. The manufacturing process in a preferred embodiment includes moving a sheet of material in the form of strip 2 along a production line 4 including through production stations 6, 8 and 10. It should however be understood that the process could include any number of production stations. The strip 2 is typically produced through an extrusion process and supplied to the first production station 6 in a hot, pliable, form. The strip 2 could be manufactured on site or brought from a third party. However, it should be understood that strip 2 could be produced

using various typical sheet forming methods. At the first production station (not shown) the strip 2 is thermoformed to create a shaped portion 12 within the strip 2. This involves forming the pliable material 2 within a mould (not shown) to form the material 2 into a lid shape 12 as shown in the Figures. In this example, the thermoforming is vacuum forming, that is, the strip 2 is sucked onto a male die. In other examples of the process, the material 2 may be supplied in solid form, in a roll and heated to be made pliable before application or the like. The lids 12 could also be made through injection moulding.

[0025] After thermoforming, the shaped portion 12 (i.e. lid) is moved to the second station 6 (see Figures 1a, 1b). Station 6 is a punching station at which the shaped portion 12 is sandwiched between a punch tool 6a and a complementary anvil 6b to form a drinking aperture 12a, vent holes and the like. From station 6 the shaped portion 12 is moved to the third station 8 (see Figures 2a 2b).

[0026] Third station 8 is a barrier application station at which a barrier 14 is applied to the formed portion 12 (see Figures 2a, 2b). Station 8 includes a sticker application tool 8a. The tool 8a includes a main body 8b referred to as a "mask" integrally formed with a shaft 8c projecting therefrom. A collar 8d embraces the shaft 8c and carries vacuum fingers 8e which slidably project through apertures (not shown) through the mask 8b in a direction parallel to the shaft 8c.

[0027] Figures 1a, 1b show the tool 8a in its barrier selecting position in which the fingers 8e project beyond the mask 8b to suctionally engage the face of a barrier 14 to a dispenser 8f.

[0028] From the barrier selecting position of Figures 1a, 1b the tool 8a is moved to a sticker applying position of Figures 2a, 2b. In this variant the tool 8a rotates from a horizontal barrier selecting position to a vertical barrier applying position. The sticker could at this stage or later applied include advertising or the like.

[0029] In the position of Figures 2a, 2b the tool 8a is aligned with the shaped portion 12 sitting at station 8. The tool 8a is then relatively advanced towards the shaped portion 12 (in this case lowered) to press the barrier 14 onto the shaped portion 12. As the tool 8a advances toward the portion 12, the barrier 14, carried by the fingers 12e, contacts the shaped portion 12 (see Figures 3a, 3b). With continued advancement of the tool 8a, the collar 8d and fingers 8e remain stationary whilst the main body 8b continues on the production line 4. The main body

8b has a face (not shown) shaped to complement the shaped portion 12 so as to conformably apply the barrier 14 to the shaped portion 12.

[0030] From the position of Figures 4a, 4b the tool 8a is withdrawn (in this example raised) and returns to select a further barrier from the dispenser 8f whilst the strip 2 is incremented along the production line 4 to move the newly shielded shaped portion 12 to the station 10 (see Figures 4a, 4b).

[0031] The station 10 is a trimming station including a cutter 10a and anvil 10b. The anvil 10b has a central bore and is lowered into contact with the strip 2 so as to encircle the shielded shaped portion 12. The cutter 10a has a circular cutting edge complementary to the bore of the anvil 10b and is upwardly driven to make a circular cut severing the shielded shaped portion 12 from the strip 2. Thus a shielded lid 1 is formed, although of course its formed plastic portion still fits the description of "a shaped portion" 12. The sticker 14 however can be dressed before trimming or after trimming.

[0032] With continued advancement of the tool 10a the newly formed lid 12 is driven to engage the underside of an overlying previously formed lid 12. Thus the newly formed shielded lid 12 is added to the stack of lids 12. In this example, the newly formed shielded lid 12 nests within the upwardly adjacent lid 12 as shown in the Figures.

[0033] The shapes of the described exemplary lids 12 and barriers 14 are better shown in more detail in Figures 5a, 5b and 6a, 6b.

[0034] As can be seen in for example Figures 5a, 5b, 6a, 6b, the shaped portion 12, which is to become a lid 12, includes an upwardly converging conical exterior 12c surrounding a circular well or central portion 12d dimensioned to receive the bottom of a cup (not shown). The well 12d has an upwardly diverging conical side wall 12b. The wall 12c and the wall 12b of the well 12d are connected about the upper peripheries by a rim 12e. The aperture 12a is spaced about the rim. There may be one or more apertures. The wall 12c is surrounded by a circular flange 12f shaped to engage the rim of a cup.

[0035] The flange 12f includes an outwardly bulbous portion (not shown) defining an annular recess (not shown) dimensioned to receive a more or less toroidal rim of a cup. The bulbous portion is shaped to embrace the rim of the cup and defines an annular nose which in use

underlies the rim of the cup to hold the lid 12 in place as per a standard coffee cup lid. Below the nose is a short downwardly diverging conical skirt (not shown) which acts on the rim of the cup to provide a lead in when fitting the lid 12 to the cup.

[0036] When the lids 12, or shaped portions which are to become lids 12, are stacked an interior of the skirt rests on an exterior of the bulbous portion defining a circular line of contact and in turn defining the pitch at which the lids 12 are stacked.

[0037] The barrier 14, in the example of Figs 5a and 6a, is a sticker predominantly consisting of a thin pliable piece cut from a sheet of material. The sticker may be formed of paper treated with a suitable adhesive or any other suitable material.

[0038] The sticker 14 in an embodiment is about twice as long as it is wide when viewed in plan. One end of the sticker terminates in a straight edge 14a which runs transverse to the sticker's length. A central portion 14b is positioned towards the other end of the sticker 14. The central portion 14b can be of any shape and size. A straight bridging portion 14c runs parallel to the sticker's length and connects a rectangular body of material defining the edge 14a to the central portion 14b. On either side of the bridging portion 14c a portion 14d projects from the body of material. Each portion 14d has an outer edge 14g and an inclined edge 14h. The inclined edges 14h diverge from each other in a direction away from the edge 14a and thus a respective opening 14e is defined between each portion 14d and the bridging portion 14c. A pull tab 14f extends from the circular portion 14b in a direction parallel to the length of the sticker 14. The sticker 14 would be made of a single piece of material and could include separable slits, perforations, scores or the like. The sticker 14 could be made of a biodegradable material.

[0039] In alternate embodiments the stickers 14 may be applied by heat or by heat shrinking or vacuum shrinking. Heat and heat shrinking eliminates the need for cuts and perforations as it molds the plastic sticker 14 around the contours, however, slight scores may be required. It also eliminates the need to make stickers 14 in different shapes to suit different shape lids 12. The stickers 14 may also be applied without heat and/or only with a downward pressure and use of an adhesive or the like. In this regard, the section about the aperture would utilise food grade adhesive or the like and leave no residue about the aperture. The sticker 14 may cover the entire mouth area or the whole lid 12. The sticker 14 would be drawn using a vacuum, but

there can be other ways to draw the stickers, like a roll over the lids that by pressing down, will apply the sticker 14 and release the sticker 14 from the roll, or a roller that rolls over the lids 12 and applies the sticker in a rolling motion. The tab 14f is generally positioned towards the center of the lid 12 so the pulling motion is down, pulling the tab 14f upwards may cause the lid 12 to pop off the cup. The sticker 14 can be made using any thin material, whether plastic, vinyl, paper etc. The sticker 14 will be adhered back onto the side of the cup to prevent littering.

[0040] In use, the edge 14a follows the circular lower extent of the surface 12c and the central portion 14b is adhered to the floor of the well 12d such that the bridging portion 14c directly overlies the drinking aperture 12a and runs down the conical wall of the well 12d. As the material defining the edge 14a is deformed about the surface 12c the sticker 14 is deformed to close the openings 14e and the inclined portions 14d overlie the conical wall of the well 12d.

[0041] The central portion 14d serves to shield the floor of well 12d, which may contact the consumer's nose. It is also a convenient place for displaying images, advertising, trademarks, and/or other markings. By way of example the markings may be logos or advertisements. A business, such as a cafe or coffee supplier, might pay for their identity to be applied to the spot.

[0042] Of course some deformation of the sticker 14 is required to follow the complex curvatures of the shaped portion 12. The inclusion of the openings 14e serves to minimize overlapping portions of material and/or potential folds in the material which may "scrunch up". Thus this sticker 14 sits flat against the shaped portion 12 to permit efficient stacking.

[0043] No part of the sticker 14 overlies the flange 12f, such that when stacked the circular line of contact between the portion 12g and an upwardly adjacent lid 12 is not broken by the sticker 14. By spacing the sticker 14 from the point of contact, the lids 12 may be efficiently stacked to form a straight vertical stack 30 which is stable. Such stacking qualities are of course highly desirable to suit packaging and transport and easy handling by the barista or other café staff. In particular a stack 30 of shielded lids 12 can be packaged in a tube of pliable plastic material (not shown) to shield them from contamination between the manufacturer and the barista or during use at a café. The barista may then receive the sealed package and simply remove the stack from the package and transfer it to a convenient location. By way of example, the stack

30 may be placed atop a coffee machine or the like, in which case the stability of the stack is highly desirable so that the stack does not fall over in response to machine vibration or the like.

[0044] The sticker 14 in a preferred embodiment has strategically placed points of adhesive - in this case, one adjacent each end of the edge 14a and one adjacent the pull tab 14f. The degree of adhesion is selected to resist inadvertent removal of the sticker 14 from the shaped portion 12 whilst permitting removal of individual stickers 14 from the dispenser 8f and removal of the sticker 14 by the consumer. The sticker 14 preferably covers the hole or aperture 12a and acts to stop liquid located within the cup from splattering through the hole when a consumer is walking or when pressing on the sides of the cup. The sticker 14 can also be applied to the side of the cup once peeled from the lid to become a "cup print" or advertising as well as to prevent litter.

[0045] For the purpose of removal by the consumer, the pull tab 14f is positioned to be grasped and pulled horizontally towards the edge 14a and then, without releasing the pull tab 14f, to be pulled downwardly to peel the material defining the edge 14a from the conical surface 12c. This positioning of the pull tab 14c desirably allows for the removal of the sticker 14 in substance without upward force being applied, such that the likelihood of inadvertently pulling the lid 12 from the cup is reduced.

[0046] Following the described example, a shielded lid 12 is manufactured and supplied to the retailer (e.g. café or the like) in a fully assembled configuration. This ensures that a barista, café staff, delivery man or the like has not touched the drinking aperture prior to use by a consumer. This will be of great reassurance to many consumers and a significant advance in hygiene.

[0047] Various exemplary features have been described. These examples do not limit the scope of the invention as described herein. Many other examples are possible. By way of example, the ordering of the steps may be revised - the lids 12 could be stacked atop to the shaped portion prior to it being severed from the sheet 2, or the sticker 14 may be applied after a shaped portion is severed from the sheet. Indeed, shaped portions may be formed other than from sheet material.

[0048] The orientation and scale of the production line may also be varied. Multiples of the described work stations may be arranged in parallel or series. In one example, an extruder

horizontally feeds a sheet of hot pliable material to a drum having a horizontal axis about which it is rotatable, wherein the drum includes 7 rows of 8 vacuum forming dies along its length. The drum rotates continuously forming shaped portions as it carries the sheet material from about a 2 o'clock to about a 7 o'clock position. At about the 7 o'clock position the sheet peels away from the drum and moves downwardly through 7 parallel vertically-oriented variants of the production line 4.

[0049] The lids 1 may be of various shapes and sizes, including different spout shapes, etc. Indeed the lids 1 may be spoutless.

[0050] Although the invention has been described with reference to specific examples, it will be appreciated by those skilled in the art that the invention may be embodied in many other forms.

CLAIMS

1. A beverage cup lid having a generally planar central portion and a rim surrounding and extending away from said central portion;
at least one drinking aperture located substantially adjacent said rim and adapted to permit liquid to flow through said lid;
a barrier member overlying said drinking aperture;
the barrier member being applied to the lid during a manufacturing process and removable by an end user to permit drinking via the drinking aperture.
2. The lid of claim 1 wherein the barrier member overlies a region, about the drinking aperture where a consumer's lips contact the lid whilst drinking.
3. The lid of claim 1 or 2, wherein the barrier member is a sticker, the sticker having a tab to peel said sticker away from at least a portion of said lid to expose said drinking aperture.
4. The lid of claims 1, 2 or 3 wherein the barrier member extends at least partly over the drinking apertures, rim and central portion.
5. A method of producing a beverage cup lid including:
forming a portion shaped to fit a cup;
forming a drinking aperture in said shaped portion;
applying a barrier member to the shaped portion to shield the drinking aperture;
wherein during said method the drinking aperture is not touched by human hands.
6. The method of claim 5 including the step of selecting the barrier from a supply of barriers.
7. The method of claim 6 including the step of applying a vacuum to the barrier to urge the barrier into contact with said shaped portion.
8. The method of claim 5 or 6 wherein the step of applying the barrier to said shaped portion includes pressing the barrier against the shaped portion.

9. The method of any one of claims 5 to 8 wherein the step of forming the shaped portion includes thermoforming a portion of a sheet of material.
10. The method of claim 9 including the step of severing the shaped portion from the sheet of material.
11. The method of any one of claims 5 to 10 further including the step of, after applying the barrier to a shaped portion, stacking a plurality of lids and shaped portions to form a transportable stack.
12. The method of claim 11 including the step of sealingly packaging said stack as a single unit.
13. A beverage cup lid manufactured by the method of claim 5.
14. A stack of beverage cup lids, the lids manufactured by the method of claim 5.

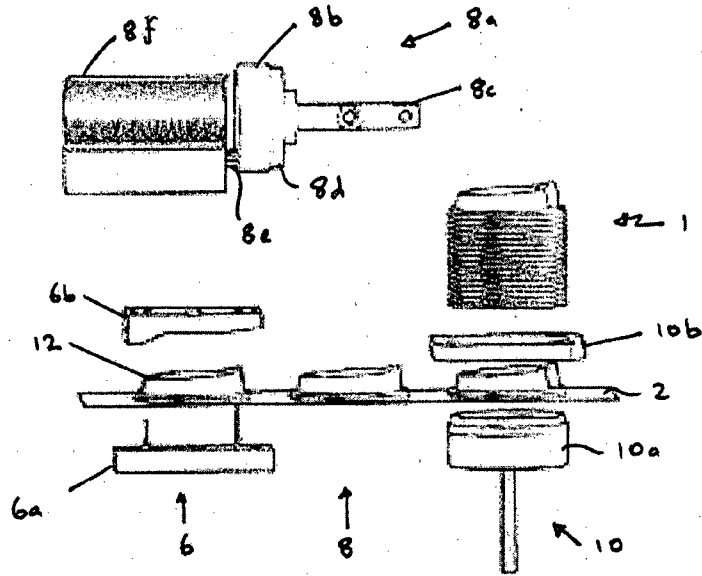


Figure 1a

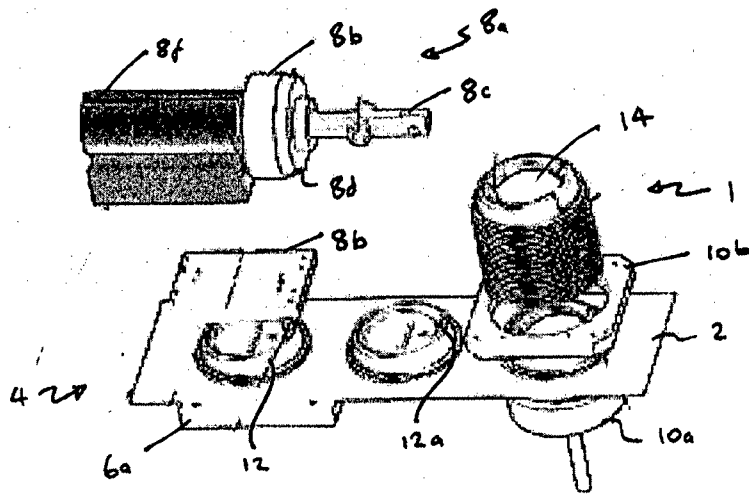


Figure 1b

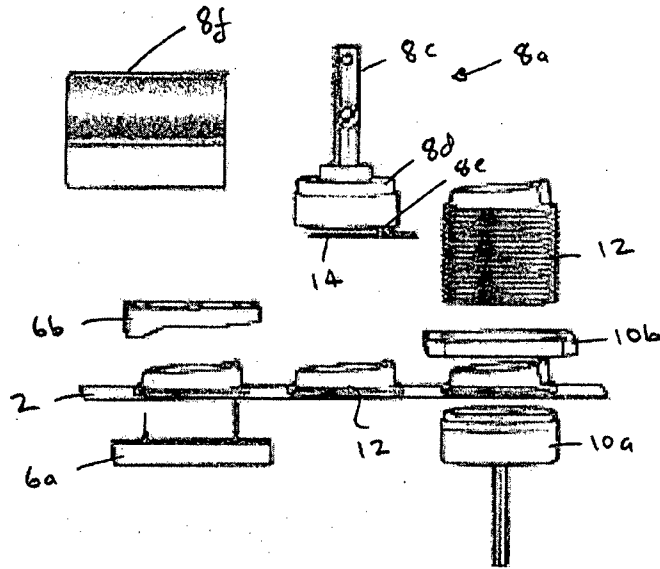


Figure 2a

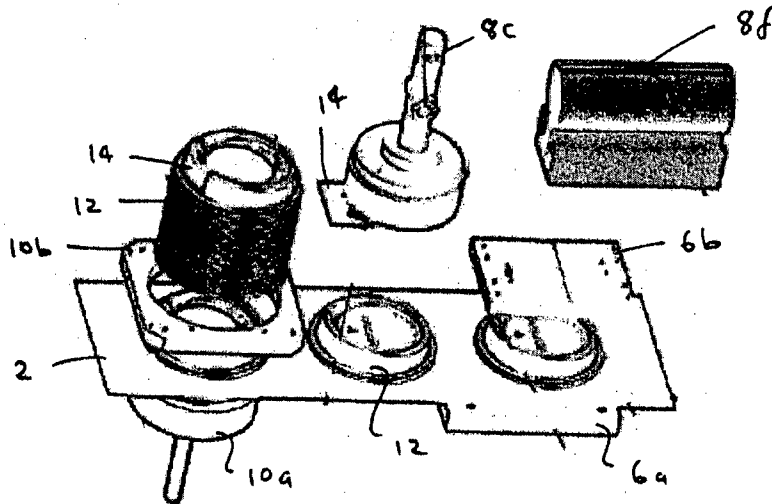


Figure 2b

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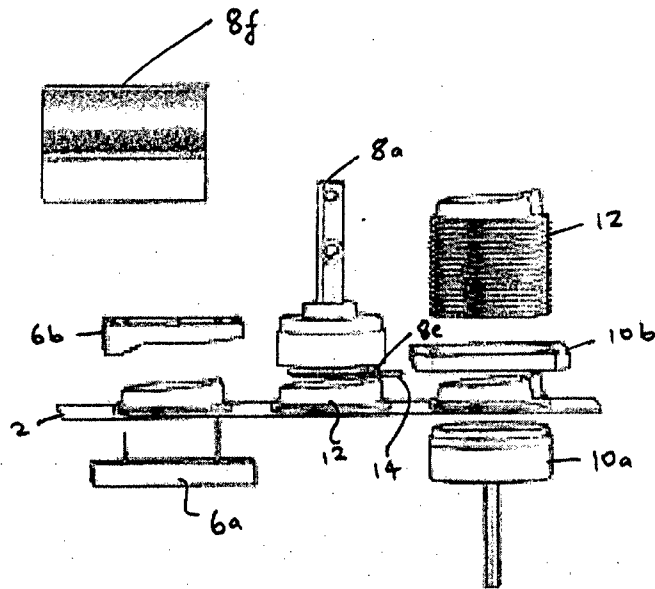


Figure 3a

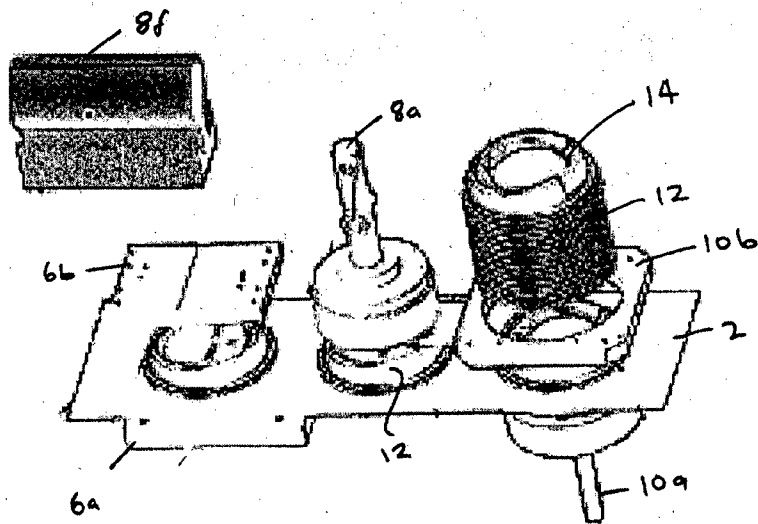


Figure 3b

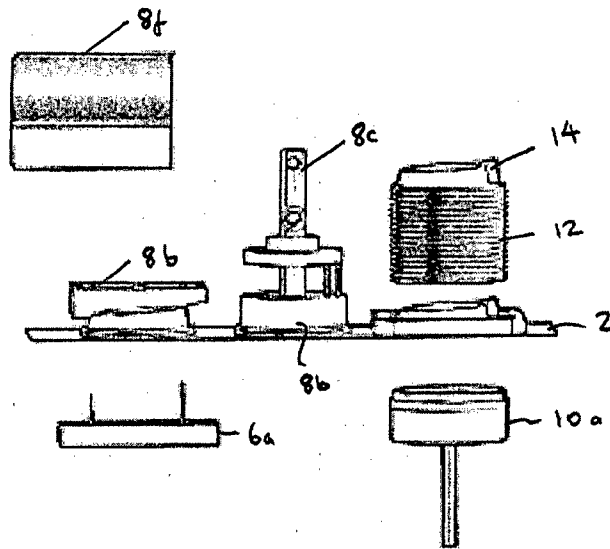


Figure 4a

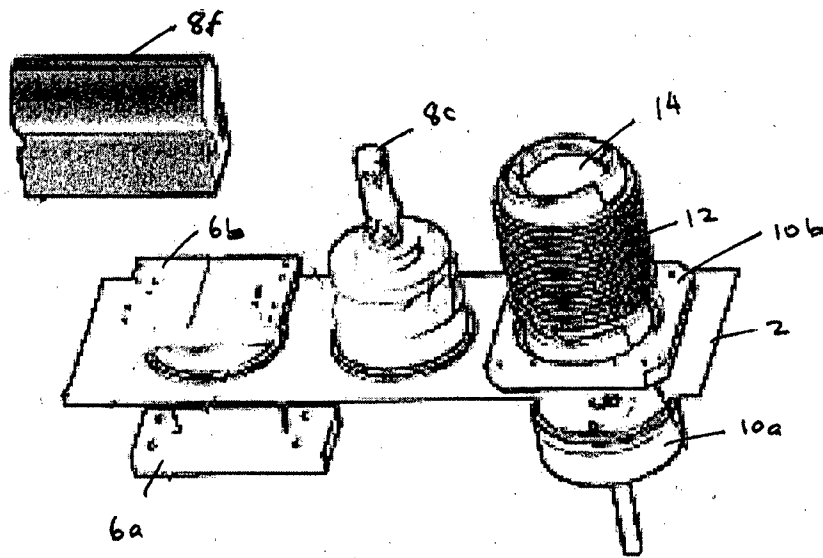


Figure 4b

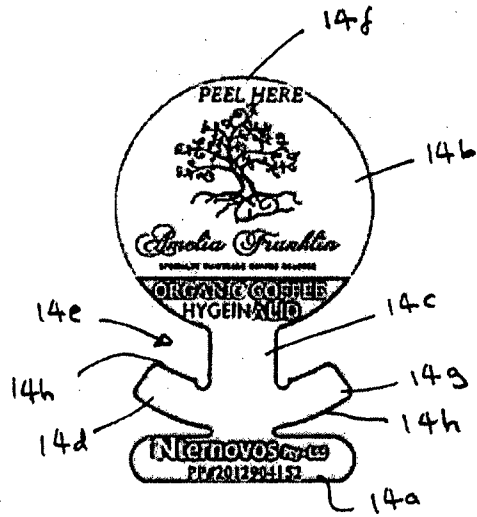


Figure 5a

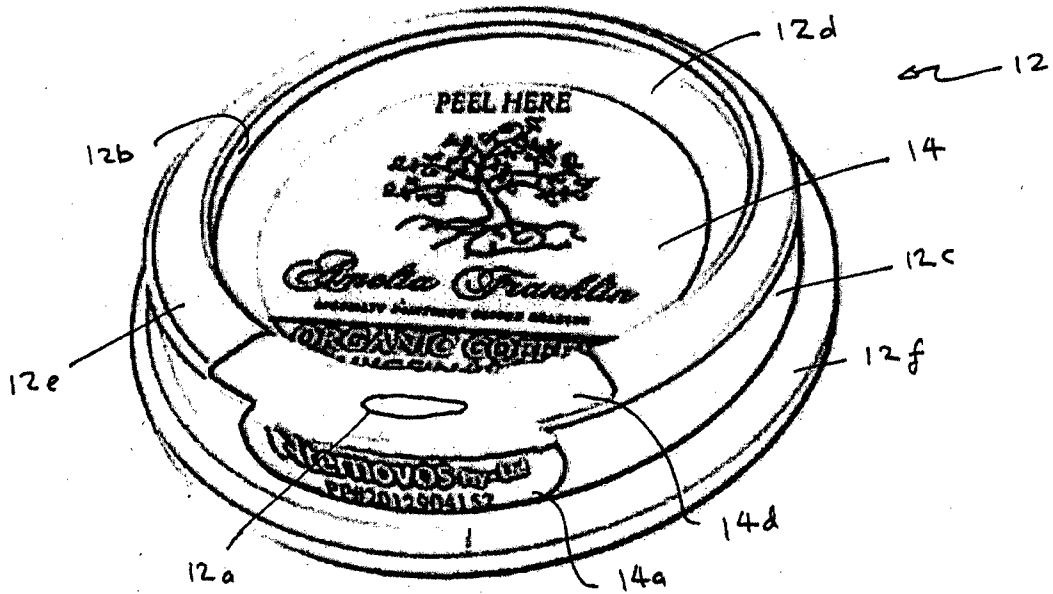


Figure 5b

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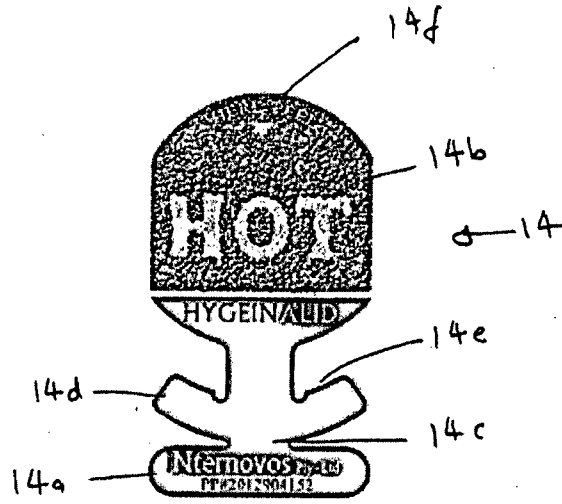


Figure 6a

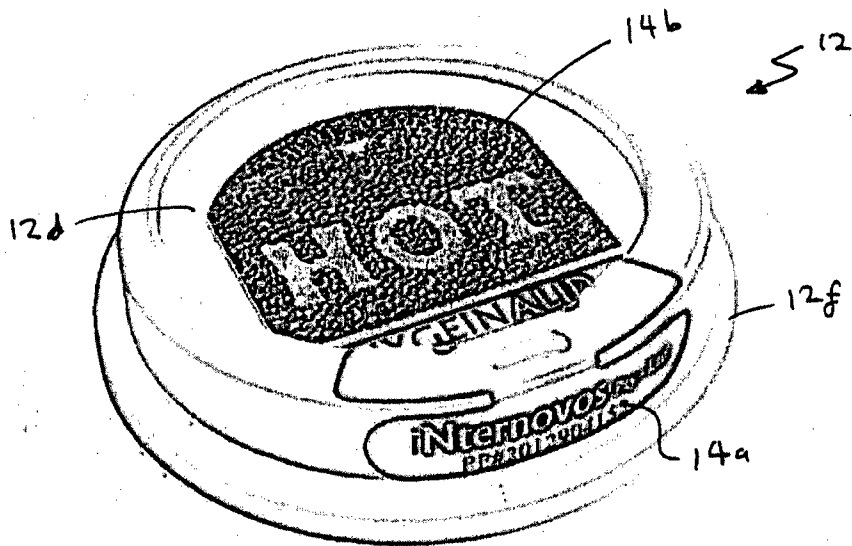


Figure 6b

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2013/001026

A. CLASSIFICATION OF SUBJECT MATTER		
A47G 19/22 (2006.01) A47G 19/12 (2006.01) A47G 19/23 (2006.01) A47G 23/00 (2006.01) B65D 55/02 (2006.01) B65D 53/08 (2006.01)		
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)		
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)		
EPODOC, WPI: CPC, IPC:(A47G 19, 23, B65D 43, 50, 53/08) and keywords (mug, cup, glass, lid, barrier, sticker, seal, tape, tamper and like terms).		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex		
* "A"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed	
Date of the actual completion of the international search 11 October 2013	Date of mailing of the international search report 11 October 2013	
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA Email address: pct@ipaaustralia.gov.au Facsimile No.: +61 2 6283 7999	Authorised officer Ron Weber AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. 0262102110	

INTERNATIONAL SEARCH REPORT

International application No.

C (Continuation).

DOCUMENTS CONSIDERED TO BE RELEVANT

PCT/AU2013/001026

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3690509 A (KINOIAN et al.) 12 September 1972 Columns 1 to 6 and figures 1 to 6.	1 to 14.
X	US 20020027139 A1 (O'NEILL) 07 March 2002 Pages 1 to 5 and figures 1 to 13.	1 to 14.
X	US 20030141302 A1 (RYAN et al.) 31 July 2003 Pages 1 and 2 and figures 1 to 3.	1 to 14.
X	US 20090223981 A1 (LEVEY) 10 September 2009 Pages 1 to 9 and figures 2H, 4D and 4E.	1 to 14.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2013/001026

This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document/s Cited in Search Report		Patent Family Member/s	
Publication Number	Publication Date	Publication Number	Publication Date
US 3690509 A	12 Sep 1972	None	
US 20020027139 A1	07 Mar 2002	US 7191911 B2	20 Mar 2007
		US 2002027139 A1	07 Mar 2002
US 20030141302 A1	31 Jul 2003	US 2004094549 A1	20 May 2004
		WO 03063657 A1	07 Aug 2003
US 20090223981 A1	10 Sep 2009	CA 2717768 A1	11 Sep 2009
		US 2009223981 A1	10 Sep 2009
		US 8167162 B2	01 May 2012
		WO 2009111718 A2	11 Sep 2009

End of Annex

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

Form PCT/ISA/210 (Family Annex)(July 2009)