(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 808 673 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
21.04.2021 Bulletin 2021/16

(21) Application number: **18905901.7**

(22) Date of filing: **29.05.2018**

(51) Int Cl.:
B65D 41/04 *(2006.01)*

(86) International application number:
PCT/CN2018/000199

(87) International publication number:
WO 2019/227247 (05.12.2019 Gazette 2019/49)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **Foshan City Meiwanbang Technology Co., Ltd**
Foshan, Guangdong 528225 (CN)

(72) Inventors:
- **LAI, Tzung-shen**
  Taiwan (CN)
- **RAO, Rihua**
  Guangdong 528225 (CN)

(74) Representative: **Cabinet Chaillot**
16/20, avenue de l'Agent Sarre
B.P. 74
92703 Colombes Cedex (FR)

(54) PAPER-PLASTIC CUP LID

(57) Disclosed is a molded pulp cup lid (1) made of a material which is a mixture of paper pulp and/or plant fibers. The molded pulp cup lid (1) is manufactured by a mold with pulp suction molding and hot pressing technologies, and has a binding edge (31) capable of covering the cup securely, an offset cup top (15), and a drinking opening (20) formed on a high platform (14) to achieve the effects of preventing a liquid contained in the cup from spilling to the outside, facilitating users to carry or move the stacked takeout paper cups, and retarding the flow of the beverage at the drinking opening (20).

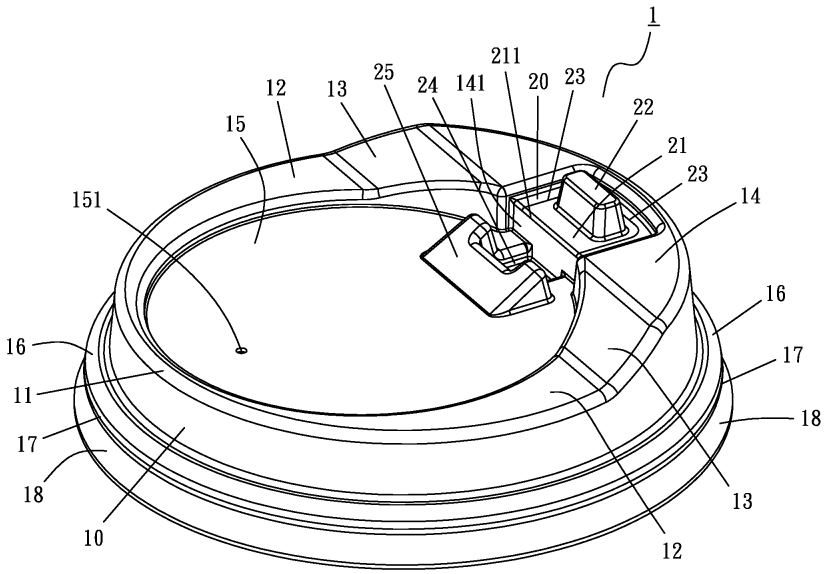

FIG. 1

EP 3 808 673 A1

Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a molded pulp cup lid, and more particularly to the molded pulp cup lid capable of combining with a cup rim tightly to prevent the liquid contained in a cup from spilling out and facilitate user to carry, stack, or move takeout paper cups, and retard the flow of beverage.

Description of the Related Art

[0002] Most people, particularly office workers, would buy a cup of coffee from a branded chained convenience store or a fast food restaurant to start a day's work almost every day. Without drinking coffee, one seems to be lacking in enthusiasm for work. If consumers do not bring their own cups for the takeout coffee, then convenience stores or fast food stands will use a "takeout paper cup" to help the consumers to contain the coffee and let the consumers carry the "takeout paper cup" and drink the coffee from the paper cup. Such "takeout paper cup" is often called "single-use paper cup", "single-use portable paper cup" or "disposable paper cup". The conventional takeout paper cup is usually composed of a cup and a cup lid, and the cup is provided for containing liquid beverage, and the cup lid is covered onto the cup rim to prevent the liquid beverage contained in the cup from spilling out.

[0003] In general, the conventional cup lid used for the takeout paper cup is made of a plastic material such as PP, PS, PVC, etc. and manufactured by plastic injection molding, and such product is usually called a "plastic cup lid". The conventional plastic cup lid has recycle and disposal issues which produce serious pollutions. Particularly, the quantity is huge, and thus it is very difficult for the recycle process and leads to serious damages to the environment. With today's high awareness of environmental protection, the use of a disposal plastic cup lid is totally contrary to the awareness of environmental protection. In addition, the conventional plastic cup lid is manufactured by the plastic injection molding and thus limited by the moving space required for the demolding, so that the plastic cup lid product cannot satisfy the requirement of covering the paper cup onto the cup rim tightly. After the paper cup is combined with the cup rim, they may be loosened easily and cause a leakage of the beverage, and users has the safety concern of the use. Further, the conventional plastic cup lid is formed by the plastic injection molding, so that the top of the cup lid and the drinking opening are arranged on the same plane, and when a user sets his/her mouths close to the drinking opening and tilts the cup for drinking the beverage, the whole of the liquid of the beverage contained in the cup rushes to the drinking opening, so that if the user tilts the cup with a too-large angle, the flow of the beverage will be too fast and may even spill out from the cup. Obviously, the aforementioned structure of the conventional paper cup requires improvements.

[0004] At present, a mixture of paper pulp and/or plant fiber has been developed, and the mixture is processed by molding, grouting, and shaping as well as hot press molding to form a pulp molded product, but most of the products are made of isolation buffer materials, and no one ever thought that it would be molded into the molded pulp cup lid by using the pulp molded material. Unlike the conventional plastic cup lid, the present invention adopts the molded pulp cup lid manufactured by the pulp molding process to overcome the drawbacks of the conventional plastic cup lid.

SUMMARY OF THE INVENTION

[0005] In view of the drawbacks of the conventional plastic cup lid, the inventor of the present invention based on years of experience in the related industry to conduct extensive research and experiment, and finally developed molded pulp cup lid to overcome the drawbacks of the conventional plastic cup lid.

[0006] Therefore, it is a primary objective of the present invention to provide a molded pulp cup lid capable of combining with a cup rim tightly to prevent liquid or beverage contained in a cup from spilling out, and allowing users to stacks several cups with one another to facilitate the carry of the cups.

[0007] Another objective of the present invention is to provide a molded pulp cup lid having a drinking opening formed on a high platform to prevent the beverage contained in the cup from having a too large flow when the cup is tilted for drinking.

[0008] To achieve the above-mentioned objective, the present invention is particularly to provide a molded pulp cup lid, comprising a main surrounding wall surrounded into a circle, a rear arc edge upwardly erected from a rear side of the main surrounding wall, and both sides of the rear arc edge extending forward and surrounding from both sides to form a horizontal side platform, and the front of the side platform being inclined and extended to a section of an oblique protective slope, and the fronts of the oblique protective slopes on both sides being combined into a high platform, and the junction of an inner edge of the high platform and the inner edges of the oblique protective slopes on both sides being tangentially drooped in an arc shape to form an inner protective wall; and the rear arc edge, side platform, oblique protective slope and high platform being surrounded into a circle, and a cup top being formed at the middle and having a height lower than the cup top after being offset, and the cup top having a small venting hole formed thereon; and a drinking opening being concavely formed in the height-wise direction at the center position of the high platform, and a horizontal opening plate being formed on a side of the drinking opening, and the inner edge of the drinking opening being

the top edge of the inner protective wall to constitute an easy folding edge, and a pusher being formed and protruded from the central position of the opening plate, and the connecting edges of the opening plate and the drinking opening except the easy folding edge being tapered thin easy-to-tear edges, and the easy-to-tear edges reaching the easy folding edge; and an accommodating cavity being downwardly and concavely formed on the cup top and at a position with a distance from the high platform, and a hatchback raised blocking platform being formed at the rear of the accommodating cavity, and the blocking platform encircling the accommodating cavity from both sides; and the bottom of the main surrounding wall extending outwardly to a small distance to form a countertop and then bent downwardly and extended to inwardly in an arc shape to form a covering edge, and then expanded outwardly to form a lift plate.

[0009] According to the above-mentioned molded pulp cup lid, the easy-to-tear edge is cut into a thickness smaller than half of its original thickness.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

Fig. 1 is a perspective view of an embodiment of the present invention;

Fig. 2 is a top view of an embodiment of the present invention;

Fig. 3 is a side view of an embodiment of the present invention;

Fig. 4 is a cross-sectional side view of an embodiment of the present invention;

Fig. 5 is a blowup view of Section a of Fig. 2;

Fig. 6 is a blowup view of Section b of Fig. 4;

Fig. 7 is a blowup view of a covering edge covering a cup binding edge in accordance with an embodiment of the present invention;

Fig. 8 is a perspective view of a molded pulp cup lid covering a cup in accordance with an embodiment of the present invention;

Fig. 9 is a schematic view of a molded pulp cup lid pushing a pusher to turn in accordance with an embodiment of the present invention; and

Fig. 10 is a schematic view of covering a molded pulp cup lid onto a cup and stacking them together vertically in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0011] The present invention will become clearer in light of the following detailed description of an illustrative embodiment of this invention described in connection with the drawings.

[0012] With reference to FIGS. 1~4 for a molded pulp cup lid 1 in accordance with an embodiment of the present invention, the molded pulp cup lid 1 is manufactured by molding, suction, shaping, and hot press molding, and the molded pulp cup lid 1 comprises a main surrounding wall 10 surrounded into a circle, and a rear arc edge 11 upwardly erected from a rear side of the main surrounding wall 10, and the rear arc edge 11 extends forwardly and surrounds from both sides for approximately half of a circle to gradually form a horizontal side platform 12, and an outer edge and an inner edge of the rear arc edge 11 are curved lines, and the inner edge has a curvature greater than that of the outer edge (or the inner edge is more curved than the outer edge), and then the front of the side platform 12 is inclined upwardly and extended to a section of an oblique protective slope 13, and both of the outer edge and inner edge of the oblique protective slope 13 are curved lines, and the inner edge has a curvature greater than that of the outer edge (or the inner edge is more curved than the outer edge). Finally, the fronts of oblique protective slopes 13 on both sides are jointly combined with a high platform 14, and the junction of the inner edge of the high platform 14 and the inner edges of the oblique protective slopes 13 on both sides is tangentially drooped in an arc shape to form an inner protective wall 141. Viewing each portion from above (as shown in FIG. 2), the widths arranged in an ascending order are the width of the rear arc edge 11 (but it is wider when extending sideway), the width of the side platform 12 (which is greater than the width of the rear arc edge 11), the width of the oblique protective slope 13 9 (which is greater than the width of the side platform 12), and finally the width of the high platform 14 (since it is formed by extending both sides into one), so that the high platform 14 has the fourth largest width, and the inner edges of the rear arc edge 11, the side platform 12, the oblique protective slope 13 and the high platform 14 (wherein the inner edge of the high platform 14 is the tangential inner protective wall 141) are surrounded into a circle, and the plane situated on the plane of the middle of the circle has a height below the cup top 15, and the depth of the cup top 15 at the rear arc edge 11 is preferably 2mm, and a small venting hole 151 is formed on the cup top 15 and at a position with a distance from the rear arc edge 11, so that the cup top 15 is not situated at the center of the molded pulp cup lid 1 but situated in a backwardly offset status as shown in FIGS. 1 and 2.

[0013] The upper side of the high platform 14 is based on the arc outer edge, and a drinking opening 20 with a slight downward recession in the height-wise direction is formed at the central positon. In FIG. 5, a horizontal open-

ing plate 21 is formed on a side of the drinking opening 20, and the inner edge of the opening plate 21 is the top edge of the inner protective wall 141 at where an arc easy folding edge 211 is formed, and a raised pusher 22 is formed at the central position of the opening plate 21. During manufacture and molding, the pusher 22, the opening plate 21 and the high platform 14 are integrally formed as a whole, and the connecting edges of the opening plate 21 and the drinking opening 20 excluding the easy folding edge 211 are tapered thin easy-to-tear edge 23. In other words, the aforementioned three connecting edges are cut to a thickness less than half of its original thickness to form the easy-to-tear edges 23, and the top and bottom easy-to-tear edges 23 as shown in FIG. 5 must be cut to reach the easy folding edge 211. Therefore, when the drinking opening 20 is not in use, the drinking opening 20 is not exposed, but completely covered by the opening plate 21 and the pusher 22. In the meantime, when the drinking opening 20 is not in use, the easy-to-tear edges 23 are connected in a tapered thin manner. The cup top 15 has an accommodating cavity 24 downwardly and concavely formed thereon and at a position with a distance from the high platform 14, and a hatchback raised blocking platform 25 formed at the rear of the accommodating cavity 24, and the blocking platform 25 encircles the accommodating cavity 24 from both sides.

[0014] With reference to FIG. 6, after the bottom of the main surrounding wall 10 extends outwardly to a distance to form a countertop 16, the main surrounding wall 10 are bent downwardly and extended to form an arc covering edge 17, and finally expanded into a ring-shaped lift plate 18. An inwardly and slightly curved shape is defined from an end of the countertop 16 to an end of the covering edge 17, and an outwardly and slightly curved shape is defined from an end of the covering edge 17 to an end of the lift plate 18.

[0015] During the use of the molded pulp cup lid 1 in accordance with an embodiment of the present invention, the molded pulp cup lid 1 is used with a cup 30. In FIGS. 7 and 8, a ring-shaped binding edge 31 is generally formed at a cup rim of a cup 30, so that when the molded pulp cup lid 1 is covered onto the cup rim of the cup 30 (filled with a beverage), the molded pulp cup lid 1 is covered onto the binding edge 31 in correspondence with the covering edge 17. Since the covering edge 17 has a minimum inner diameter slightly smaller than the outer diameter of the binding edge 31, therefore the covering edge 17 will be blocked by the binding edge 31 and cannot be passed through at the beginning. Now, a user just needs to press the molded pulp cup lid 1 into a substantially symmetrical part by hands, and the minimum inner diameter of the covering edge 17 of the molded pulp cup lid 1 will be expanded slightly to cross the binding edge 31 after receiving the pressing force, so that pressing the molded pulp cup lid 1 along the rim of the cup 30 will drive the covering edge 17 to cross and cover the binding edge 31 as shown in FIG. 7, so as to achieve the effect of sealing and covering the molded pulp cup lid 1 onto the cup 30 securely. Now, the whole "takeout paper cup" (including the cup 30, the beverage contained in the cup, and the molded pulp cup lid 1) can be moved safely. If a hot drink is filled into the cup 30, the pressure produced in the cup 30 can be released from the small venting hole 151 to prevent overpressure in the cup 30.

[0016] In an embodiment of the present invention, the molded pulp cup lid 1 is made of a mixture of paper pulp and/or plant fiber, and manufactured by molding, pulp suction, shaping, and hot press molding, so that the plastic cup lid preferably has a good deformation performance and elasticity within a force applying range. When the user press the molded pulp cup lid 1 into a symmetrical part by hands and applies a slight force to press the molded pulp cup lid 1 downward, the covering edge 17 at the position of the minimum inner diameter of the molded pulp cup lid 1 will be expanded outwardly to cross the binding edge 31, and the covering edge 17 will restore its original shape after the user releases his/her hands. By pressing different positions of the molded pulp cup lid 1, the covering edge 17 can cross and cover the binding edge 31.

[0017] In FIG. 9, when the user wants to drink the beverage contained in the cup 30, the user presses the pusher 22 protruded from the molded pulp cup lid 1 by hands, and then applies a force to push the pusher 22 backward, and the easy-to-tear edge 23 coupled to the opening plate 21 and the drinking opening 20 will be broken immediately, and torn all the way to the easy folding edge 211, and the pusher 22 together with the opening plate 21 will be deflected and turned by using the easy folding edge 211 as an axis of rotation. Now, the pusher 22 will touch the inner side of the blocking platform 25 first, and the pusher 22 will push the accommodating cavity 24 for an urgent stay when the pushing force is applied continuously. Therefore, the drinking opening 20 is no longer blocked or covered by the opening plate 21 and the pusher 22, so that the drinking opening 20 can be exposed and provided for the user to drink the beverage contained in the cup 30 through the drinking opening 20.

[0018] The takeout paper cup generally contains hot drink (such as freshly brewed coffee, etc.), so that the user must set his/her mouth onto the drinking opening 20 and tilts the cup in order to drink the beverage. In the structure of the molded pulp cup lid 1 of the present invention, the drinking opening 20 is formed on the high platform 14, and the bottom of the high platform 14 is separated to provide a small space as shown in FIG. 9, so that when the user sets his/her mouth to the drinking opening 20 and tilts the cup to drink the beverage, the beverage contained in the cup will flow into the small space under the high platform 14, and the flow is limited to produce a buffering effect. As a result, the beverage can flow slowly and smoothly out from the drinking opening 20 without the risk of scaring the user or spilling the beverage on the user.

[0019] With reference to FIGS. 1, 2 and 8 for a molded

pulp cup lid 1 in accordance with an embodiment of the present invention, the cup top 15 is not situated at the center of the molded pulp cup lid 1 but situated in an offset status, so that two "takeout paper cups" can be stacked with each other to facilitate their carry. In FIG. 10, this invention designs the bottom of the cup 30 has an outer diameter equal to the diameter of the cup top 15, and the distance h between the bottom surface and the bottom edge of the cup 30 is slightly greater than the height of the blocking platform 25, so that the bottom of a takeout paper cup can be put on the cup top 15 of another takeout paper cup, and the bottom of the upper takeout paper cup can be placed exactly into the cup top 15 of the lower takeout paper cup, and the space between the bottom edge and bottom surface of the upper takeout paper cup can be provided for allowing the blocking platform 25 of the takeout paper cup to stay. Therefore, the upper and lower takeout paper cups can be stacked with each other as shown in FIG. 10.

[0020] In an embodiment of the present invention, when the upper and lower takeout paper cups are stacked, the upper takeout paper cup is offset with respect to the lower takeout paper cup, so that the upper and lower takeout paper cups will be stacked in a way that one on the left and the other one on the right. When the user hold the upper and lower takeout paper cups by both hands (including a left hand and a right hand), the user's palm can touch the cup 30 closer to provide a better stability to facilitate the carry of the cup 30.

[0021] The main idea of the present invention is to use a mixture of paper pulp and/or plant fiber to produce molded pulp cup lid 1 by the manufacturing processes including molding, pulp suction, shaping, and hot press molding. This invention is characterized in that the molded pulp cup lid 1 comprises the covering edge 17 capable of covering the binding edge 31 of the cup 30, the cup top 15 with an offset position, and the drinking opening 20 formed on the high platform 14 and has the effects of preventing the beverage (or liquid) contained in the cup 30 from spilling out, facilitating the carry of the cups 30 by stacking them on top of one another, and retarding the flow of the beverage flowing out from the drinking opening 20.

[0022] In summation of the description above, the present invention complies with the patent application requirements, and is duly submitted to the Patent and Trademark Office for review and granting of commensurate patent rights.

Claims

1. A molded pulp cup lid (1), comprising a main surrounding wall (10) surrounded into a circle, a rear arc edge (11) upwardly erected from a rear side of the main surrounding wall (10), and both sides of the rear arc edge (11) extending forward and surrounding from both sides to form a horizontal side platform (12), and the front of the side platform (12) being inclined and extended to a section of an oblique protective slope (13), and the fronts of the oblique protective slopes (13) on both sides being combined into a high platform (14), and the junction of an inner edge of the high platform (14) and the inner edges of the oblique protective slopes (13) on both sides being tangentially drooped in an arc shape to form an inner protective wall (141); and the rear arc edge (11), side platform (12), oblique protective slope (13) and high platform (14) being surrounded into a circle, and a cup top (15) being formed at the middle and having a height lower than the cup top (15) after being offset, and the cup top (15) having a small venting hole (151) formed thereon; and a drinking opening (20) being concavely formed in the height-wise direction at the center position of the high platform (14), and a horizontal opening plate (21) being formed on a side of the drinking opening (20), and the inner edge of the drinking opening (20) being the top edge of the inner protective wall (141) to constitute an easy folding edge (211), and a pusher (22) being formed and protruded from the central position of the opening plate (21), and the connecting edges of the opening plate (21) and the drinking opening (20) except the easy folding edge being tapered thin easy-to-tear edges (23), and the easy-to-tear edges (23) reaching the easy folding edge(211); and an accommodating cavity (24) being downwardly and concavely formed on the cup top (15) and at a position with a distance from the high platform (14), and a hatchback raised blocking platform (25) being formed at the rear of the accommodating cavity (24), and the blocking platform (25) encircling the accommodating cavity (24) from both sides; and the bottom of the main surrounding wall (10) extending outwardly to a small distance to form a countertop (16) and then bent downwardly and extended to inwardly in an arc shape to form a covering edge (17), and then expanded outwardly to form a lift plate (18).

2. The molded pulp cup lid (1) according to claim 1, wherein the easy-to-tear edge (23) is cut into a thickness smaller than half of its original thickness.

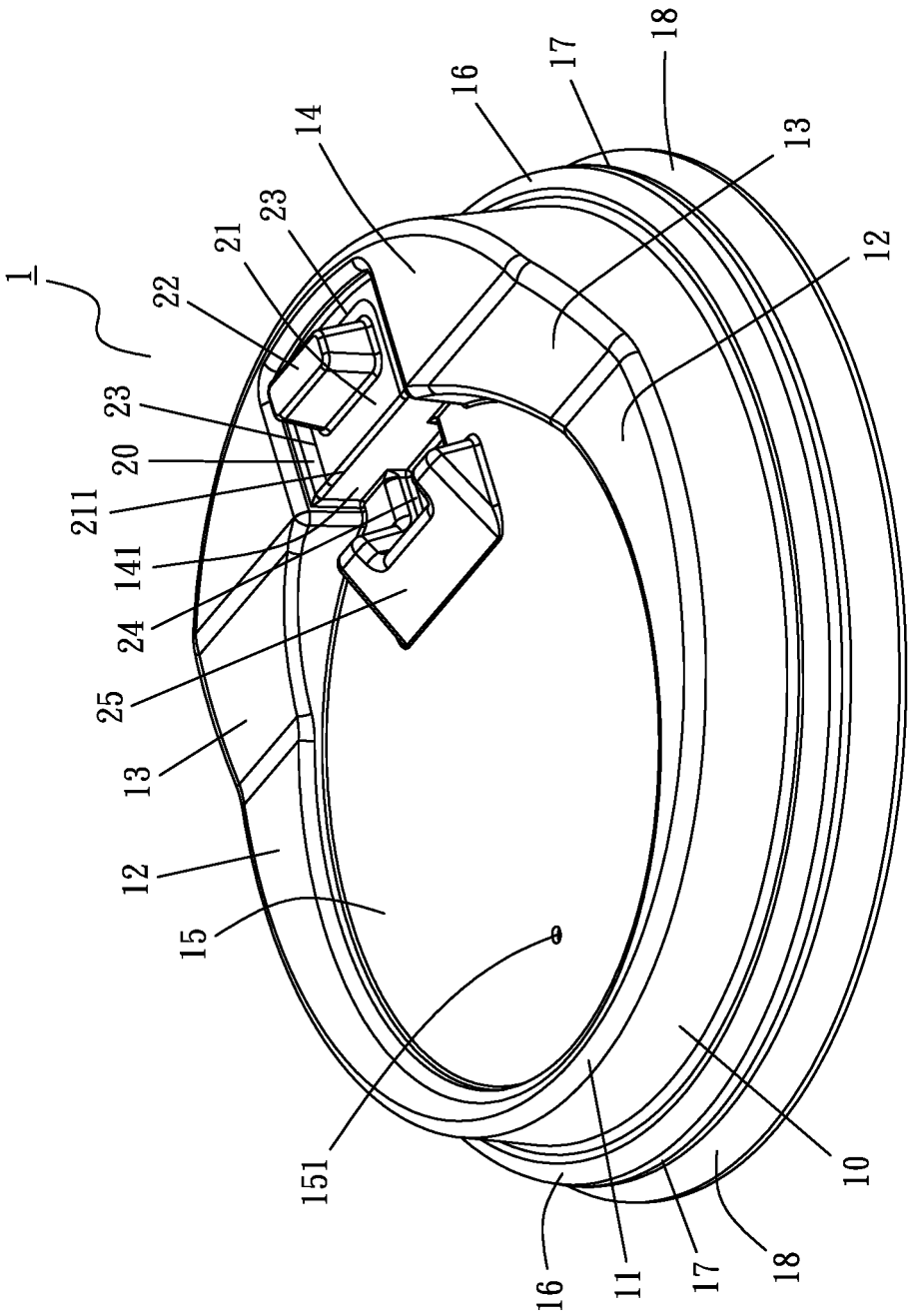
1
22
21
23
14
16
17
18
13
12
23
20
211
141
24
25
13
12
15
θ
151
16
11
17
18
10

FIG. 1

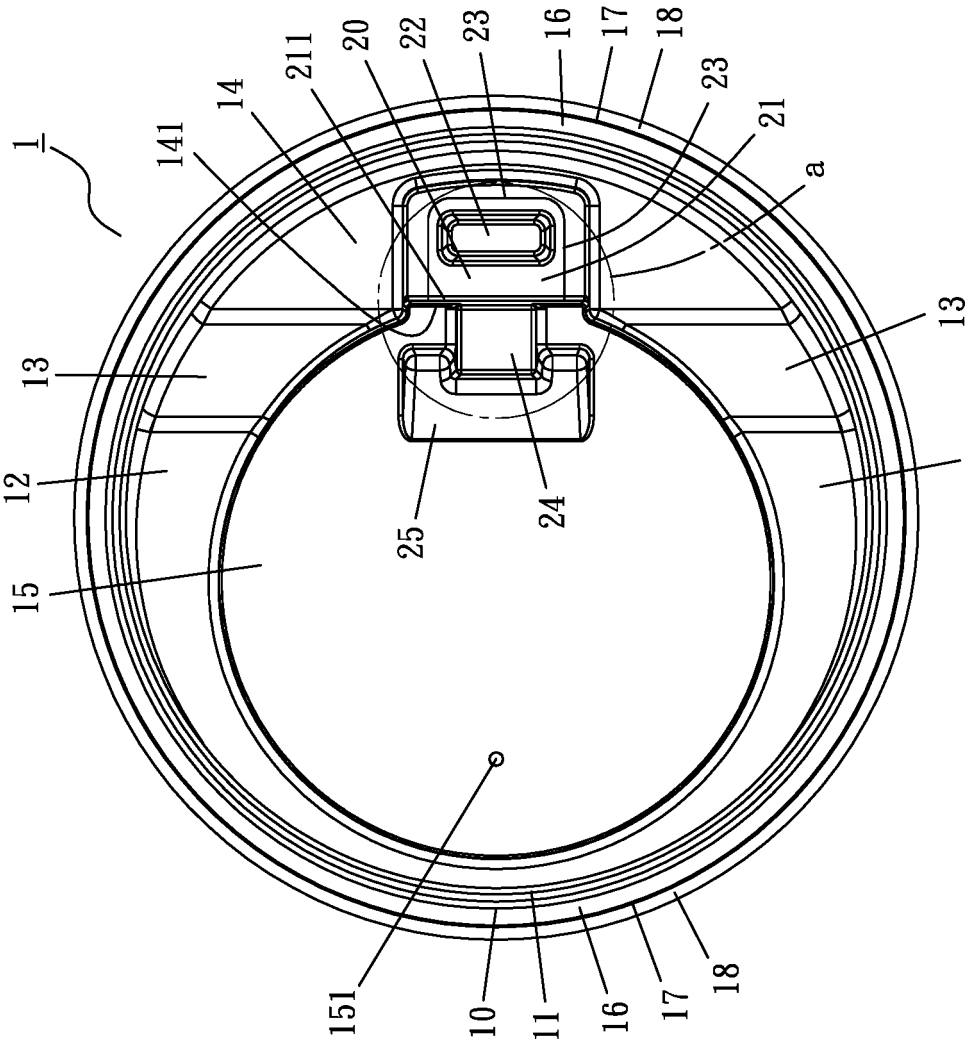
1
141
14
211
20
22
23
16
17
18
23
21
a
13
13
12
12
15
25
24
151
10
11
16
17
18

FIG. 2

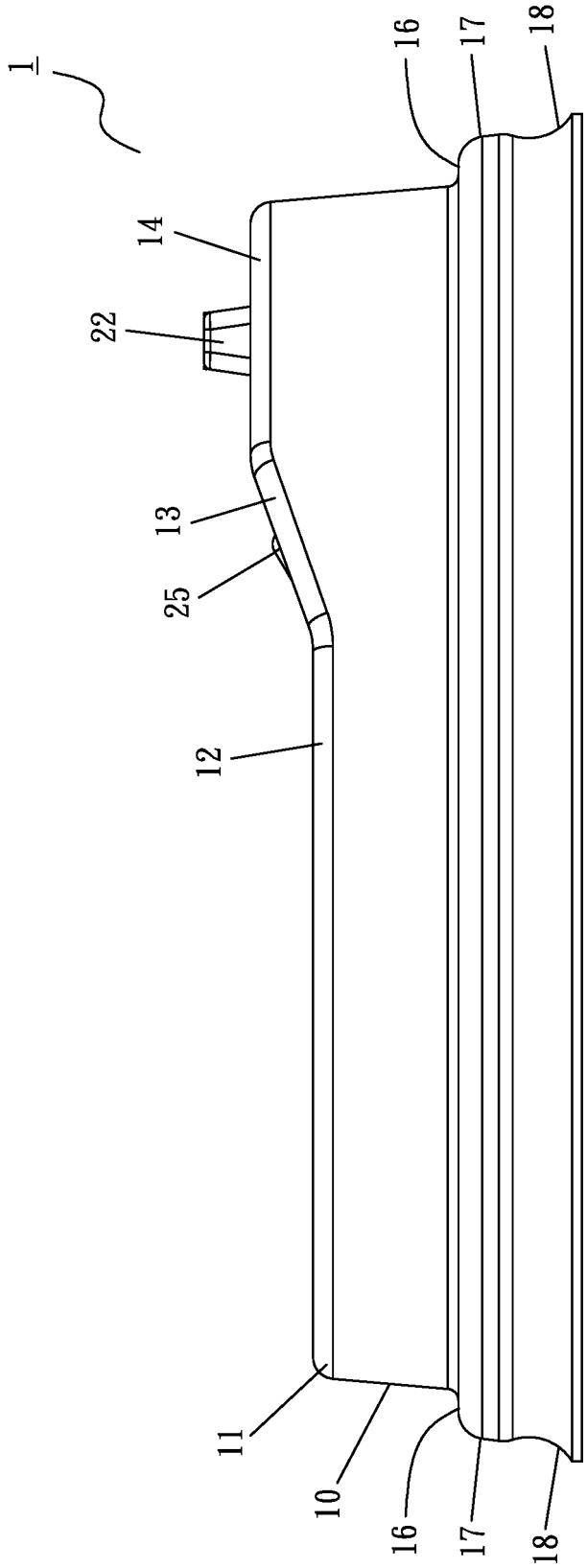

FIG. 3

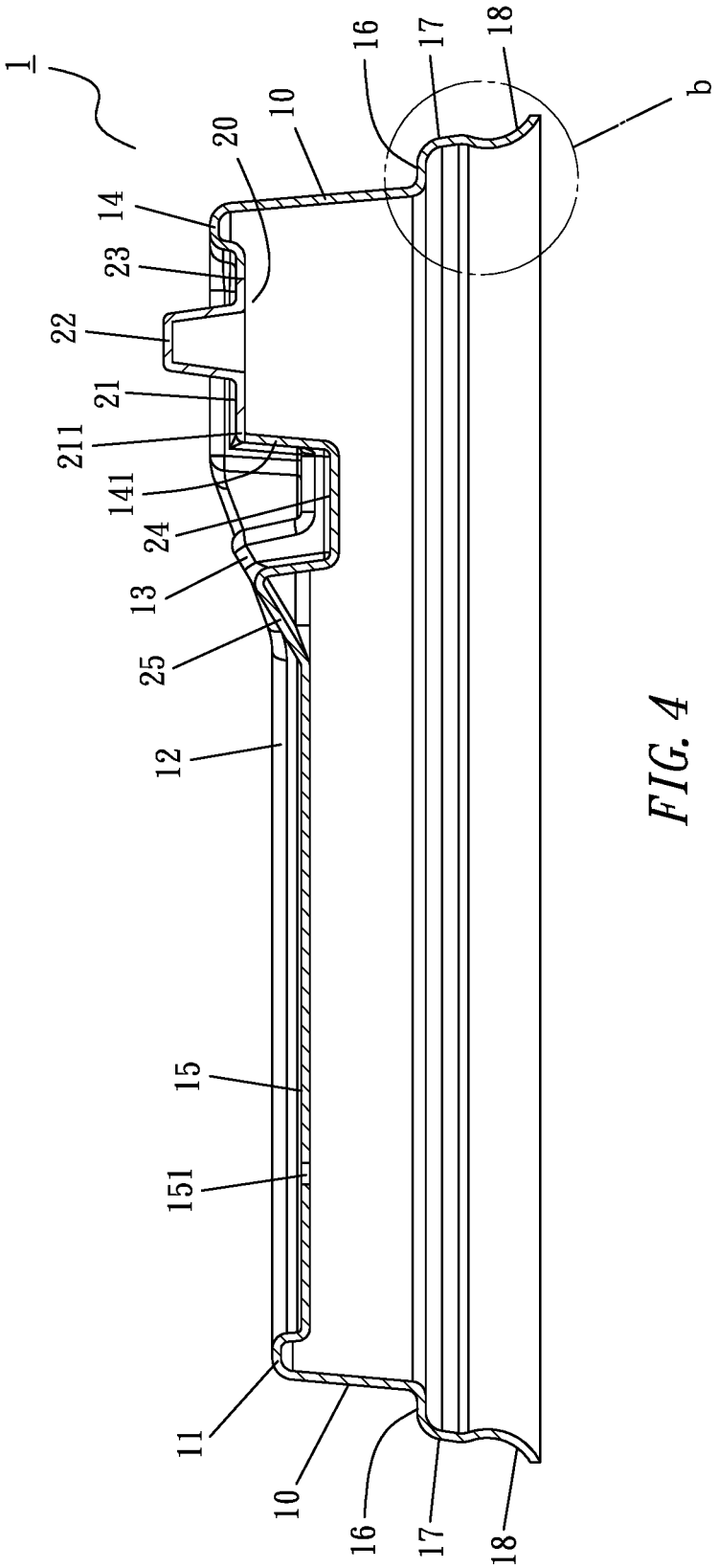

FIG. 4

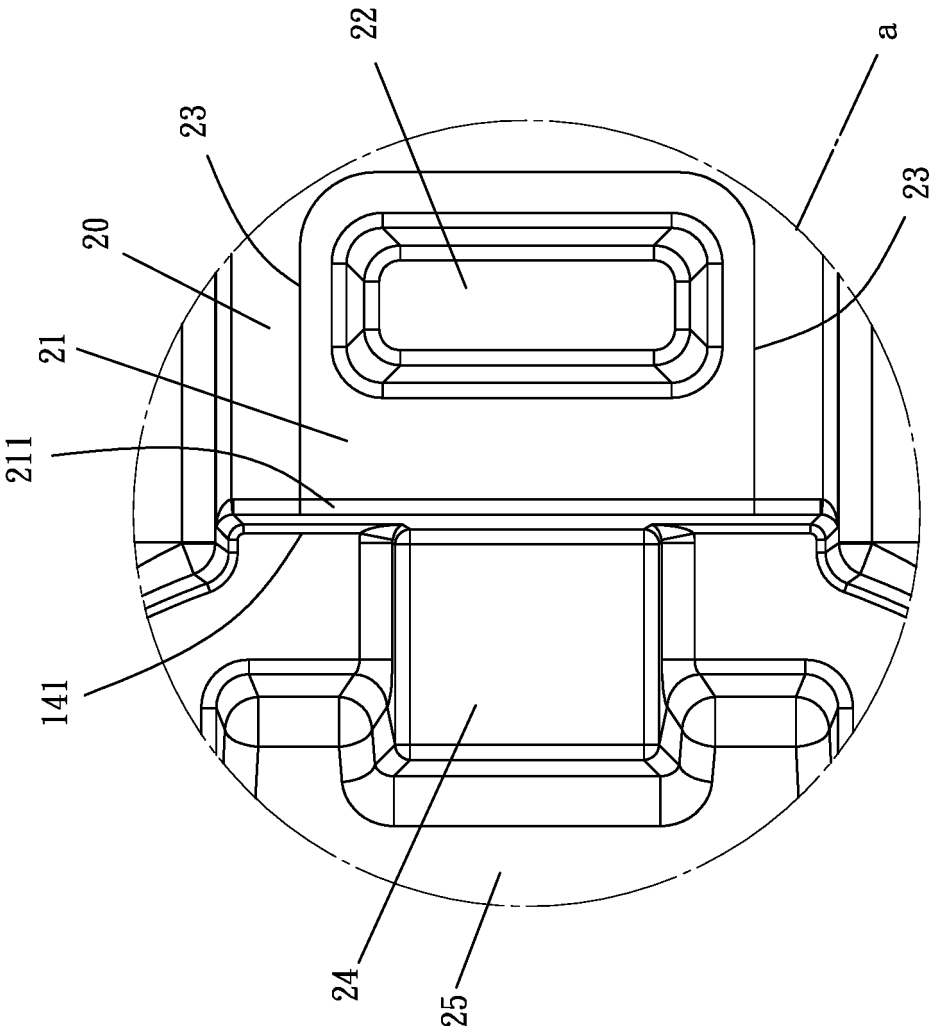

FIG. 5

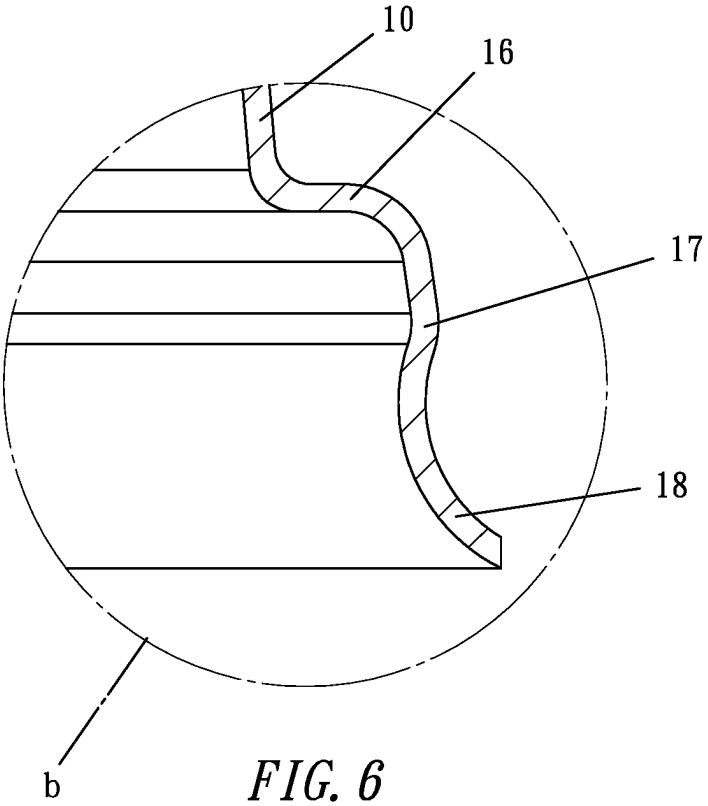

FIG. 6

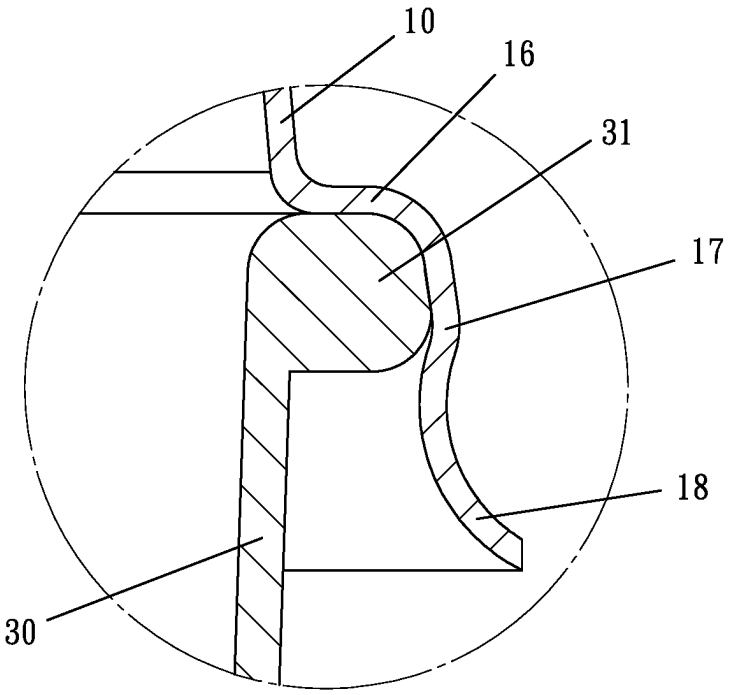

FIG. 7

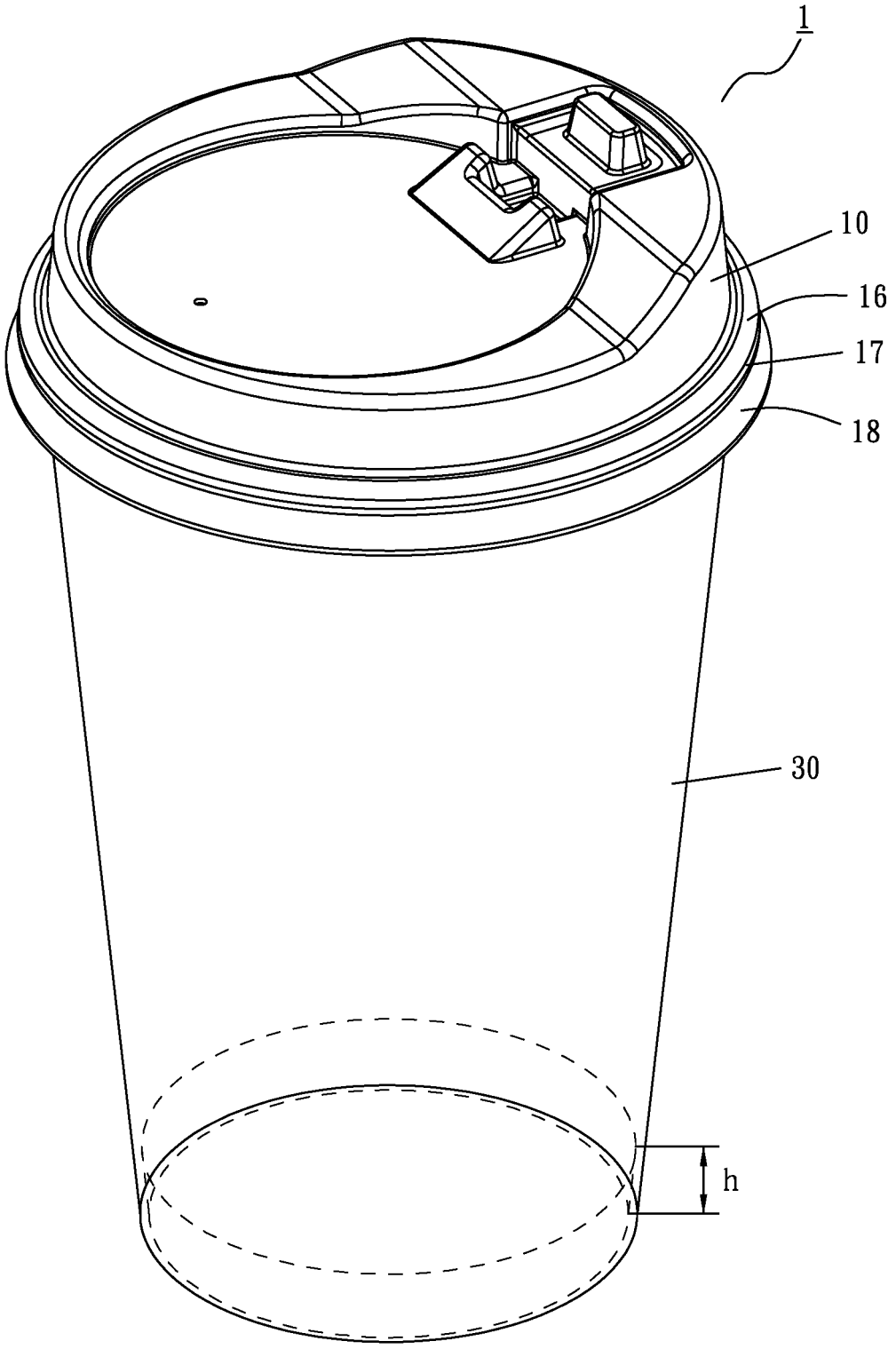

FIG. 8

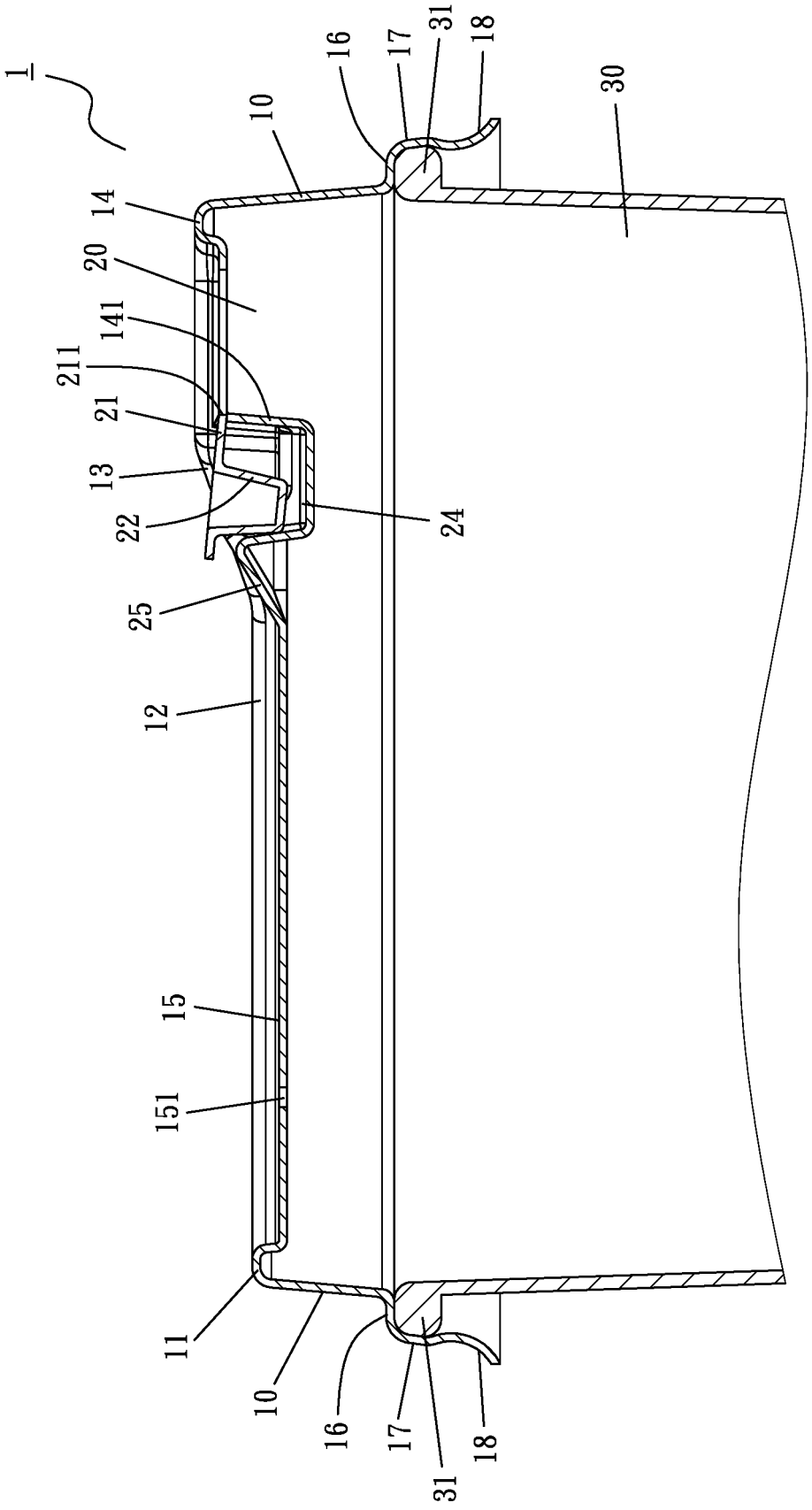
1
10
16
17
31
18
30
14
20
141
211
21
13
22
24
25
12
15
151
11
10
16
17
31
18

FIG. 9

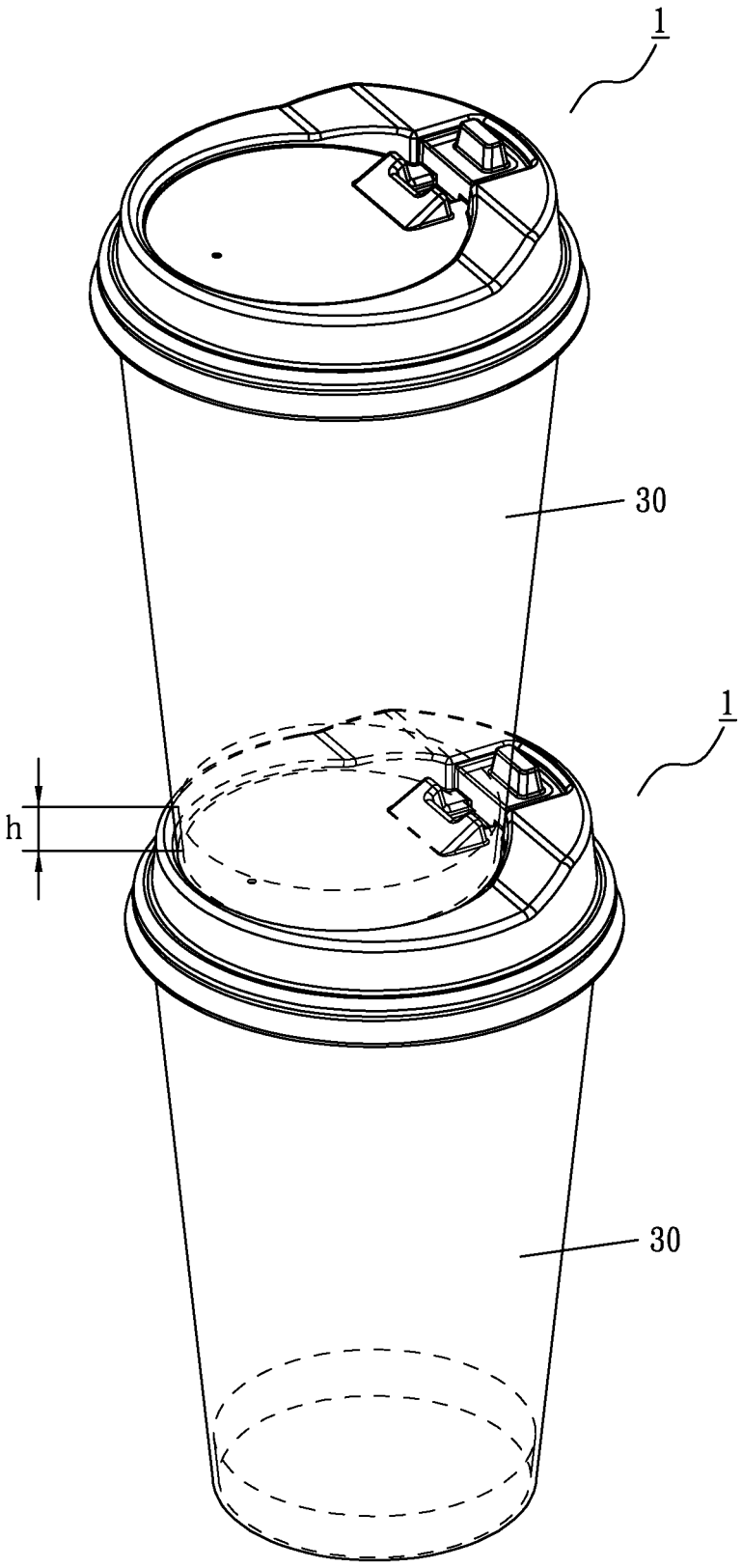

FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2018/000199

A. CLASSIFICATION OF SUBJECT MATTER

B65D 41/04(2006.01)i

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)

CNABS, SIPOABS, CNKI: 纸杯, 杯盖, 盖子, 凸缘, 隆起, 凸起, 孔, 口, 密封; paper, cup, cover? , flange, hole, aperture, seal+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 102917961 A (BOCA ENTERPRISE GROUP, INC.) 06 February 2013 (2013-02-06) description, paragraphs 0037-0067, and figures 1-12	1-2
A	CN 206734926 U (HANGZHOU WEI CHUAN FOODS CO., LTD.) 12 December 2017 (2017-12-12) entire document	1-2
A	CN 201140842 Y (LI, JIANZHANG) 29 October 2008 (2008-10-29) entire document	1-2
A	CN 102149609 A (SEDA S.P.A.) 10 August 2011 (2011-08-10) entire document	1-2
A	CN 107869094 A (SANHO AGRICULTURAL ENERGY TECHNOLOGY LTD.) 03 April 2018 (2018-04-03) entire document	1-2
A	JP 2006001582 A (WATANABE, M.) 05 January 2006 (2006-01-05) entire document	1-2

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 January 2019	**27 February 2019**

Name and mailing address of the ISA/CN	Authorized officer
State Intellectual Property Office of the P. R. China **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	
Facsimile No. **(86-10)62019451**	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2018/000199

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 102917961 A	06 February 2013	CN 104843303 A	19 August 2015
		US 8777049 B2	15 July 2014
		WO 2011149583 A4	15 March 2012
		US 2011290817 A1	01 December 2011
		WO 2011149583 A3	19 January 2012
		US 9802735 B2	31 October 2017
		NZ 620289 A	26 September 2014
		EP 2576377 A4	22 April 2015
		CA 2957905 A1	27 November 2011
		JP 5941042 B2	29 June 2016
		WO 2011149583 A2	01 December 2011
		MX 338077 B	01 April 2016
		AU 2011258832 A1	20 December 2012
		ZA 201208610 B	29 January 2014
		MX 2012013657 A	24 January 2013
		EP 2576377 A2	10 April 2013
		CA 2732609 A1	27 November 2011
		SG 185443 A1	28 December 2012
		IL 222959 D0	03 February 2013
		US 2014246448 A1	04 September 2014
		JP 2013530888 A	01 August 2013
		HK 1180663 A1	22 January 2016
		AU 2011258832 B2	21 May 2015
		US 2013248544 A1	26 September 2013
		US 8430268 B2	30 April 2013
		CN 102917961 B	25 March 2015
		IL 222959 A	30 June 2016
		CA 2732609 C	28 March 2017
		IN 2546MUN2012 A	29 May 2015
		NZ 603785 A	31 January 2014
		EP 2576377 B1	28 November 2018
		CN 104843303 B	23 March 2018
CN 206734926 U	12 December 2017	None	
CN 201140842 Y	29 October 2008	None	
CN 102149609 A	10 August 2011	CA 2735841 A1	18 March 2010
		JP 2012501922 A	26 January 2012
		SI EP2346742 T1	30 August 2013
		RU 2496698 C2	27 October 2013
		DE 202008012116 U1	11 February 2010
		CN 102149609 B	22 July 2015
		RS 52844 B	31 December 2013
		JP 5559794 B2	23 July 2014
		US 8528768 B2	10 September 2013
		ZA 201101708 B	30 November 2011
		US 2011198351 A1	18 August 2011
		RU 2011108641 A	20 October 2012
		EP 2346742 B1	03 April 2013
		ES 2419388 T3	20 August 2013
		DK 2346742 T3	01 July 2013
		AU 2008361608 A1	18 March 2010

Form PCT/ISA/210 (patent family annex) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2018/000199

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
				SI	2346742	T1	30 August 2013
				WO	2010028677	A1	18 March 2010
				HK	1160089	A1	10 January 2014
				CA	2735841	C	24 October 2017
				SM	P201100016	B	11 November 2011
				UA	100590	C2	10 January 2013
				MX	2011002624	A	07 April 2011
				HR	P20130587	T1	31 August 2013
				KR	20110065466	A	15 June 2011
				BR	PI0823059	A2	16 June 2015
				EP	2346742	A1	27 July 2011
				PT	2346742	E	09 July 2013
				NZ	591483	A	28 June 2013
				SM	AP201100016	A	11 July 2011
CN	107869094	A	03 April 2018	TW	201812140	A	01 April 2018
				US	2018086511	A1	29 March 2018
				TW	I610007	B	01 January 2018
JP	2006001582	A	05 January 2006	None			

Form PCT/ISA/210 (patent family annex) (January 2015)