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(54) **NEGATIVE ANGLE PULP MOLDED CUP LID**

(57) Disclosed is a negative angle pulp molded cup lid, wherein the cup lid is made of pulp and comprises a top portion (1) and a side portion (2) connected to an edge of the top portion (1). An inner wall of the side portion (2) has an inner conical surface (31), the inner conical

surface (31) forms an angle of less than 90° with a lower surface of the top portion (1), and the inner diameter of the inner conical surface (31) gradually decreases from top to bottom, such that the sealing property and the structural strength can be improved.

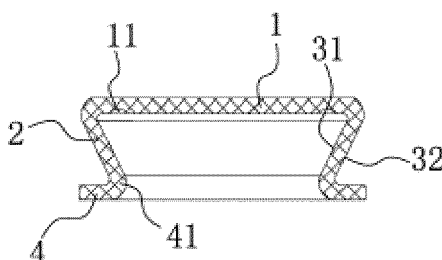


FIG. 1

Description

Technical Field

[0001] The present utility model belongs to the technical field of cup lids, in particular to a negative angle pulp molded cup lid.

Background Art

[0002] A pulp cup lid generally has an opening, which is placed on the top of a pulp cup.

[0003] At present, the existing seal between the lid and the cup is generally formed by providing a sealing structure on the top of the cup, which can avoid leakage between the lid and the cup.

[0004] However, the above structure may still have the problem of leakage. Thus, some inventors have designed a convex sealing structure provided on the inner wall of the cup lid. This structure not only improves the sealing effect, but also improves the anti-off feature between the lid and the cup.

[0005] Although it has the above mentioned improvements, its improved solution still has at least the following deficiencies: after repeated connection and disconnection between the cup and the lid, the diameter of the lid could be enlarged invisibly; in such a case, this enlargement can compromise the sealing effect between the cup and the lid.

Summary of the Utility Model

[0006] In view of the above problems, the object of the present utility model is to provide a negative angle pulp molded cup lid that can improve sealing performance and structural strength.

[0007] In order to achieve the above object, the present utility model adopts the following technical solution: a negative angle pulp molded cup lid is provided, wherein the cup lid is made of pulp and comprises a top portion and a side portion connected to an edge of the top portion, an inner wall of the side portion has an inner conical surface, the inner conical surface forms an angle of less than 90° with a lower surface of the top portion, and the inner diameter of the inner conical surface gradually decreases from top to bottom.

[0008] In the negative angle pulp molded cup lid mentioned above, the side portion has an equal wall thickness.

[0009] In another solution, in the negative angle pulp molded cup lid mentioned above, the side portion has a wall thickness that gradually increases from top to bottom.

[0010] In the negative angle pulp molded cup lid mentioned above, an outer wall of the side portion has an outer conical surface symmetrical to the inner conical surface.

[0011] An axis of the inner conical surface coincides

with an axis of the outer conical surface.

[0012] In the negative angle pulp molded cup lid mentioned above, an outer edge of the lower surface of the top portion is provided with an annular sealing groove, which allows an opening of a cup to snap therein.

[0013] In the negative angle pulp molded cup lid mentioned above, the rib is parallel to the top portion.

[0014] In another solution, in the negative angle pulp molded cup lid mentioned above, the rib is arranged obliquely downward and outward.

[0015] In the negative angle pulp molded cup lid mentioned above, an inner wall of a lower end of the inner conical surface is provided with an inner convex annular portion.

[0016] In the negative angle pulp molded cup lid mentioned above, the inner convex annular portion has a circular arc convex surface.

[0017] In the negative angle pulp molded cup lid mentioned above, the thickness of the convex part of the inner convex annular portion is smaller than the wall thickness of the conical portion.

[0018] In the negative angle pulp molded cup lid mentioned above, the side portion and the inner convex annular portion are integrally formed.

[0019] Compared with the prior art, the negative angle pulp molded cup lid of the present invention has the following advantages:

1. The structure is simple and easy to manufacture.

2. The designed inner conical surface, which cooperates with the outer convex annular structure at the upper end of the cup, can achieve the functions of enhancing the sealing effect and the connecting structure between the cup and the lid, avoiding the lid's falling off and lid leakage; the design is more reasonable and the structure is more reliable and stable.

3. Through the structure formed by the inner convex annular portion in combination with the annular sealing groove surface, the present invention can further improve the structural strength, as well as the reliability of the connection, cooperation and the sealing effect.

Brief Description of the Drawings

[0020]

FIG. 1 is a schematic view of the structure according to the present utility model.

FIG. 2 is a schematic view of a structure with an inner convex annular portion according to the present utility model.

FIG. 3 is a schematic view of the structure shown in Example 4 according to the present utility model.

FIG. 4 is a schematic view of the structure of the

outer wall of the side portion in a vertical state according to the present utility model.

FIG. 5 is a schematic view of the structure of the outer wall of the side portion in an obliquely outward state according to the present utility model.

FIG. 6 is a schematic view of the state of the utility model after being fitted with a cup.

[0021] In the above figures, top portion 1, side portion 2, inner conical surface 31, outer conical surface 32, inner convex annular portion 33, circular arc convex surface 331, rib 4, circular arc portion 41, annular portion 5

Description of the Embodiments

[0022] The technical solutions of the present utility model will be further described in detail in reference to the specific embodiments of the present utility model and accompanying drawings. However, the present utility model is not limited to these embodiments.

Example I

[0023] As shown in FIG. 1 to FIG. 5, for the negative angle pulp molded cup lid, the cup lid is made of pulp, which includes a top portion 1 and a side portion 2 connected to an edge of the top portion 1. The top portion 1 and the side portion 2 are made by pulp injection.

[0024] Specifically, the inner wall of the side portion 2 has an inner conical surface 31 which forms an angle of less than 90° with the lower surface of the top portion 1, and the inner diameter of the inner conical surface 31 gradually decreases from top to bottom. The inner conical surface cooperates with the outer convex annular portion at the upper portion of the cup to achieve the functions of enhancing the sealing effect and the connecting structure between the cup and the lid, avoiding the lid falling's off and lid leakage; the design is more reasonable and the structure is more reliable and stable.

[0025] In an optimized solution, as shown in FIG. 4 to FIG. 6, the side portion 2 has a wall thickness gradually increasing from top to bottom.

[0026] An annular sealing groove 11 is provided on the outer edge of the lower surface of the top portion 1 for the cup opening to snap in. The annular sealing groove 11 can further improve the sealing performance.

[0027] At the end of the side portion 2 away from the top portion 1, a rib that is folded outward is provided.

[0028] The rib 4 is parallel to the top portion 1.

[0029] In addition, an inner convex annular portion 33 is provided on the inner wall of the lower end of the inner conical surface 31.

[0030] The inner convex annular portion 33 can further improve the sealing performance.

[0031] The inner convex annular portion 33 has a circular arc convex surface 331.

[0032] The side portion 2 and the inner convex annular portion 33 are integrally formed.

[0033] In this example, the designed inner conical surface 31 achieves a sealing effect with the cup, and at the same time, it can avoid the issue that the cup lid is detached upward.

[0034] Secondly, the designed annular sealing groove 11 forms a seal with the cup opening at the top of the cup, which can further enhance the sealing effect at the connection.

Example II

[0035] As shown in FIG. 1 to FIG. 3, The structure and principle of this example are basically the same as those of example 1, and thus will not be repeated herein. The difference between them is that the wall thickness of the side portion 2 is equal in this example.

Example III

[0036] The structure and principle of this example are basically the same as those of example 1, and thus will not be repeated herein. The difference between them is that the rib 4 is arranged obliquely downward and outward.

Example IV

[0037] The structure and principle of this example are basically the same as those of example 1, and thus will not be repeated herein. The difference between them is that an annular portion 5 is provided at the lower end of the side portion 3.

[0038] The specific embodiments described in the present application are only examples of the spirit of the present utility model. A person skilled in the art to which the present utility model belongs can make various modifications or additions to the described specific embodiments or replace them with similar alternative manners, which do not deviate from the spirit of the present utility model or go beyond the scope defined by the appended claims.

Claims

1. A negative angle pulp molded cup lid, wherein the cup lid is made of pulp and comprises a top portion (1) and a side portion (2) connected to an edge of the top portion (1), **characterized in that** an inner wall of the side portion (2) has an inner conical surface (31), the inner conical surface (31) forms an angle of less than 90° with a lower surface of the top portion (1), and the inner diameter of the inner conical surface (31) gradually decreases from top to bottom.
2. The negative angle pulp molded cup lid according to claim 1, **characterized in that** the side portion (2)

has an equal wall thickness.

3. The negative angle pulp molded cup lid according to claim 1, **characterized in that** the side portion (2) has a wall thickness that gradually increases from top to bottom. 5
4. The negative angle pulp molded cup lid according to claim 1, **characterized in that** an outer wall of the side portion (2) has an outer conical surface (32) symmetrical to the inner conical surface (31). 10
5. The negative angle pulp molded cup lid according to claim 1, **characterized in that** an outer edge of the lower surface of the top portion (1) is provided with an annular sealing groove (11), which allows an opening of a cup to snap therein. 15
6. The negative angle pulp molded cup lid according to claim 1, **characterized in that** an end of the side portion (2) away from the top portion (1) is provided with a rib (4) that is folded outward. 20
7. The negative angle pulp molded cup lid according to claim 6, **characterized in that** the rib (4) is parallel to the top portion (1). 25
8. The negative angle pulp molded cup lid according to claim 6, **characterized in that** the rib (4) is arranged obliquely downward and outward. 30
9. The negative angle pulp molded cup lid according to claim 1, **characterized in that** an inner wall of a lower end of the inner conical surface (31) is provided with an inner convex annular portion (33). 35
10. The negative angle pulp molded cup lid according to claim 9, **characterized in that** the side portion (2) and the inner convex annular portion (33) are integrally formed. 40

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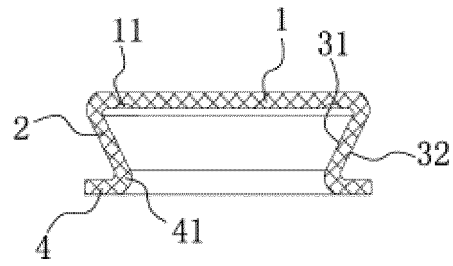


FIG. 1

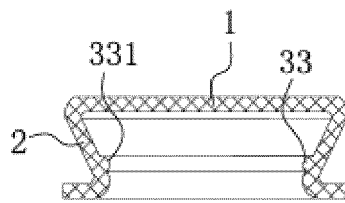


FIG. 2

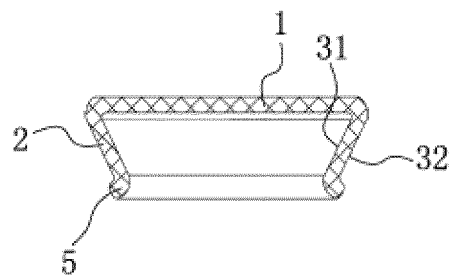


FIG. 3

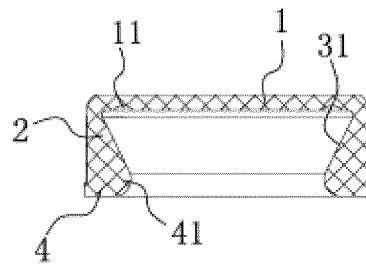


FIG. 4

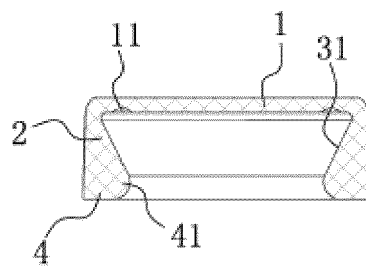


FIG. 5

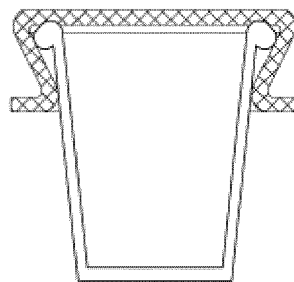


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2019/070942

5	A. CLASSIFICATION OF SUBJECT MATTER		
	A47G 19/22(2006.01)i; A47G 19/00(2006.01)i; B65D 41/00(2006.01)i; B65D 41/02(2006.01)i		
	According to International Patent Classification (IPC) or to both national classification and IPC		
	B. FIELDS SEARCHED		
10	Minimum documentation searched (classification system followed by classification symbols) A47G; :B65D		
	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
15	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNPAT, EPODOC, WPI, CNKI: 江苏绿森包装, 刘致嘉, 仝骥, 陈维民, 杯盖, 瓶盖, 盖子, 锥形, 斜, 负角度, 角度, 纸, 密封槽, 槽, 密封, 挡边, 翻边, 沿, 内凸, 凸环, cover, cap, capsule, top, lid, taper, bevel, incline, slant, negative, angle, paper, pulp, seal, groove, edge, fringe, protrude, annulus, loop, ring		
	C. DOCUMENTS CONSIDERED TO BE RELEVANT		
20	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	X	CN 2035341 U (LU, GUOQIANG) 05 April 1989 (1989-04-05) description, page 3, and figure 1	1-4
25	X	CN 2138642 Y (YAN, YIHAO) 21 July 1993 (1993-07-21) description, page 2, and figures 1-2	1-4, 6-8
	X	CN 87206542 U (ZHAO, HONG) 28 September 1988 (1988-09-28) description, page 3, and figure 1	1-4, 6-8
	Y	CN 87206542 U (ZHAO, HONG) 28 September 1988 (1988-09-28) description, page 3, and figure 1	5, 9, 10
30	Y	TW 610007 B (SANHO AGRICULTURAL ENERGY TECHNOLOGY LTD. ET AL.) 01 January 2018 (2018-01-01) description, paragraphs 13-15, and figures 1-2	5, 9, 10
	A	CN 2055127 U (NANCHANG CANNED BEER FACTORY) 28 March 1990 (1990-03-28) entire document	1-10
35	A	CN 204264636 U (ZIQUAN PACKAGING CO., LTD.) 15 April 2015 (2015-04-15) entire document	1-10
	☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
40	* 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 01 March 2019		Date of mailing of the international search report 08 April 2019
50	Name and mailing address of the ISA/CN State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088 China		Authorized officer
55	Facsimile No. (86-10)62019451		Telephone No.

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

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2019/070942

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0798225 A1 (STELPLAST DI VIDALE STELVIO & C.S.A.S.) 01 October 1997 (1997-10-01) entire document	1-10

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

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2019/070942

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 2035341 U	05 April 1989	None	
CN 2138642 Y	21 July 1993	None	
CN 87206542 U	28 September 1988	None	
TW 610007 B	01 January 2018	TW 201812140 A	01 April 2018
		US 2018086511 A1	29 March 2018
		CN 107869094 A	03 April 2018
CN 2055127 U	28 March 1990	None	
CN 204264636 U	15 April 2015	None	
EP 0798225 A1	01 October 1997	IT PD960076 A1	25 September 1997
		IT 1287222 B1	04 August 1998

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