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(54) **CUP LID AND CUP**

(57) A lid and a cup are disclosed, relates to the technical field of cups. The lid includes a fixing ring, a sealing cover, and an elastic connecting structure; the fixing ring, the elastic connecting structure, and the sealing cover are sequentially connected from outside to inside; at least one water outlet hole is arranged on the elastic connecting structure; a middle part of the fixing ring is arranged with a water outlet; the elastic connecting structure is used to change a position of the sealing cover, making the sealing cover close or open the water outlet. The sealing cover can seal the water outlet below after being pressed, thereby sealing the cup. The cup cover can be made by an integral molding process, with few preparation steps and low cost.

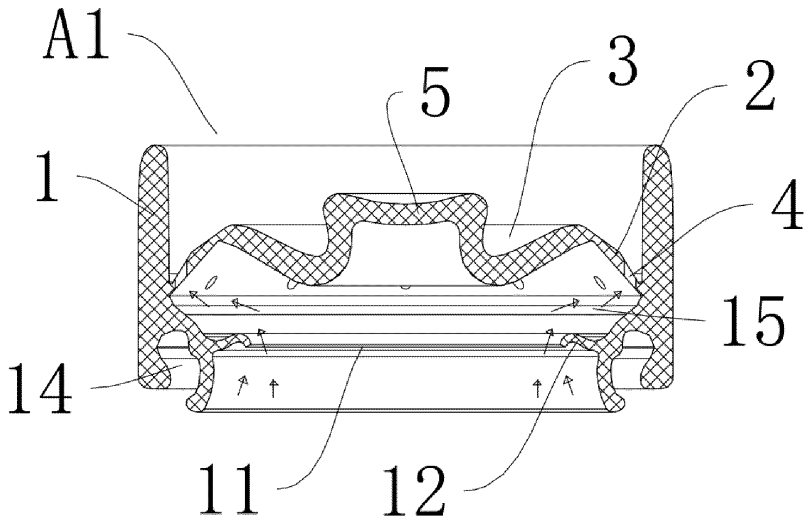

Fig. 2

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Description

FIELD OF THE DISCLOSURE

[0001] The present disclosure relates to the technical field of cups, in particular to a lid and a cup.

BACKGROUND

[0002] Cups are necessity in daily life. In order to avoid spilling the liquid from the cup or exposing the liquid in the cup to air for a long time, the cup is equipped with a lid according to the use needs.

[0003] At present, the lid and the cup are mainly connected or clamped by threads. The way of clamping shows different sealing and connecting effects according to different cup materials. For instance, the soft plastic cups used in bubble tea shops or juice shops tend to have lids that are easily detached from the cup body after the cup body is clamped with the lid, and can only be laid flat after being filled with liquid. Another kind of hard plastic cup, although having good water tightness with the lid being hard to be separated from the cup body, is difficult to open, and once the force is excessive, it also leads to liquid spillage.

[0004] Basically, the lids and bodies of thermos cups (thermos pots) are connected by threads. The middle part of the lids of some thermos cups are provided with a push button to facilitate opening and closing, but it has some disadvantages such as relatively complex structure, more accessories, more assembly processes, heavy weight and high cost, so the price of this kind of thermos cups is higher. Therefore, at present, there is no lid with light weight, good water tightness, low cost and convenient opening and closing.

[0005] It can be seen that the existing technology needs to be improved and developed.

BRIEF SUMMARY OF THE DISCLOSURE

[0006] According to the above-mentioned defect of the prior art, the purpose of the present disclosure is to provide a cup and a lid to solve the problem that the advantages of good water tightness, no need for assembly and easy opening and closing of the lid are difficult to achieve simultaneously in the prior art.

[0007] To achieve the purposes, the present disclosure adopts following technical schemes.

[0008] A lid, which includes a fixing ring, further includes a sealing cover and an elastic connecting structure; the fixing ring, the elastic connecting structure, and the sealing cover are sequentially connected from outside to inside; at least one water outlet hole is arranged on the elastic connecting structure; a middle part of the fixing ring is arranged with a water outlet; the elastic connecting structure is used to change a position of the sealing cover, making the sealing cover close or open the water outlet.

[0009] In the lid, a first circular sealing strip is arranged on an inner side wall of the fixing ring, an area surrounded by the first circular sealing strip forms the water outlet; when the sealing cover closes the water outlet, the first circular sealing strip abuts against the sealing cover.

[0010] In the lid, a middle part of the sealing cover is downward concave; an inner side of the first circular sealing strip protrudes upward.

[0011] In the lid, a second circular sealing strip is arranged on a bottom of the sealing cover; a lower part of the inner side wall of the fixing ring is arranged with a circular protrusion; a middle part of the circular protrusion forms the water outlet; the second circular sealing strip is in interference fit with the water outlet.

[0012] In the lid, a middle part of the sealing cover is downward concave; a top of the second circular sealing strip is fixedly connected with an edge of the sealing cover.

[0013] In the lid, an outer side wall of the elastic connecting structure is fixedly connected to a middle part of the inner side wall of the fixing ring; an inner side wall of the elastic connecting structure is fixedly connected to an upper part of the sealing cover.

[0014] In the lid, a plurality of the water outlet holes are circumferentially arranged on the elastic connecting structure.

[0015] In the lid, a lid handle is arranged on the upper part of the sealing cover.

[0016] In the lid, the lid handle is columnar-shaped; an cavity is arranged inside the lid handle.

[0017] A cup, which includes a cup body and the lid, a circular clamping groove is arranged on a bottom of the fixing ring, a top of the cup body is clamped with the circular clamping groove.

[0018] Beneficial effects: A lid is provided. The lid is arranged with an elastic connecting structure. The elastic connecting structure connects the fixing ring and the sealing cover, so that the sealing cover can respectively seal or open the water outlet on the lid by pressing and pulling, thereby realizing the closing and opening of the cup. The lid is simple in structure, can be prepared by an integral molding process, does not need to be assembled, is convenient to operate and has good water tightness.

[0019] The present disclosure also provides a cup, which includes a cup body and the lid described above. The cup features a simple structure, light weight, low cost, and good sealing performance.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020]

Fig. 1 is a first top view diagram of a lid in one embodiment of the present disclosure.

Fig. 2 is a B-B sectional view of Fig.1.

Fig. 3 is a first sectional view when the lid is in a

closed state in one embodiment of the present disclosure.

Fig. 4 is a second top view diagram of the lid in one embodiment of the present disclosure.

Fig. 5 is an A-A sectional view of Fig.4.

Fig. 6 is a second sectional view when the lid is in a closed state in one embodiment of the present disclosure.

Fig. 7 is a first sectional view of the lid in one embodiment.

Fig. 8 is a second sectional view of the lid in one embodiment.

Fig. 9 is a third sectional view of the lid in one embodiment.

Fig. 10 is a first schematic structural diagram of the lid in one embodiment.

Fig. 11 is a second schematic structural diagram of the lid in one embodiment.

Fig. 12 is a third schematic structural diagram of the lid in one embodiment.

Fig. 13 is a first sectional view of a cup in one embodiment.

Fig. 14 is a second sectional view of the cup in one embodiment.

[0021] Attached drawing marks: A1-lid, A2-cup body, 1-fixing ring, 11-water outlet, 12-first circular sealing strip, 13-circular protrusion, 14-circular clamping groove, 15-water outlet channel, 16-water passage, 17-outer groove wall, 18-second circular rib, 19-inner groove wall, 2-elastic connecting structure, 21-elastic connecting ring, 22-connecting slice, 3-sealing cover, 31-second circular sealing strip, 4-water outlet hole, 5-lid handle, 51-cavity, 6-first circular rib.

DETAILED DESCRIPTION OF EMBODIMENTS

[0022] The technical schemes of the embodiments of the present disclosure are clearly and completely described in combination with the attached drawings in the embodiments of the present disclosure. Obviously, the described embodiments are only a part of embodiments, not whole embodiments of the present disclosure. Based on the embodiments of the present disclosure, all other embodiments obtained by those skilled in the art with no inventive labor should fall within the protection scope of the appended claims of the present disclosure.

[0023] It should be noted that if there are directional indications or location indications (such as up, down, inner, outer etc.) in the embodiments of the present disclosure, the directional indications or location indications are only used to explain the relative position relationship and movement situation among components in a specific posture, rather than indicating or implying that the referred device or element must have a specific orientation and a specific orientation construction and operation. Therefore, it cannot be understood as a limitation of the present disclosure. In addition, terms "first" and "second" are only used for descriptive purposes, and cannot be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Therefore, features defined as "first" and "second" may include one or more of these features explicitly or implicitly. In the description of the present disclosure, unless otherwise specified, "plurality" means two or more.

[0024] As shown in Figs. 1~6. The present disclosure provides a lid A1, which includes a fixing ring 1, a sealing cover 3 and an elastic connecting structure 2. The fixed ring 1, the elastic connecting structure 2 and the sealing cover 3 are sequentially connected from outside to inside. At least one water outlet hole 4 is arranged on the elastic connecting structure 2, a middle part of the fixing ring 1 is arranged with a water outlet 11; the elastic connecting structure 2 is used to change a position of the sealing cover 3, making the sealing cover 3 close or open the water outlet 11. A lower part of the fixing ring 1 is detachably connected with a cup body A2. As shown in Figs. 2 and 5, a lower surface of the fixing ring 1 is arranged with a circular clamping groove 14 for clamping with a top of the cup body A2. As shown in Fig. 8, the lower part of the fixing ring 1 can also be arranged with an internal thread, which is suitable for the cup body A2 with an external thread on an upper part. When the water outlet 11 needs to be closed, the sealing cover 3 is pressed, so that the elastic connecting structure 2 turns down and the sealing cover 3 covers the water outlet 11. When the water outlet 11 needs to be opened, the sealing cover 3 is pulled up, and the elastic connecting structure 2 turns upwards, so that the sealing cover 3 leaves the water outlet 11, and the water outlet 11 is communicated with the water outlet hole 4.

[0025] As shown in Figs. 2 and 5, in one embodiment, when the lid A1 is in the open state, the elastic connecting structure 2 is obliquely arranged upward from the fixing ring 1 to the sealing cover 3, and the sealing cover 3 and the elastic connecting structure 2 form a stable structure protruding upward. At this time, the elastic connecting structure 2 is in the upturned state, so that the sealing cover 3 is located above the water outlet 11. As shown in Figs. 3 and 6. When the lid A1 is in a closed state, the elastic connecting structure 2 is arranged obliquely downward from the fixing ring 1 to the sealing cover 3, and the sealing cover 3 and the elastic connecting structure 2 form a stable structure that is downward concave.

The sealing cover 3 abuts against the fixing ring 1 to close the water outlet 11, and the elastic connecting structure 2 is in a downward-turned state. The fixing ring 1, the elastic connecting structure 2 and the sealing cover 3 are fixedly connected in turn.

[0026] As shown in Figs. 10 and 11, in one embodiment, the elastic connecting structure 2 can be an elastic connecting ring 21, and the elastic connecting ring 21 is in a shape of the peripheral wall of a conical table after being turned up or down.

[0027] As shown in Fig. 12, in one embodiment, the elastic connecting structure 2 includes a plurality of connecting slices 22 arranged obliquely from outside to inside, and the water outlet holes 4 are formed between the adjacent connecting slices 22. Specifically, a length of each connecting slice 22 is longer than a horizontal distance between the sealing cover 3 and the fixing ring 1, so that the connecting slice 22 can be straightened when it is obliquely arranged and is in a stable shape.

[0028] The whole of the lid A1 can be made of elastic plastic materials such as silicone. The lid A1 can be made by an integral molding process such as injection molding, and assembly process is not required, so that the production efficiency is high.

[0029] An inner diameter of the upper part of the fixing ring 1 is larger than a diameter of the sealing cover 3, and an inner diameter of the lower part of the fixing ring 1 is smaller than a diameter of the lower part of the sealing cover 3. The fixing ring 1 encloses an accommodating cavity with a large upper diameter and a small middle diameter, and the accommodating cavity is communicated and connected with inside of the cup body A2 and the water outlet hole 4. A diameter of the upper part of the accommodating cavity is larger than a diameter of the lower part of the sealing cover 3. The diameter of the lower part of the accommodating cavity is smaller than a diameter of the lower part of the sealing cover 3, and when the sealing cover 3 is pressed down, the lower part of the sealing cover 3 abuts against the lower cavity wall of the accommodating cavity.

[0030] Figs. 2 and 5 are schematic diagrams of an open state of the lid A1. At this time, a peripheral wall of the elastic connecting structure 2 is inclined upward from the outside to the inside, and the sealing cover 3 is not connected with the inner side wall of the fixed ring 1. At this time, a water outlet channel 15 is formed between the sealing cover 3 and the fixed ring 1, and a lower end of the water outlet channel 15 is connected to the inside of the cup body A2, and an upper end of the water outlet channel 15 is communicated and connected to the water outlet hole 4.

[0031] Figs. 3 and 6 are schematic views of the lid A1 in a closed state. Due to the variability of the elastic connecting structure 2, after the sealing cover 3 is pressed, the elastic connecting structure 2 deforms with the downward movement of the sealing cover 3, reaches a stable state when the elastic connecting structure 2 is completely turned down, and still maintains the shape shown in Figs. 3 and 6 after the external force is removed. After the sealing cover 3 is pressed down, the lower peripheral wall of the sealing cover 3 abuts against the inner peripheral wall of the fixing ring 1. At this time, the connection between the water outlet channel 15 and the inside of the cup body A2 is cut off, and the shape of the water outlet channel 15 becomes narrow due to the changes in the positions and shapes of the elastic connecting ring 21 and the sealing cover 3.

[0032] As shown in Figs. 2 and 3, in one embodiment, an inner side wall of the fixing ring 1 is arranged with a first circular sealing strip 12, and an area surrounded by the first circular sealing strip 12 forms the water outlet 11. When the sealing cover 3 closes the water outlet 11, the first circular sealing strip 12 abuts against the sealing cover 3. When sealing is needed, the sealing cover 3 is pressed down to make the elastic connecting structure 2 turn down. At this time, the upper surface of the first circular sealing strip 12 abuts against the lower surface of the sealing cover 3 to close the water outlet 11. Due to the elasticity of the first circular sealing strip 12, the first circular sealing strip 12 is slightly elastically deformed when closed, so as to further press the first circular sealing strip 12 against the sealing cover 3.

[0033] Further, a middle part of the sealing cover 3 is downward concave. In an open state, the joint between the sealing cover 3 and the elastic connecting structure 2 is an upward convex structure. The sealing cover 3 is located above the first circular sealing strip 12, and the water outlet channel 15 is located between the sealing cover 3 and the first circular sealing strip 12. At this time, water flows through the water outlet 11, the water outlet channel 15 in turn, and finally flows out from the water outlet hole 4. In a sealed state, the elastic connecting structure 2 turns down and the sealing cover 3 moves down, so that the first circular sealing strip 12 abuts against the sealing cover 3, and the water outlet channel 15 is closed. At the same time, the sealing cover 3 closes the water outlet 11. An inner side of the first circular sealing strip 12 protrudes upward, which can improve structural strength of the first circular sealing strip 12, thus enhancing an abutting action between the first circular sealing strip 12 and the sealing cover 3 and improving water tightness.

[0034] As shown in Figs. 5 and 6, in one embodiment, a bottom of the sealing cover 3 is arranged with a second circular sealing strip 31. A lower part of the inner side wall of the fixing ring 1 is arranged with a circular protrusion 13. A middle part of the circular protrusion 13 forms the water outlet 11. The second circular sealing strip 31 is in interference fit with the water outlet 11. A diameter of the water outlet 11 is smaller than an outer diameter of the second circular sealing strip 31. When it needs to be closed, the sealing cover 3 is pressed down until the second circular sealing strip 31 passes through the circular protrusion 13. At this time, the inner side wall of the fixing ring 1 below the circular protrusion 13 abuts against the second circular sealing strip 31, and a top surface of

the second circular sealing strip 31 is pressed against a lower surface of the circular protrusion 13. The arrangement of the circular protrusion 13 can increase the contact area between the inner wall of the fixing ring 1 and the second circular sealing strip 31, so that the sealing effect of the second circular sealing strip 31 is better.

[0035] Further, a middle part of the sealing cover 3 is downward concave. The upper part of the second circular sealing strip 31 is fixedly connected with edge of the sealing cover 3. A cross section of the middle part of the sealing cover 3 is bow-shaped, which can effectively improve the outward rebound force. When the lower part of the sealing cover 3 and the second circular sealing strip 31 are in interference fit with the lower part of the fixing ring 1, the bow-shaped arrangement can make the lower part of the sealing cover 3 and the second circular sealing strip 31 press more strongly on an inner peripheral wall of the fixing ring 1, thus improving the water tightness.

[0036] Further, as shown in Fig. 9, a trumpet-shaped water passage 16 is formed in the middle part of the fixing ring 1. The trumpet-shaped water passage 16 has a passage wall with a protruded middle part, and the second circular sealing strip 31 passes through the middle part and clamped with the protruded passage wall. The trumpet-shaped arrangement can also make the passage wall of the water passage 16 have a gentle transition from upper to lower or from lower to upper, so that the second circular sealing strip 31 passes more smoothly and the water tightness is ensured.

[0037] As shown in Figs. 5 and 6, the lower part of the peripheral wall of the second circular sealing strip 31 protrudes outwards, so that an inward concave and arc-shaped groove is formed on the peripheral wall of the second circular sealing strip 31. The arc-shaped groove is adapted to the circular protrusion 13, so that a contact area between the second circular sealing strip 31 and the circular protrusion 13 can be increased, and the sealing effect can be improved. The lower part of the second circular sealing strip 31 protrudes outward to form a barb shape in cross section, which can increase the adhesion of the second circular sealing strip 31 to the inner wall of the fixing ring 1, so that the sealing cover 3 does not leak water when the cup is inverted after being closed.

[0038] As shown in Figs. 2, and 7~9, in one embodiment, an outer side wall of the elastic connecting structure 2 is fixedly connected to the middle part of the inner side wall of the fixing ring 1. An inner side wall of the elastic connecting structure 2 is fixedly connected to an upper part of the sealing cover 3. In the embodiment, the upper part of the inner peripheral wall of the fixing ring 1 can be used as a water guide plate. When drinking water, the water flows out from the water outlet hole 4 and enters the human mouth through the upper part of the inner peripheral wall of the fixing ring 1.

[0039] As shown in Figs. 10~12, in one embodiment, a plurality of water outlet holes 4 are circumferentially arranged on the elastic connecting structure 2. The plurality of water outlet holes 4 can be circular holes, strip holes, elliptical hole structures, etc. By arranging the plurality of water outlet holes 4 in different directions of the elastic connecting structure 2, the cup can discharge water at different angles, which is convenient to use.

[0040] As shown in Figs. 3 and 6, in one embodiment, the upper part of the sealing cover 3 is arranged with a lid handle 5, which is convenient for pulling out the sealing cover 3 in a closed state to switch to an open state. In addition to the lid handle 5, the top surface of the sealing cover 3 may be provided with grooves or clamping holes, or the upper part of the sealing cover 3 may be provided with a structure such as a pull hook to facilitate pulling out the sealing cover 3.

[0041] If the sealing cover 3 is not provided with a structure with a function similar to the structure of the lid handle 5, the opening of the sealing cover 3 can also be completed by matching the cup body A2 with good elasticity (such as using elastic plastic materials such as silicone). When the lid A1 is in a closed state, the cup body A2 can be squeezed by hand to raise the closed internal pressure and force the sealing cover 3 to move upward.

[0042] As shown in Figs. 3 and 6, further, the lid handle 5 is columnar-shaped, and a cavity 51 is arranged inside the lid handle 5. When the hand grasps the lid handle 5, the cavity 51 serves as a deformation space. After the lid handle 5 is twisted, a contact area between the surface of the lid handle 5 and the hand can be increased and the friction force can be increased. Optionally, the bottom of the cavity 51 is communicated and connected to the space below, which is convenient for integrated processing and molding.

[0043] As shown in Figs. 13 and 14, a cup includes the cup body A2 and the lid A1. The lower part of the fixing ring 1 is arranged with a circular clamping groove 14, and the upper part of the cup body A2 is clamped with the circular clamping groove 14. Further, the upper part of the cup body A2 is in interference fit with the circular clamping groove 14 on the lid A1. Both the lid A1 and the cup body A2 can be made of silicone, which has good elasticity, aging resistance, light weight and easy processing. When the silicone lid A1 and the silicone cup body A2 are used together, the top of the elastic cup body A2 is more tightly engaged with the circular clamping groove 14 in the elastic lid A1.

[0044] As shown in Figs. 13 and 14, in one embodiment, the top peripheral wall of the cup body A2 is arranged with a first circular rib 6. The first circular rib 6 is arranged in the circular clamping groove 14. The lower inner side of an outer groove wall 17 of the circular clamping groove 14 is arranged with a second circular rib 18, and a top surface of the second circular rib 18 abuts against the lower surface of the first circular rib 6. Viewed from the cross section, the outer groove wall 17 of the circular clamping groove 14 is like a gripping arm bent inward, which clamps the first circular rib 6 in the circular clamping groove 14.

[0045] As shown in Figs. 13 and 14, further, a cross section of an inner groove wall 19 of the circular clamping groove 14 is an arch bent inward. A lower part of the inner groove wall 19 abuts against the inner peripheral wall of the cup body A2. A height of the first circular rib 6 is the same as a height of the arched concave area. When the outer groove wall 17 of the circular clamping groove 14 presses the outer wall of the cup body A2 and the inner groove wall 19 of the circular clamping groove 14 presses the inner wall of the cup body A2, the cup body A2 is deformed and the deformed part is forced into the concave area, so that the cross section of the upper part of the cup body A2 is S-shaped, the contact area between the top of the cup body A2 and the lid A1 is increased, so that the cup body A2 is more difficult to be separated from the lid A1, and the water tightness is better.

[0046] In summary, in the present disclosure, by connecting the fixing ring 1 and the sealing cover 3 using the elastic connecting structure 2, the cup can be closed or opened by pressing down or pulling up the sealing cover 3. The overall structure of the lid A1 is simple, and it can be integrally processed and molded by using elastic plastic materials such as silicone, requires no assembly, with light weight, low cost and excellent water tightness.

[0047] It should be understood that for those skilled in the art, substitutions or modifications can be made based on the technical solution of the present disclosure, and such substitutions or modifications all fall within the scope of the present disclosure.

Claims

1. A lid, comprising a fixing ring, wherein further comprises a sealing cover and an elastic connecting structure; the fixing ring, the elastic connecting structure, and the sealing cover are sequentially connected from outside to inside; at least one water outlet hole is arranged on the elastic connecting structure; a middle part of the fixing ring is arranged with a water outlet; the elastic connecting structure is used to change a position of the sealing cover, making the sealing cover close or open the water outlet.

2. The lid according to claim 1, wherein a first circular sealing strip is arranged on an inner side wall of the fixing ring, an area surrounded by the first circular sealing strip forms the water outlet; when the sealing cover closes the water outlet, the first circular sealing strip abuts against the sealing cover.

3. The lid according to claim 2, wherein a middle part of the sealing cover is downward concave; an inner side of the first circular sealing strip protrudes upward.

4. The lid according to claim 1, wherein a second circular sealing strip is arranged on a lower part of the sealing cover; a lower part of the inner side wall of the fixing ring is arranged with a circular protrusion; a middle part of the circular protrusion forms the water outlet; the second circular sealing strip is in interference fit with the water outlet.

5. The lid according to claim 4, wherein a middle part of the sealing cover is downward concave; a top of the second circular sealing strip is fixedly connected with an edge of the sealing cover.

6. The lid according to claim 1, wherein an outer side wall of the elastic connecting structure is fixedly connected to the middle part of the inner side wall of the fixing ring; an inner side wall of the elastic connecting structure is fixedly connected to an upper part of the sealing cover.

7. The lid according to claim 6, wherein a plurality of the water outlet holes are circumferentially arranged on the elastic connecting structure.

8. The lid according to claim 1, wherein a lid handle is arranged on an upper part of the sealing cover.

9. The lid according to claim 8, wherein the lid handle is columnar-shaped, an cavity is arranged inside the lid handle.

10. A cup, comprising a cup body and the lid according to any one claims 1-9, wherein a circular clamping groove is arranged on the lower part of the fixing ring, an upper part of the cup body is clamped with the circular clamping groove.

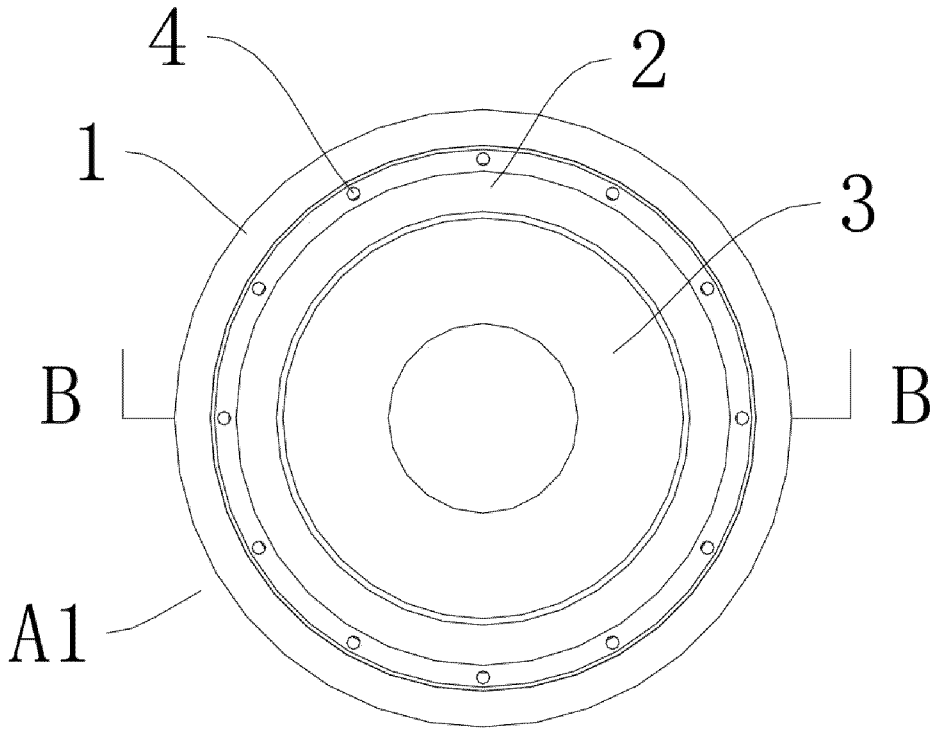

Fig. 1

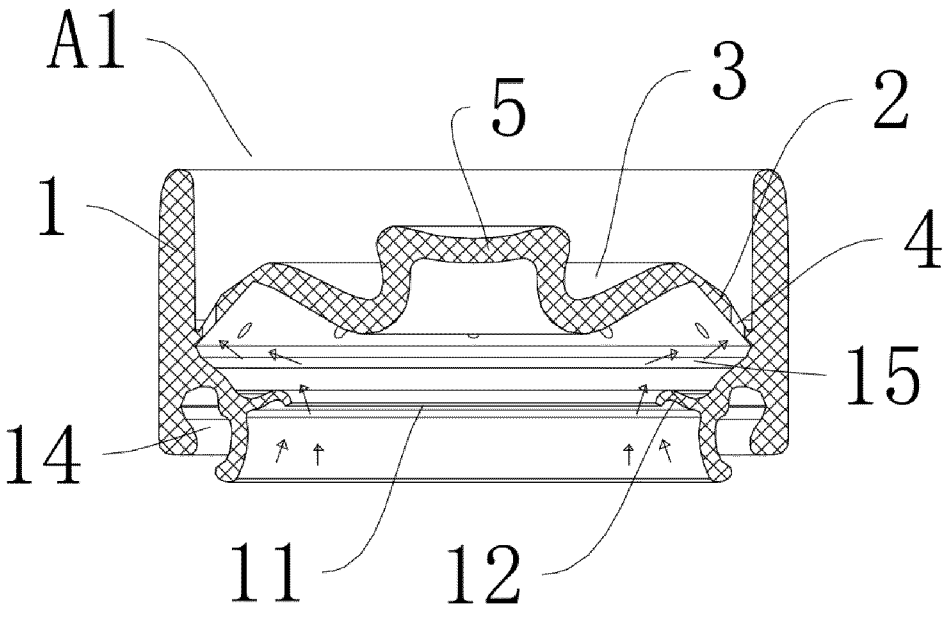

Fig. 2

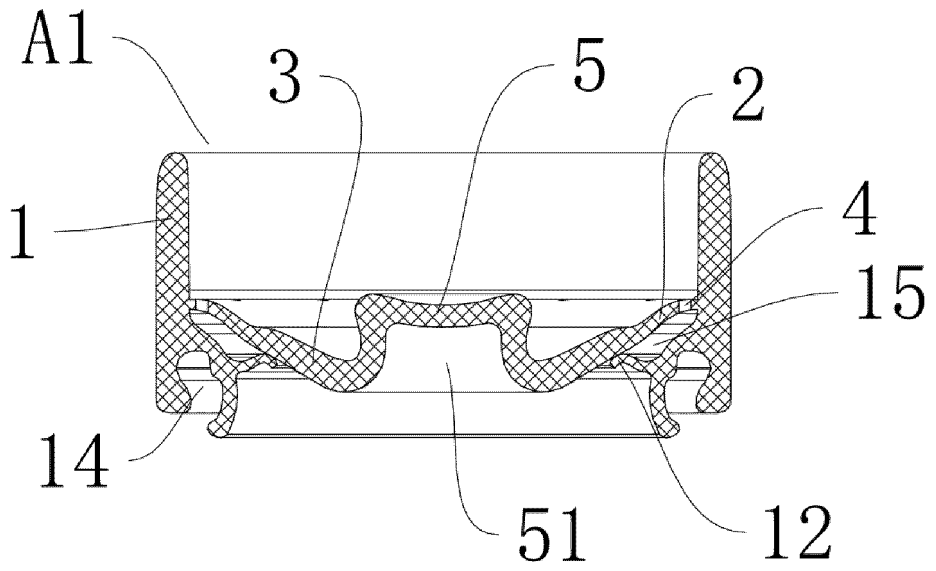

Fig. 3

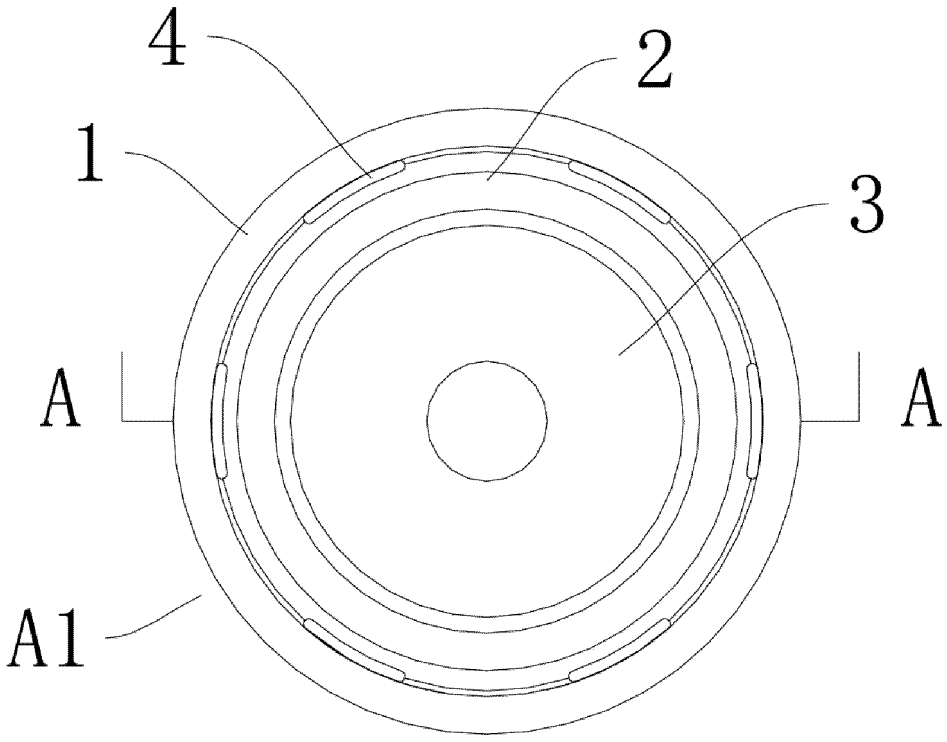

Fig. 4

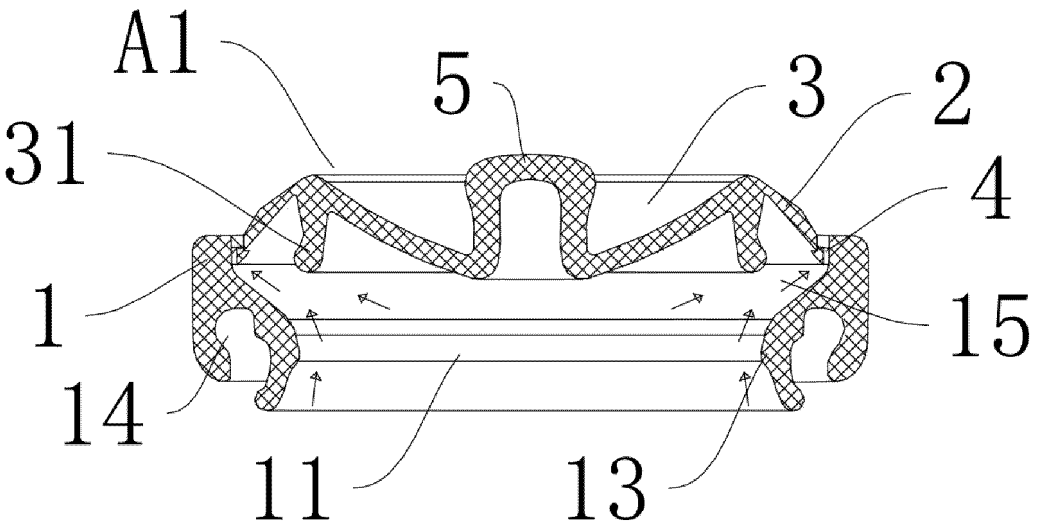

Fig. 5

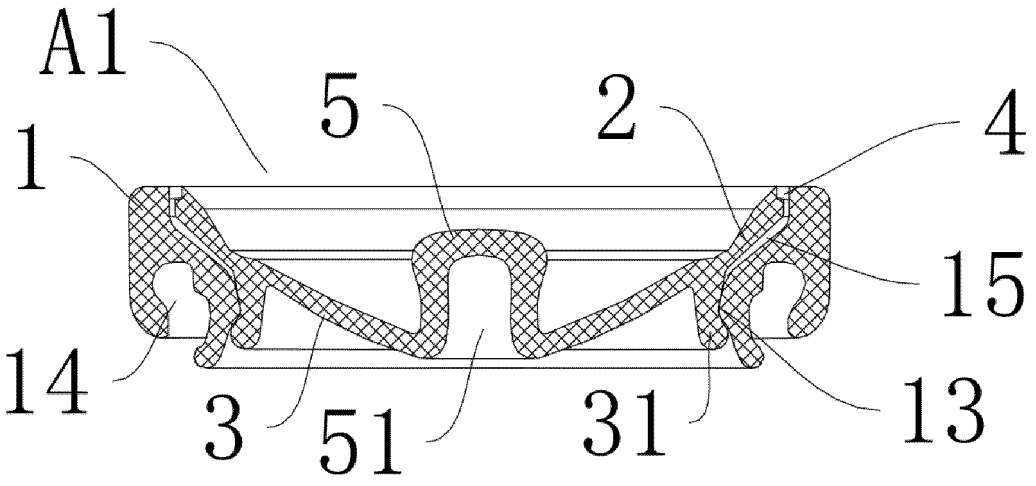

Fig. 6

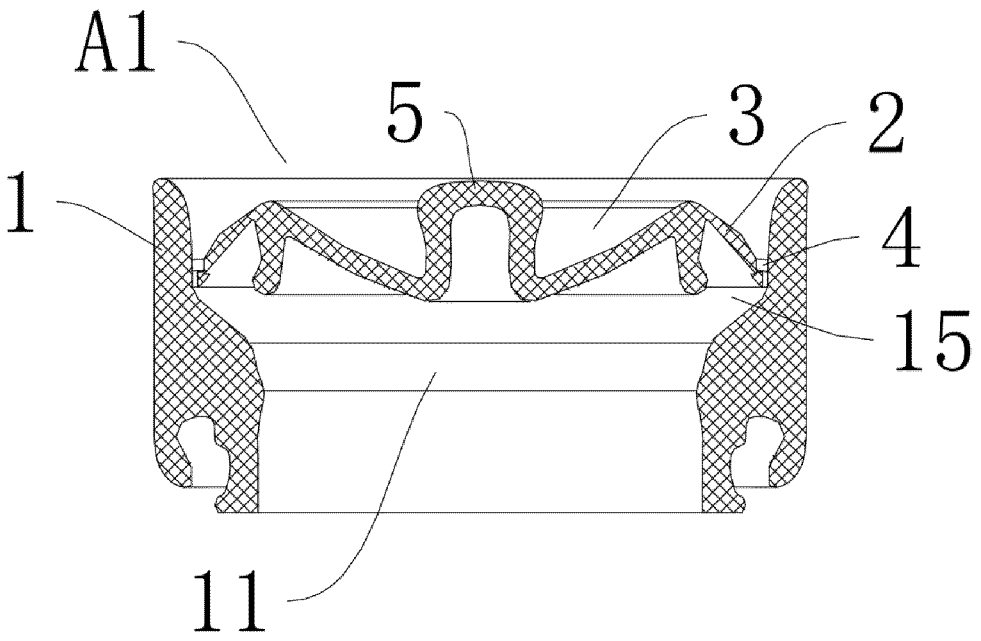

Fig. 7

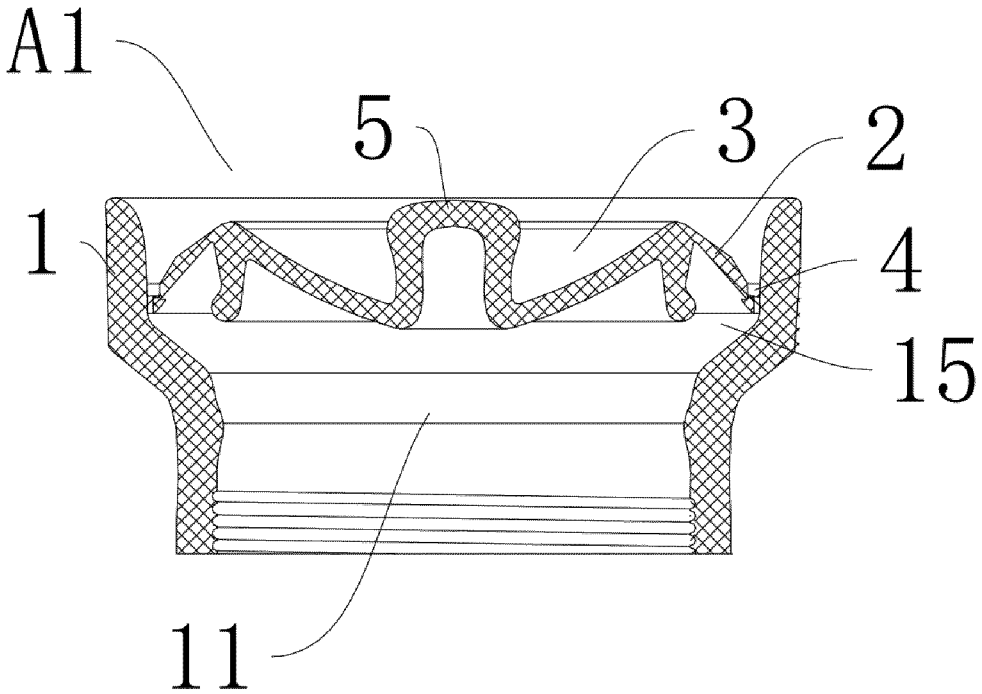

Fig. 8

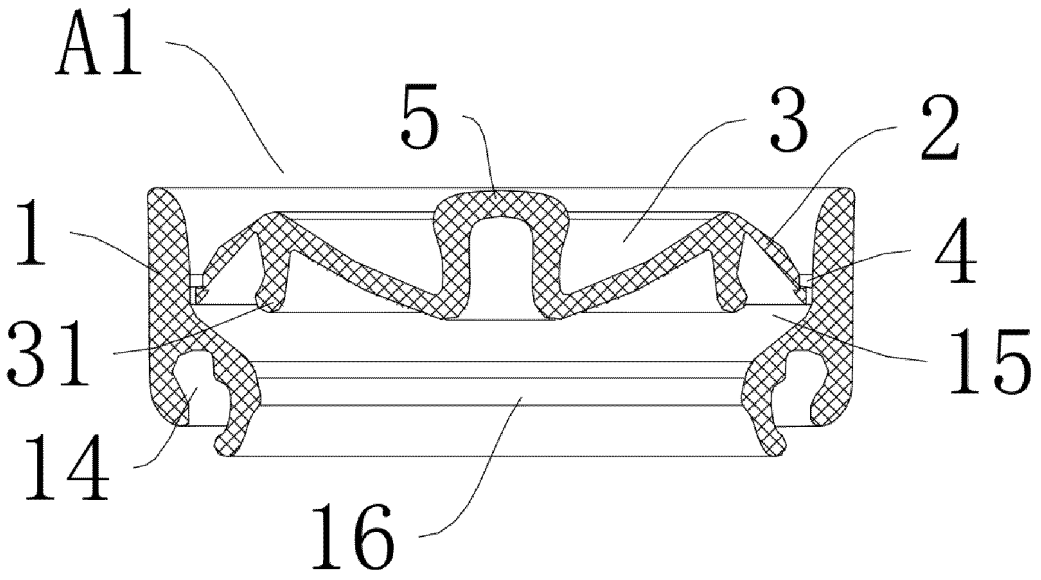

Fig. 9

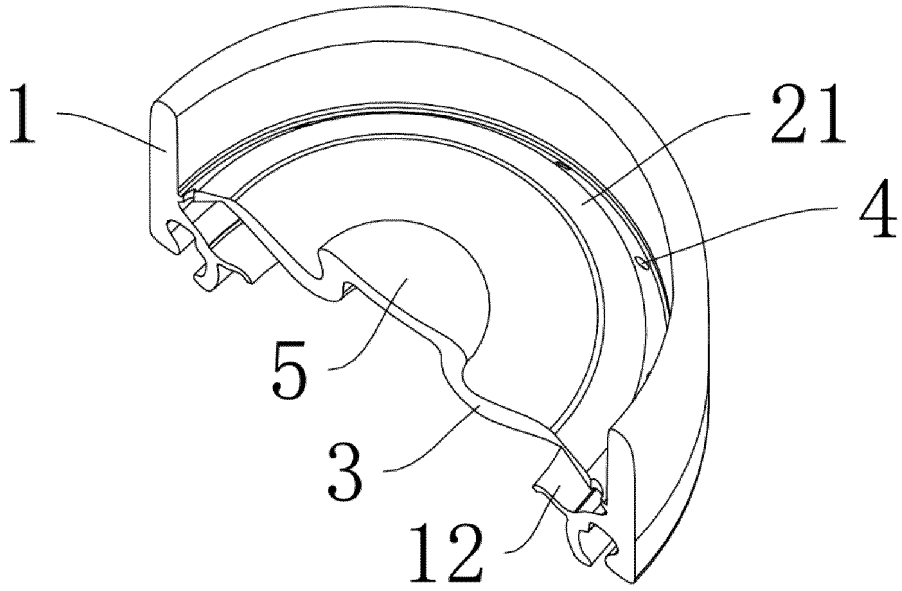

Fig. 10

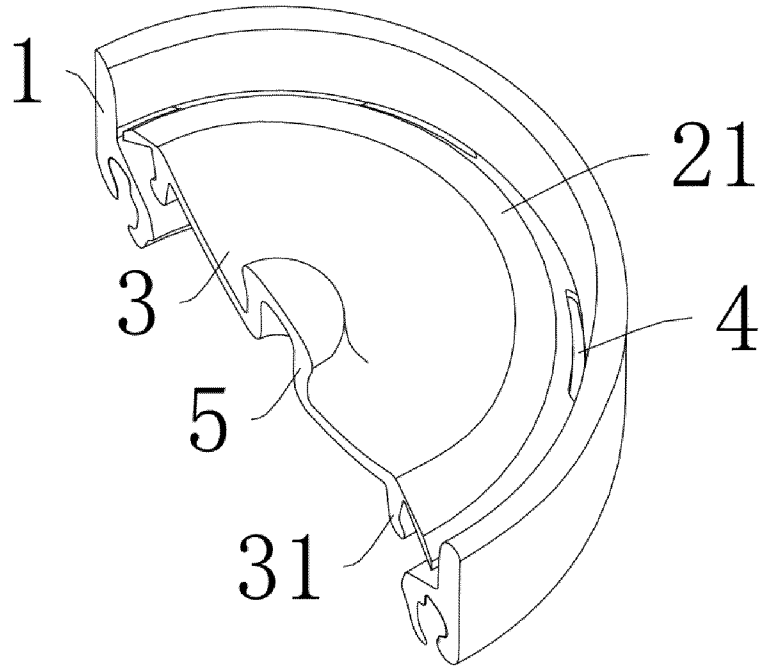

Fig. 11

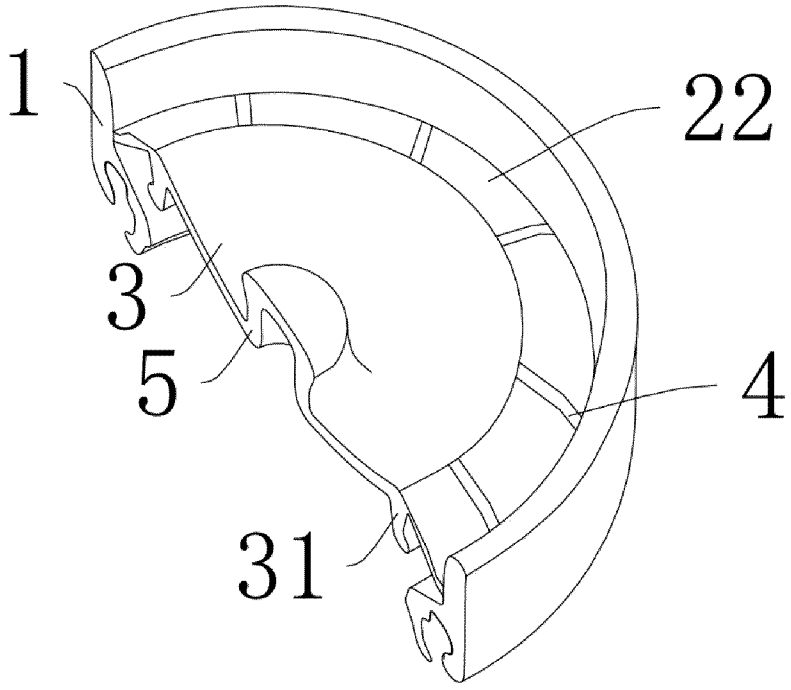

Fig. 12

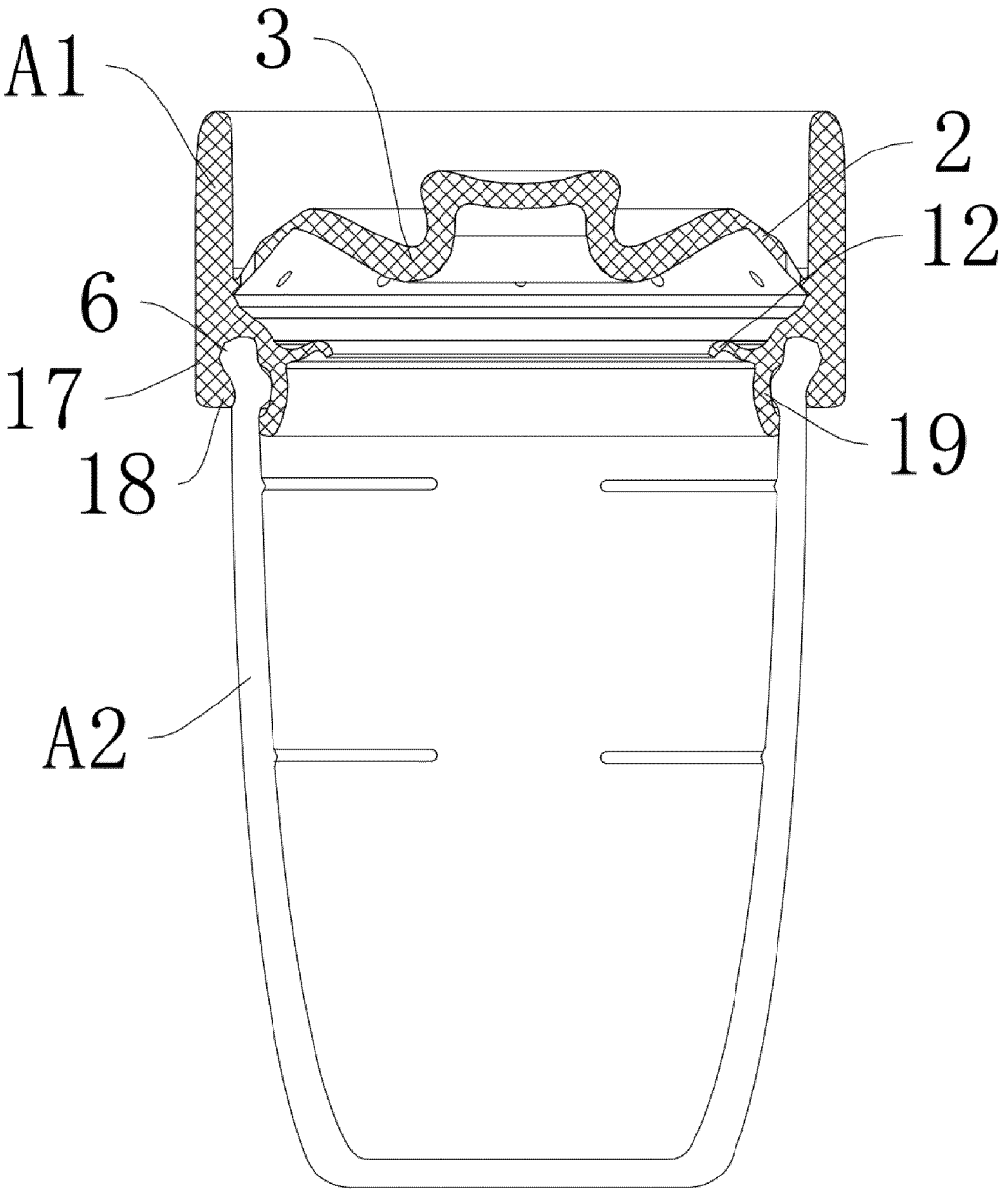

Fig. 13

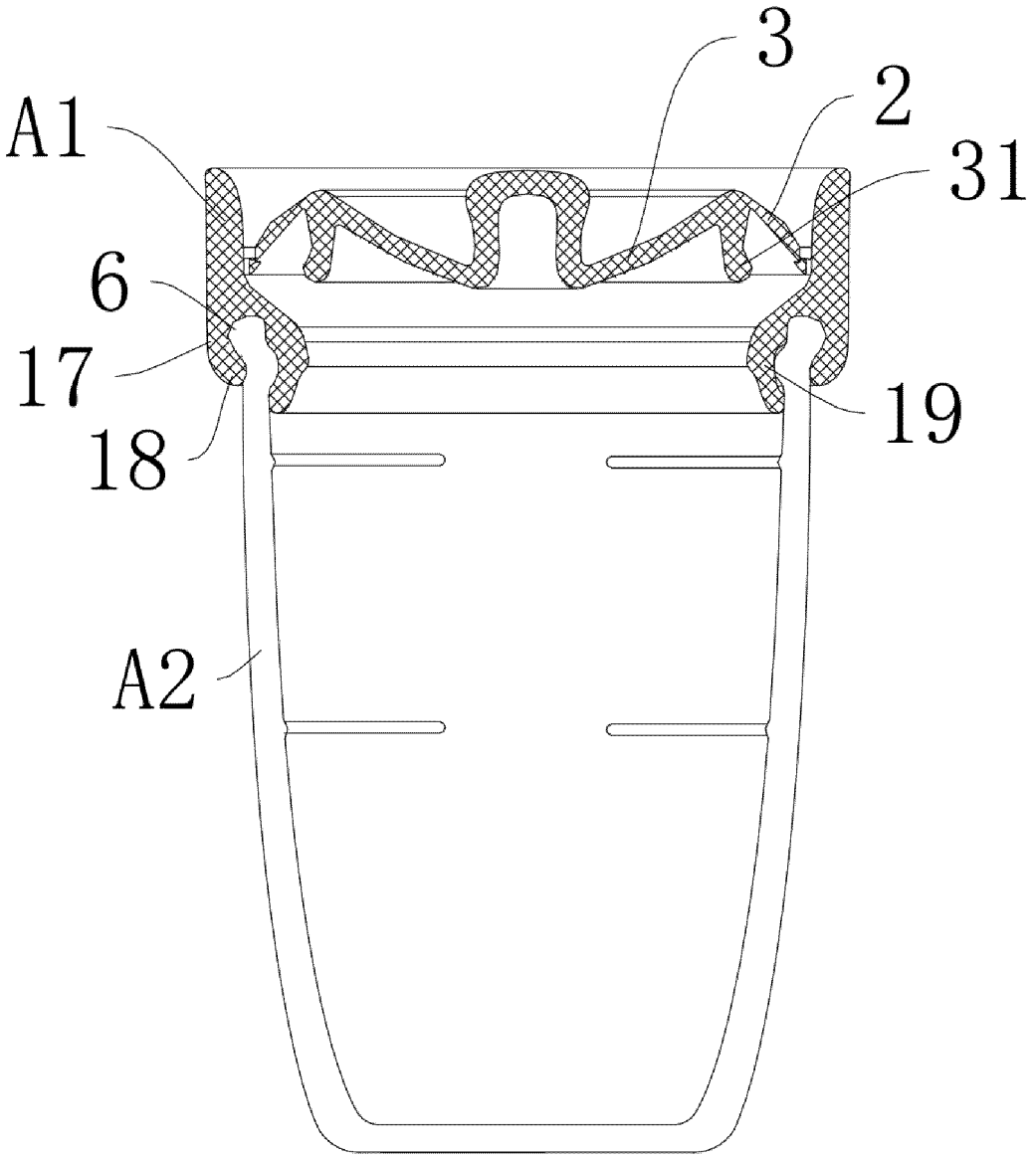

Fig. 14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2024/111840

A. CLASSIFICATION OF SUBJECT MATTER

A47G19/22(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)

IPC:A47G,B67D

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)

CNTXT, ENTXTC, WPABSC, ENTXT, DWPI: 道格科技, 熊道武, 杯, 弹性, 盖, 关闭, 硅胶, 密闭, 密封, 挠性, 塑胶, 橡胶, cup top, seal, resilient

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 117084535 A (FOSHAN DRAGON TECHNOLOGY CO., LTD.) 21 November 2023 (2023-11-21) description, paragraphs 0033-0054, and figures 1-9	1, 4-10
X	TW 201626927 A (THAT INVENTIONS CO.) 01 August 2016 (2016-08-01) description, paragraphs 0016-0024, and figures 1-10	1-10
X	US 3730399 A (NOSPITAL LTD.) 01 May 1973 (1973-05-01) entire document	1-10
X	US 2018344064 A1 (HANDI-CRAFT COMPANY) 06 December 2018 (2018-12-06) entire document	1-10
A	CN 206079987 U (ZHU LIN) 12 April 2017 (2017-04-12) entire document	1-10
A	CN 205618678 U (MA LIXIU) 05 October 2016 (2016-10-05) entire document	1-10

☑ 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
"D" document cited by the applicant in the international application
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"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
20 September 2024	**29 September 2024**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2024/111840

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	CN 216494708 U (DONGGUAN GOOD IMPRESSION INDUSTRIAL CO., LTD.) 13 May 2022 (2022-05-13) entire document	1-10

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2024/111840

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TW 201626927 A	01 August 2016	TWI 543740 B	01 August 2016
US 3730399 A	01 May 1973	None	
US 2018344064 A1	06 December 2018	KR 20180086450 A	31 July 2018
		KR 102558893 B1	21 July 2023
		EP 3379980 A1	03 October 2018
		EP 3379980 A4	18 December 2019
		US 10881228 B2	05 January 2021
		WO 2017091639 A1	01 June 2017
CN 206079987 U	12 April 2017	None	
CN 205618678 U	05 October 2016	None	
CN 213696451 U	16 July 2021	None	
CN 216494708 U	13 May 2022	None	

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