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(54) [Title of the Invention] Stopper With Mouthpiece For Liquid Container

This exploded perspective view illustrates the assembly of a mechanical device. The main components include a base housing (11) with internal features like a central cavity (13) and various mounting points (16, 17, 18, 25, 26, 27, 28, 29, 33). A central shaft or tube (3) is shown passing through the assembly. A top cover (20) is designed to fit over the base, featuring a central opening (4) and a flange (19). A bracket (2) is positioned to support the shaft (3) and is secured with a bolt (23) and a nut (24). A small circular component (5) with a central feature (31) and a mounting point (32) is shown separately. Various other parts and fasteners are labeled with numbers 1 through 35, indicating their specific locations and functions within the assembly.

[Claims]

[Claim 1] A stopper with a mouthpiece for a liquid container having a mouthpiece communicating with the interior of the container attached with an upward biasing force to the stopper body, a hinge shaft of a lid covering the mouthpiece attached to shaft receiving recesses in the stopper body provided on opposing wall surfaces of the stopper body, and a guide groove with a width that allows the hinge shaft to pass through provided in the opposing wall surfaces, the stopper with a mouthpiece characterized in that one end of the guide groove extends along the middle of the circumferential wall of the shaft receiving recesses in the height direction, and the hinge shaft is forcibly removed from the shaft receiving recesses via the guide groove while bending the lid during cleaning.

[Claim 2] The stopper with a mouthpiece for a liquid container according to claim 1, wherein the guide groove is provided in the direction of the force applied to the hinge shaft when bending the lid.

[Claim 3] The stopper with a mouthpiece for a liquid container according to claim 1, wherein a contact portion is provided on the body of the stopper where the back of the lid comes into contact when the lid is opened to its fullest extent, and the guide groove is provided in the direction of the force exerted by the hinge shaft on the shaft receiving recesses when bending the lid using the contact portion as the fulcrum.

[Claim 4] The stopper with a mouthpiece for a liquid container according to any one of claims 1 to 3, wherein the stopper body is provided with an engaging portion with the lid and a means for disengaging the engaging portion, the mouthpiece is rotatably attached to the lid, an elastic suction hose is connected to the mouthpiece, closing of the lid folds the suction hose, and the restoring elasticity of the hose forces the lid in the open direction.

[Claim 5] The stopper with a mouthpiece for a liquid container according to claim 4, wherein the stopper body has a storage recess for the mouthpiece and suction hose, a communication hole is provided in the rear portion of the storage recess, one end of the suction hose is connected to the communication hole, the front portion of the storage recess is provided with a contact portion for the mouthpiece, and the mouthpiece is pulled into the storage recess while pressing against the contact portion when the lid is closed.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention] The present invention relates to a stopper with a mouthpiece for a water bottle or other liquid container.

[0002]

[Prior Art] Stoppers for a water bottle or other liquid container are known to be provided with a mouthpiece connected to a suction hose that communicates with the interior of the container, where the mouth is placed directly over the mouthpiece to drink the beverage inside (see, for example, JP H01-27696 Y2).

[0003] In such a mouthpiece, a lid covering mouthpiece inside when stored in the storage recess is attached so as to open and close freely, and the mouthpiece moves up and down in conjunction with the opening and closing of the lid.

[0004] The lid is attached to the stopper body by fitting a pair of hinge shafts on the lid itself into shaft receiving recesses in the stopper body, so that the lid can be opened and closed freely. When attaching the lid to the stopper body, the hinge shafts are forced into the shaft receiving recesses of the stopper body while bending the lid.

[0005]

[Problem to Be Solved by the Invention] However, from the standpoint of the user, in order to keep the liquid container clean, the user may wish to remove the lid from the stopper to clean and otherwise care for the interior of the stopper. In such cases, the lid is difficult to remove easily because it is forcibly fitted in place as described above, and attempts to force it off may destroy part of the lid.

[0006] Therefore, the problem to be solved by the present invention is to provide a stopper with a mouthpiece in which the lid can be easily removed without destroying it when it needs to be cleaned, etc., while remaining difficult to remove under normal conditions of use.

[0007]

[Means for Solving the Problem] In order to solve this problem, the present invention is a stopper with a mouthpiece for a liquid container having a mouthpiece communicating with the interior of the container attached with an upward biasing force to the stopper body, a hinge shaft of a lid covering the mouthpiece attached to a shaft receiving recess in the stopper body provided on opposing wall surfaces of the stopper body, and a guide groove with a width that allows the hinge shaft to pass through provided in the opposing wall surfaces, the stopper with a mouthpiece characterized in that one end of the guide groove extends along the middle of the circumferential wall of the shaft receiving recess in the height direction, and the hinge shaft is forcibly removed from the shaft receiving recess via the guide groove while bending the lid during cleaning.

[0008] In the configuration described above, the hinge shaft rotates while being held by the inner circumferential wall of the shaft receiving recess as the lid is opened and closed during normal use, so it cannot be easily dislodged. The lid can be easily removed by aligning the hinge shaft with the guide groove while bending the lid when the lid is to be cleaned, etc.

[0009] The guide groove can be configured in the direction of the force applied to the hinge shaft when bending the lid. In this configuration, the lid can be removed while bending force is being applied by providing a guide groove in a direction that enables easy bending when removing the lid.

[0010] A configuration can also be used in which a contact portion is provided in the stopper body where the backside of the lid makes contact when the lid is opened to the maximum extent, and the guide groove is provided in the direction of the force exerted by the hinge shaft on the shaft receiving recess when the lid is bent using this contact portion as the fulcrum. In this configuration, when force is applied to the lid in the opening direction while open to the maximum extent, the lid bends with the contact serving as a fulcrum and is detached intact.

[0011] A configuration can also be used in which the stopper body is provided with an engaging portion with the lid and a means for disengaging the engaging portion, the mouthpiece is rotatably attached to the lid, an elastic suction hose is connected to the mouthpiece, closing of the lid folds the suction hose, and the restoring elasticity of the hose forces the lid in the open direction. Another configuration can be used in which the stopper

body has a storage recess for the mouthpiece and suction hose, a communication hole is provided in the rear portion of the storage recess, one end of the suction hose is connected to the communication hole, the front portion of the storage recess is provided with a contact portion for the mouthpiece, and the mouthpiece is pulled into the storage recess while pressing against the contact portion when the lid is closed.

[0012]

[Embodiment of the Invention] An embodiment of the present invention will now be described with reference to the accompanying drawings. As shown in Fig. 1, the stopper with a mouthpiece in the present embodiment is composed of a combination of a stopper body 1, a mouthpiece 2, a suction hose 3, a lid 4, and a button 5 serving as a disengaging means.

[0013] The stopper body 1 has an annular rib 6 (see Fig. 2) on the underside, which is used to seal the mouth 9 of the container 7 by pressing the rib 6 against a mouth gasket 8 in the container 7. A storage recess 11 is provided inside the rib 6, and the mouthpiece 2 and suction hose 3 are stored in the storage recess 11. A vertical communication hole 12 is provided in the rear portion of the storage recess 11, and connection ports 13, 14 are provided in the upper and lower end portions.

[0014] The suction hose 3 is connected to connection port 13, and a lower suction hose 15 is connected to connection port 14. The suction hose 3 has the required elasticity. The elasticity of the hose is such that if bent into a "U" shape with the fingers and then released, it becomes straight again due to its intrinsic elasticity. The mouthpiece 2 is connected to the tip of this hose. The suction hose 3 is long enough that the mouthpiece 2 can protrude diagonally upward and forward of the stopper body 1 when the lid 4 is opened and the suction hose 3 is extended, as described below (see Fig. 3). The lower suction hose 15 is long enough to reach the bottom of the container 7.

[0015] Shaft receiving recesses 17, 17 are provided on left and right opposing walls 16, 16 (see Figure 1) of the storage recess 11 behind connection port 13. A guide groove 18 is provided diagonally upward at the front of each shaft receiving recess 17. The lower end of each guide groove 18 is continuous in the peripheral wall of the shaft receiving recess 17 at mid-height (see Fig. 4). The groove bottom of the guide groove 18 is approximately half the height of the peripheral wall of the shaft receiving recess 17, with a peripheral wall of constant height d in this portion. The groove bottom of the guide groove 18 becomes shallower toward the top end and reaches zero at the top end.

[0016] A pair of hinge shafts 19, 19 are provided on the left and right sides of the hinge portion 20 (see Fig. 1) in the rear end portion of the lid 4, and each hinge shaft 19 is rotatably fitted into each shaft receiving recess 17. The lid 4 covers the storage recess 11 and the top surface of the stopper body 1 surrounding the recess. A pair of leg pieces 21 and 21 are provided on the underside of the lid 4, and a protrusion 24 on the arms 23 of the mouthpiece 2 is rotatably fitted into a hole 22 at the bottom end of each leg piece 21. When the lid 4 is opened to its maximum extent, the outer surface of the lid comes into contact with the contact portion 25 at the upper end of the rear wall of the stopper body 1, as shown in Fig. 3.

[0017] On the underside of the above lid 4, a pair of engaging hooks 30, 30 (see Fig. 1) are provided with a width greater than the width of the leg pieces 21, 21 so as to oppose the leg pieces, and engaging protrusions 26, 26 with shallow engagement recesses are provided on the top surface of the stopper body 1. When the lid 4 is closed, the engaging hooks 30 are shallowly engaged with the engaging protrusions 26, keeping the lid 4 closed (see Fig. 2).

[0018] When the lid 4 is closed, the suction hose 3 is bent at two upper and lower points and folded into the storage recess 11 together with the mouthpiece 2. The suction hose 3 pushes up the lid 4 due to its elasticity, but the engagement force between the engaging hooks 30 and the engagement protrusions 26 is great enough to overcome the elasticity and keep the lid 4 from opening on its own.

[0019] In front of the storage recess 11, there is a storage compartment 27 for the button 5 (see Fig. 1), and shaft receiving recesses 28, 28 are provided on the left and right opposing walls of the storage compartment 27. A stopper protrusion 29 is also provided on the bottom surface of the storage compartment. The button 5 has a pair of hinge shafts 31, which are rotatably fitted into the shaft receiving recesses 28. A projecting piece 32 is provided on the inner end of the button 5, and the projecting piece 32 rests on the partitioning wall 33 between the storage recess 11 and the storage compartment 27 (see Fig. 2). The front edge of the lid 4 is laid over this projecting piece 32.

[0020] When the upper surface of the rear end portion of the button 5 is pushed in (see arrow a in Fig. 3), because the projecting piece 32 side of the button 5 rises up, it pushes the lid 4 upward, and disengages the engaging hooks 30 and engaging protrusions 26, enabling the lid 4 to be pushed open by the restoring elasticity of the suction hose 3.

[0021] In Fig. 2 and Fig. 3, 34 is an air hole that allows the storage recess 11 to communicate with the interior of the container 2.

[0022] The liquid container stopper in the present embodiment is configured as described above. In the normal state, as shown in Fig. 2, the mouthpiece 2 and the suction hose 3 are folded into the storage recess 11, and the lid 4 is engaged with the stopper body 1 to cover and close the storage recess 11. In this state, a portion of the bent suction hose 3 seals the air hole 34, preventing leakage of liquid inside the container 7.

[0023] When the button 5 is pushed in as shown by arrow a in Fig. 3, the projecting piece 32 springs open the lid 4 and disengages it from the stopper body 1. The lid 4 is then pushed up and released by the restoring elasticity of the suction hose 3. As the lid 4 opens, the mouthpiece 2 protrudes above the button 5 and the air hole 34 is unsealed to prevent depressurization of the interior of the container 7.

[0024] When closing the lid 4, the user pushes down on the lid 4, and the mouthpiece 2 is pulled in. While being pulled in, it bends the suction hose 3 which gradually rises up due to contact with the contact portion 35 on the front end face of the button 5, and is then folded into the storage recess 11. The lid 4 returns to its original closed state when the stopper body 1 has been engaged.

[0025] When removing the lid 4 from the stopper 1 for cleaning, etc., the lid 4 is opened to the maximum extent (see Fig. 3 and Fig. 5 (a)) and then a rearward tilting force is applied as shown by arrow b in Fig. 5 (b). Force is applied to the hinge shafts 19 while bending the lid 4 in the direction of rotation using the contact portion 25 of the stopper body 1 as the fulcrum. The direction of the force (direction tangential to the circle of rotation) is indicated by arrow c in Fig. 5 (b). The guide groove 18 is formed at an angle tangential to this or nearly tangential to this. Therefore, by simply bending the lid 4 to height d (see Fig. 4) of the circumferential wall, the hinge shafts 19 can be detached from the shaft receiving recesses 17 and the lid 4 removed with relative ease (see the dotted lines in Fig. 4).

[0026] Note that the hinge shafts 19 do not come off the shaft receiving recesses 17 during normal opening and closing of the lid 4 because of height d in the communication portion of the guide groove 18 with the shaft receiving recesses 17.

[0027] In the embodiment described above, a bending force is applied to tilt the lid 4 rearward, but another method of removing the lid 4 is shown in Fig. 3. In this method, a horizontal twisting force is applied to bend the lid after the lid 4 has been opened. When this method is used, the guide groove 18 should be provided horizontally, as shown in Fig. 6 (a) and Fig. 6 (b). In these figures, horizontal guide grooves 18, 18 are provided on both sides of the shaft receiving recesses 17 so that the lid can be twisted off in either direction. The dotted lines in Fig. 6 (b) show an example in which the lid 4 is removed by twisting it to the right.

[0028]

[Effect of the Invention] As described above, the stopper with a mouthpiece in the present invention has the effect of simplifying cleaning, etc. of the lid, since the lid can be removed from the stopper body simply by bending it slightly. By setting the height of the guide groove from the groove bottom appropriately, the lid does not interfere with the normal opening and closing of the lid.

[Brief Description of the Drawings]

[Fig. 1] Fig. 1 is an exploded perspective view of an embodiment of the present invention.

[Fig. 2] Fig. 2 is a cross-sectional view of the same with the lid closed.

[Fig. 3] Fig. 3 is a cross-sectional view of the same with the lid opened.

[Fig. 4] Fig. 4 is an enlarged cross-sectional view of the hinge portion of the same.

[Fig. 5] Fig. 5 (a) to Fig. 5 (c) are partial enlarged cross-sectional views with the lid removed.

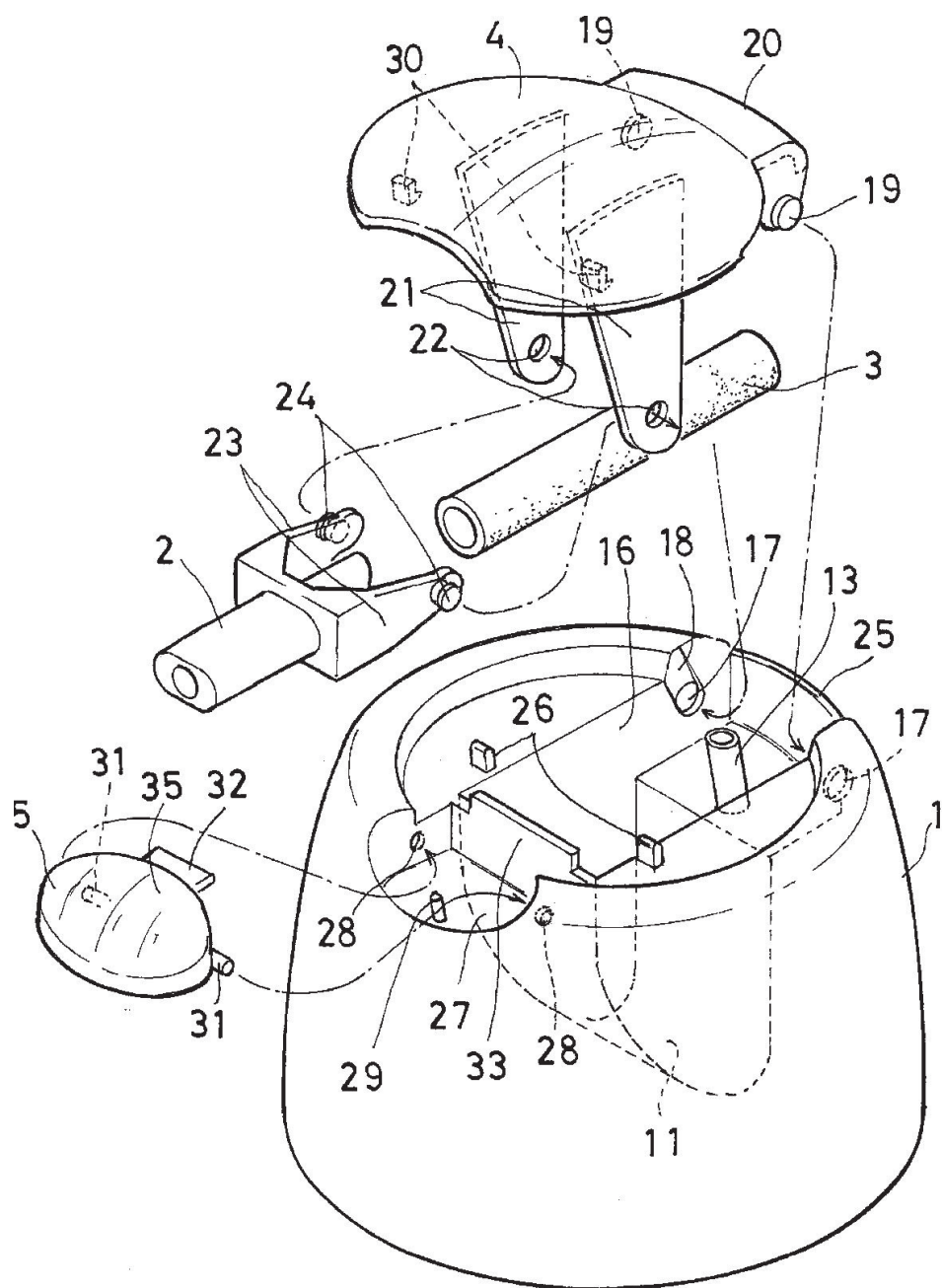
[Fig. 6] Fig. 6 (a) is a partial cross-sectional view of the shaft receiving recesses in another example, and Fig. 6 (b) is a cross-sectional view of the hinge portion of the same.

[Key to the Drawings]

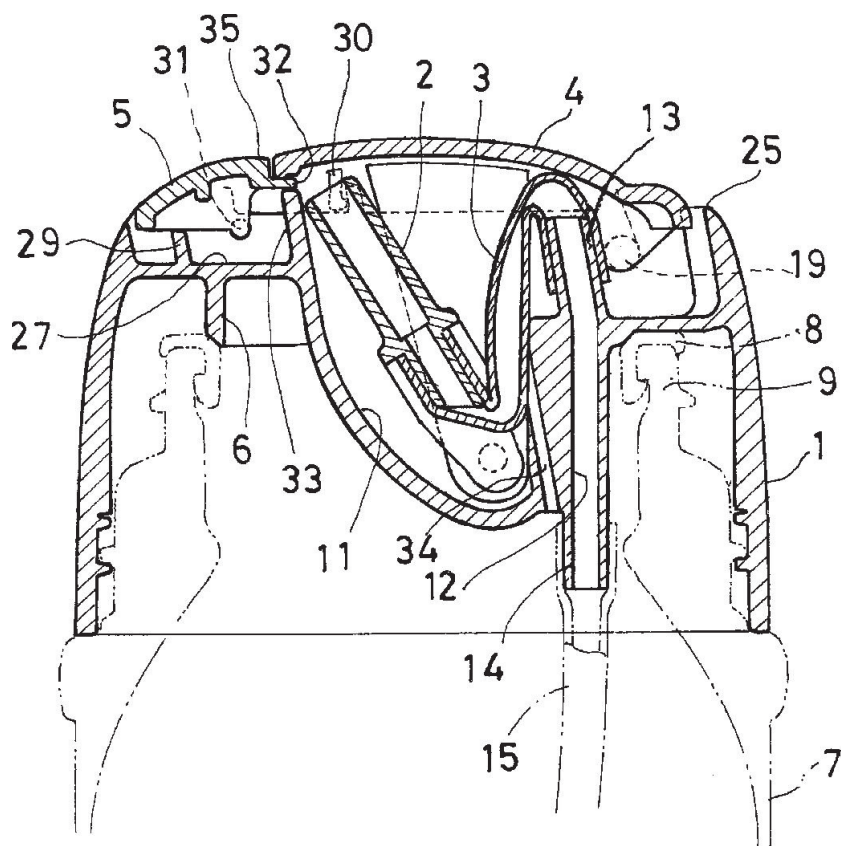
- 1: Stopper body
- 2: Mouthpiece
- 3: Suction hose
- 4: Lid
- 5: Button
- 6: Rib
- 7: Container
- 8: Mouth gasket
- 9: Mouth
- 11: Storage recess
- 12: Communication hole
- 13: Connection port
- 14: Connection port
- 15: Lower suction hose
- 16: Opposing wall surface
- 17: Shaft receiving recess

18: Guide groove
19: Hinge shaft
20: Hinge portion
21: Leg piece
22: Hole
23: Arm
24: Protrusion
25: Contact portion
26: Engaging protrusion
27: Storage compartment
28: Shaft receiving recess
29: Stopper protrusion
30: Engaging hook
31: Hinge shaft
32: Projecting piece
33: Partitioning wall
34: Air hole
35: Contact portion

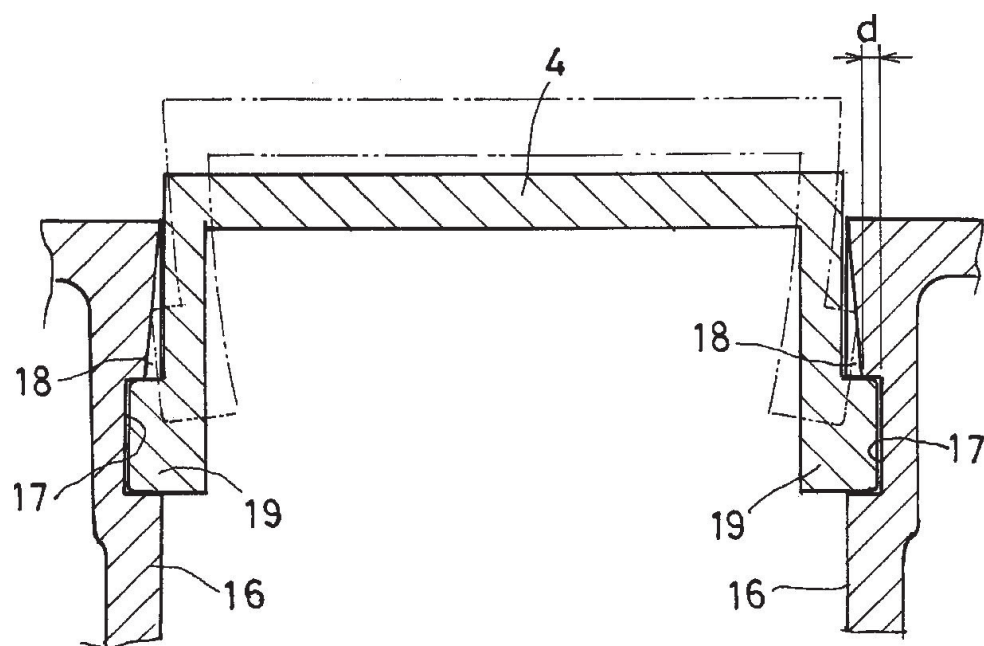
[Fig. 1]



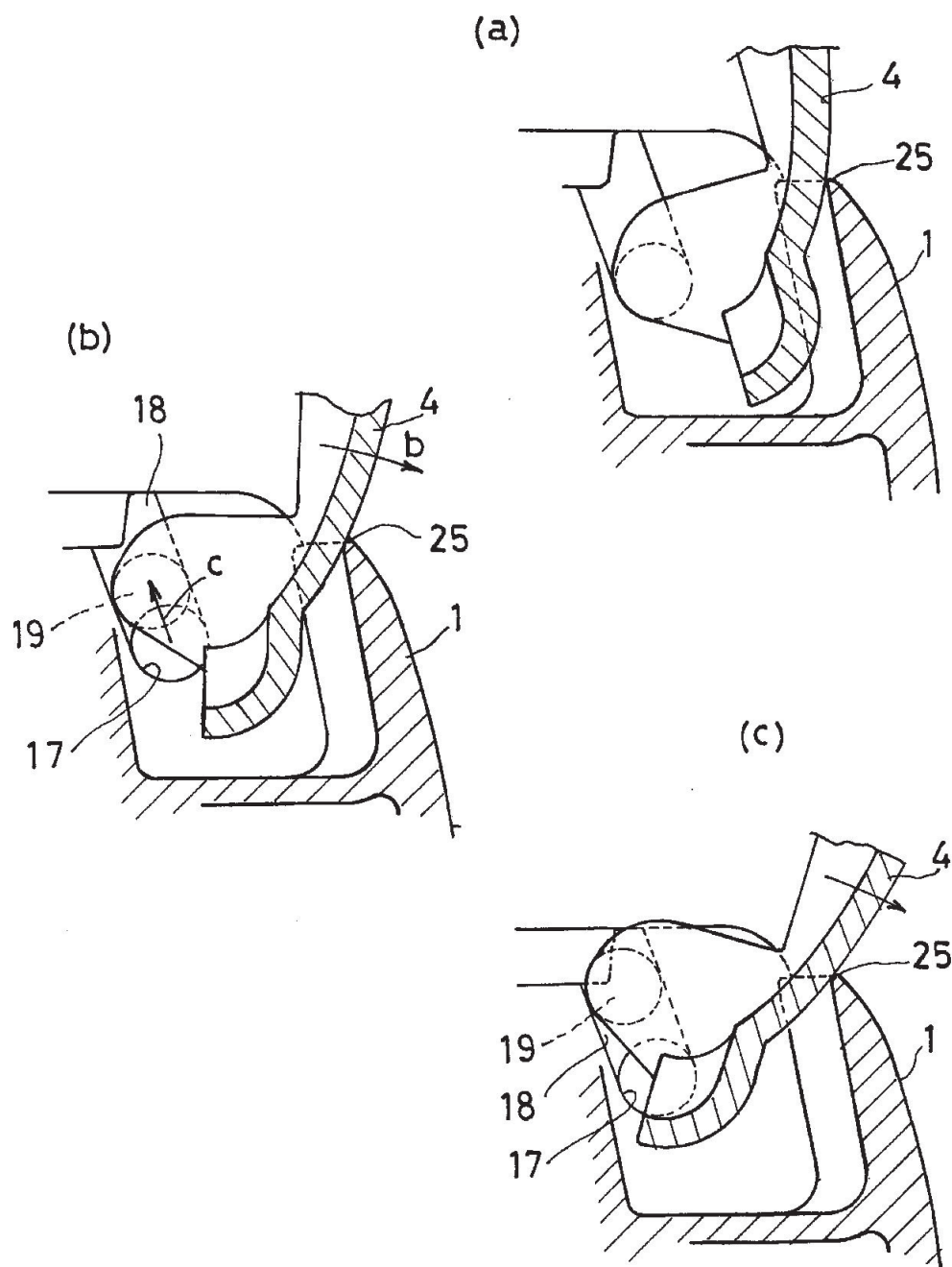
[Fig. 2]



[Fig. 4]

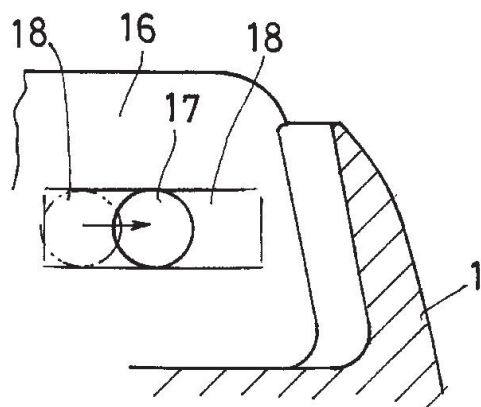


[Fig. 5]

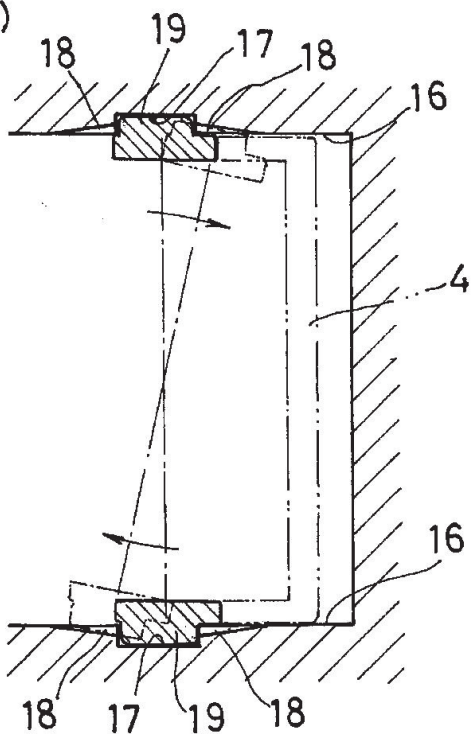


[Fig. 6]

(a)



(b)





TRANSLATION CERTIFICATION

Date: May 22, 2024

To whom it may concern:

This is to certify that the attached translation is an accurate representation of the documents received by this office. The translation was completed from:

- Japanese

To:

- English (USA)

The documents are designated as:

- 'JP2002211613A.pdf'

Jordan Woodard, Project Manager in this company, attests to the following:

"To the best of my knowledge, the aforementioned documents are a true, full and accurate translation of the specified documents."

A handwritten signature in black ink that reads "Jordan Woodard". The signature is written in a cursive, flowing style.

Signature of Jordan Woodard

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