

STOPPER OF VESSEL

TECHNICAL FIELD

The present invention relates to a stopper of a vessel for opening and
5 closing a vessel opening, and more particularly, to a stopper of a vessel
capable of facilitating usage by detaching a sealing member sealed at a
vessel opening from a vessel together with the stopper at the time of opening
the stopper, and capable of preventing the sealing member from being
discarded outwardly by storing the removed sealing member in the stopper.

10

BACKGROUND ART

FIG. 1 is a sectional view of a vessel stopper in accordance with the
conventional art.

The conventional vessel stopper 100 is mounted at a vessel opening
15 102 thus to protect contents stored in a vessel 104. A sealing member 106 for
sealing the contents stored in the vessel 104 is mounted at the vessel
opening 102.

The vessel stopper 100 has a cylindrical shape of which upper side is
sealed. A stopping protrusion 110 stopped by a stopping rib 108 formed at an
20 outer circumferential surface of the vessel opening 102 thus to be prevented
from being detached is formed at an inner circumferential surface of the
vessel stopper 100. A handgrip 112 that is held by a user in order to facilitate
to detach the vessel stopper 100 from the vessel opening 102 is provided at
the vessel stopper 100.

The vessel stopper 100 is detached from the vessel opening 102 by grasping the handgrip 112 and thereby pulling the handgrip 112 by a user. Then, the sealing member 106 is removed from the vessel opening 102, and the contents stored in the vessel 104 are discharged outwardly through the vessel opening 102.

However, in the conventional vessel stopper 100, after the vessel stopper 100 is detached from the vessel 104, the sealing member 106 sealed at the vessel opening 102 has to be removed by a hand or by an additional tool such as a knife, etc. thereby to have inconvenience in usage.

Also, since the sealing member 106 that has been removed from the vessel opening 102 is discarded outwardly at the time of using the vessel outside, an environment pollution can be caused.

Additionally, a skirt portion 114 wound on an outer circumferential surface of the vessel opening 102 in a circumferential direction with a certain length is necessary in order to facilitate to remove the sealing member 106 sealed at the vessel opening 102 by an adhesion method, etc., thereby increasing a usage amount of the sealing member 106 and thus increasing a fabrication cost.

20

DISCLOSURE OF THE INVENTION

Therefore, it is an object of the present invention to provide a vessel stopper capable of facilitating usage without installing an additional sealing member removing unit by installing a sealing member removing unit at a stopper so that a sealing member can be automatically removed at the time of

opening the stopper by rotating the stopper.

A second object of the present invention is to provide a vessel stopper capable of preventing an environment pollution due to a discard of a sealing member to an outside by storing a sealing member that has been removed
5 from a vessel opening in the stopper.

A third object of the present invention is to provide a vessel stopper capable of mixing contents stored in a stopper with contents stored in a vessel when the stopper is detached from the vessel by storing contents different from the contents stored in the vessel in the stopper and by
10 introducing the contents stored in the stopper into the vessel.

A fourth object of the present invention is to provide a vessel stopper capable of reducing a fabrication cost by minimizing a usage amount of a sealing member without installing an additional skirt portion for removing the sealing member since the sealing member is automatically removed by a
15 sealing member removing unit.

To achieve these objects, there is provided a vessel stopper comprising: a body mounted at a vessel opening through which contents stored in a vessel are discharged outwardly, and having a space therein; a mounting unit formed at a lower side of the body, for mounting the body at the
20 vessel opening; and a sealing member removing unit formed in the body, for removing a sealing member sealed at the vessel opening and thereby storing the sealing member in the body when the body is detached from the vessel opening .

A cover member for protecting the sealing member removing unit is

mounted at an upper end of the body.

The mounting unit is constructed as a stopping protrusion protruded at an inner circumferential surface of the body in a circumferential direction thus to be stopped by a stopping rib formed at an upper surface of the vessel opening.

The mounting unit is a female screw portion formed at the inner circumferential surface of the body to be spirally-coupled to a male screw portion formed at an outer circumferential surface of the vessel opening.

The sealing member removing unit includes: a connection portion elastically and deformably connected to an inner circumferential surface of the body; a pressing plate connected to an inner circumferential surface of the connection portion and pressed by a user; and a cutting unit formed at the edge of a lower surface of the pressing plate in a circumferential direction with a certain interval, for punching the sealing member when the pressing plate is pressed and for cutting the sealing member and thereby storing in the body when the body is rotated.

The connection portion is formed as a thin film of a dome shape connected between an inner circumferential surface of the body and an outer circumferential surface of the pressing plate thus to be elastically deformed at the time of pressing the pressing plate.

The pressing plate is formed as a disc shape, and is provided with a pressing portion protruded to be pressed by a user at the center of an upper surface thereof. A reinforcing rib for reinforcing the pressing plate is radially formed at an upper surface of the pressing plate.

The cutting unit includes: a plurality of supporting portions formed at the edge of a lower side of the pressing plate in a circumferential direction with the same interval; a punching portion extended downwardly from the end portion of the supporting portion, for punching the sealing member; a cutter
5 formed at both lateral surfaces of the supporting portion and rotated together with the body at the time of rotating the body, for cutting the sealing member as a circular shape; and an accommodation portion for accommodating the sealing member that has been removed by the cutter at the vessel opening.

The vessel stopper according to the present invention comprises: a
10 body mounted at a vessel opening through which contents stored in a vessel are discharged outwardly, for storing contents different from contents stored in the vessel therein; a connection portion connected to an inner circumferential surface of the body; a pressing plate connected to an inner circumferential surface of the connection portion and pressed by a user; a
15 cutting unit extended to a lower side of the pressing plate, for punching the sealing member by being moved downwardly when the pressing plate is pressed and for cutting the sealing member when the body is rotated; and a punch extended from the lower side of the pressing plate, for punching the sealing member by being downwardly moved at the time of pressing the
20 pressing plate and thereby introducing the contents stored in the body into the vessel.

The vessel stopper according to the present invention comprises: a body mounted at a vessel opening through which contents stored in a vessel are discharged outwardly, and having a partition wall therein; and at least two

sealing member removing units formed at the edge of the partition wall in a circumferential direction with the same interval, for removing a sealing member sealed at the vessel opening and thereby storing in the body when the body is detached from the vessel opening.

- 5 The partition wall is provided with at least two circular grooves in a circumferential direction thereof, and a sealing member removing unit is formed at said each circular groove.

 The vessel stopper according to the present invention comprises: a body spirally-coupled to a vessel opening; a mounting unit formed at an inner
10 circumferential surface of the body thus to be coupled to the vessel opening; and a sealing member removing unit formed at an inner side surface of the body, for punching a sealing member attached to the vessel opening when the body is rotated in a close direction of the vessel, and for cutting the sealing member and thereby storing the sealing member in the body when
15 the body is rotated in an open direction of the vessel.

BRIEF DESCRIPTION OF THE DRAWINGS

 FIG. 1 is a sectional view of a vessel stopper in accordance with the
20 conventional art;

 FIGs. 2 and 3 are perspective views of a vessel stopper according to one embodiment of the present invention;

 FIG. 4 is a sectional view showing a state that the vessel stopper is mounted at a vessel opening according to one embodiment of the present

invention;

FIG. 5 is a bottom view of the vessel stopper according to one embodiment of the present invention;

FIG. 6 is a sectional view taken along line VI-VI of FIG. 4;

5 FIG. 7 is a perspective view of a cutting unit according to one embodiment of the present invention;

FIGs. 8 and 9 are operational state views of the vessel stopper according to one embodiment of the present invention;

10 FIG. 10 is a sectional view of a vessel stopper according to a second embodiment of the present invention;

FIG. 11 is a sectional view of a vessel stopper according to a third embodiment of the present invention;

FIG. 12 is a sectional view of a vessel stopper according to a fourth embodiment of the present invention;

15 FIG. 13 is an operational state view of the vessel stopper according to the fourth embodiment of the present invention;

FIG. 14 is an upper surface view of a vessel stopper according to a fifth embodiment of the present invention;

FIG. 15 is a sectional view taken along line VII-VII of FIG. 14;

20 FIG. 16 is an enlargement view of 'B' of FIG.15;

FIG. 17 is an operational state view of the vessel stopper according to the fifth embodiment of the present invention;

FIG. 18 is a sectional view of a vessel stopper according to a sixth embodiment of the present invention;

FIG. 19 is an operational state view of the vessel stopper according to the sixth embodiment of the present invention;

FIG. 20 is a sectional view of a vessel stopper according to a seventh embodiment of the present invention;

5 FIG. 21 is an operational state view of the vessel stopper according to the seventh embodiment of the present invention; and

FIG. 22 is a sectional view of a vessel stopper according to an eighth embodiment of the present invention.

10 **MODES FOR CARRYING OUT THE PREFERRED EMBODIMENTS**

Hereinafter, preferred embodiments of a vessel stopper according to the present invention will be explained with reference to the attached drawings.

15 Even if a plurality of preferred embodiments of the vessel stopper can exist in the present invention, the most preferred embodiment will be explained.

FIGs. 2 and 3 are perspective views of a vessel stopper according to one embodiment of the present invention, FIG. 4 is a sectional view showing
20 a state that the vessel stopper is mounted at a vessel opening according to one embodiment of the present invention, and FIG. 5 is a bottom view of the vessel stopper according to one embodiment of the present invention.

The vessel stopper 2 according to the present invention comprises: a body 16 mounted at a vessel opening 12 through which the contents stored in

a vessel 10 are discharged outwardly, and having a space therein; a mounting unit 22 formed at a lower side of the body 16, for mounting the body 16 at the vessel opening 12; and a sealing member removing unit 18 formed in the body 16, for removing a sealing member 20 sealed at the vessel opening 12 when the stopper 2 is separated from the vessel opening 12.

The vessel 10 stores a storage item of a fluid state therein, and the sealing member 20 for protecting the storage item contained in the vessel 10 by sealing the vessel opening 12 is attached to the vessel opening 12 through which the storage item is discharged outwardly. The sealing member 20 is preferably formed of a material such as paper or an aluminum thin plate capable of being easily removed by a knife, etc.

Since the sealing member 20 is removed by the sealing member removing unit 18, a skirt portion for removing the sealing member 20 by a hand is not necessary. That is, in the conventional art, a certain amount of skirt portion is wound on an outer circumferential surface of the vessel opening in order to remove the sealing member by a hand after removing the vessel stopper. However, in the present invention, since the sealing member 20 is removed by the sealing member removing unit 18, the sealing member 20 is mounted only at the vessel opening thereby to minimize a usage amount of the sealing member 20.

The body 16 has a cylindrical shape of which upper and lower sides are respectively opened, and is composed of: a first body 24 where the sealing member removing unit 18 is formed; and a second body 26 having an inner diameter larger than that of the first body 24 and provided with the

mounting unit 22 for mounting the body 16 at the vessel opening 12. A plurality of protrusions 28 for easily turning the vessel stopper 2 by a hand are formed at an outer circumferential surface of the body 16. A handgrip 36 to be held and pulled when the body 16 is detached from the vessel opening 12 is
5 formed at a lower end of the body 16.

A stopping protrusion 30 is formed at the open upper portion of the body 16 in a circumferential direction thereof. Also, a cover member 32 is mounted at the stopping protrusion 30 thus to close the open upper portion of the body 16 and thereby to protect the sealing member removing unit 18
10 mounted in the body 16.

The cover member 32 is formed as a disc shape, and is preferably provided with a handgrip 34 for easily detaching the cover member 32 from the body 16 by a hand at one side thereof.

A supporting rib 38 is protruded at an inner circumferential surface of a
15 connection portion between the first body 24 and the second body 26 in a circumferential direction thus to be adhered to an upper surface of the vessel opening 12 where the sealing member 20 is mounted. That is, the sealing member 20 is adhered to the upper surface of the vessel opening 12 by the supporting rib 38 thereby to maintain a sealing state.

20 The mounting unit 22 is preferably constructed as a stopping protrusion formed at an inner circumferential surface of the second body 26 and stopped by a stopping rib 40 formed at an upper end of the vessel opening 12 for maintaining a state that the vessel stopper 2 is mounted at the vessel opening 12.

The sealing member removing unit 18 includes: a connection portion 42 connected to an inner circumferential surface of the body 16; a pressing plate 44 connected to the connection portion 42 and pressed by a user; and a plurality of cutting units 46 formed at a lower surface of the pressing plate 44 in a circumferential direction with a certain interval, for punching the sealing member 20 by being moved downwardly when the pressing plate 44 is pressed and for cutting the sealing member 20 when the body 16 is rotated.

The connection portion 42 is formed as a thin film of a dome shape connected between an inner circumferential surface of the first body 24 of the body 16 and an outer circumferential surface of the pressing plate 44. The connection portion 42 is elastically deformed when the pressing plate 44 is pressed by a force more than a certain intensity, thereby moving the pressing plate 44 downwardly.

Since the connection portion 42 is connected between the inner circumferential surface of the body 16 and the outer circumferential surface of the pressing plate 44, the connection portion 42 seals the second body 26 and elastically supports the current position of the pressing plate 44. That is, when the pressing plate 44 is upwardly protruded without being pressed, the connection portion 42 maintains the current position of the pressing plate 44 while maintaining a convex dome shape. Also, when the pressing plate 44 is pressed by a force more than a certain intensity, the connection portion 42 is elastically deformed as a concave shape thus to support the state that the pressing plate is pressed.

FIG. 6 is a sectional view taken along line VI-VI of FIG. 4 showing the

pressing plate of the vessel stopper according to the present invention.

The pressing plate 44 is provided with a pressing portion 50 protruded to be pressed by a user at the center of an upper surface thereof, and is provided with a reinforcing rib 52 for uniformly dispersing a force applied
5 when the pressing portion 50 is pressed to the entire pressing plate 44 at the upper surface thereof. The reinforcing rib 52 is radially formed at the upper surface of the pressing plate 44, and the number of the reinforcing rib 52 is the same as the number of the cutting unit 46.

As shown in FIG.7, the cutting unit 46 includes: a plurality of supporting
10 portion 56 formed at a lower side of the pressing plate 44 in a circumferential direction with a certain interval; a punching portion 58 extended downwardly from the end portion of the supporting portion 56 and moved downwardly at the time of pressing the pressing plate 44, for punching the sealing member 20; a cutter 60 formed at both lateral surfaces of the supporting portion 56
15 and rotated together with the body 16 at the time of rotating the body 16, for cutting the sealing member 20 as a circular shape; and an accommodation portion 62 for accommodating the sealing member 20 that has been removed by the cutter 60 at the vessel opening 12.

The supporting portion 56 is formed as a flat plate having a certain
20 curvature radius and arranged at the edge of the lower surface of the pressing plate 44 with a certain interval, and is provided with the cutter 60 for cutting the sealing member 20 at both lateral surfaces thereof. The supporting portion 56 is provided with a cutter 64 for punching the sealing member 20 like the punching portion 58 at both lateral surfaces of the lower end thereof.

The punching portion 58 is formed at the lower end of the supporting portion 56 with a width narrower than a width of the supporting portion 56, and has an end portion sharply formed to easily punch the sealing member 20.

5 The accommodation portion 62 is extended from the end portion of the punching portion 58 to an inner side of the body 16 with a certain inclination angle, and mounts the outer circumferential surface of the sealing member 20 that has been removed from the vessel opening 12.

Operation of the vessel stopper according to the present invention will
10 be explained as follows.

FIGs. 8 and 9 are operational state views of the vessel stopper according to one embodiment of the present invention.

First, in order to discharge the contents stored in the vessel 10 outwardly, the cover member 32 mounted at the upper side of the body 16 is
15 uncovered. That is, as the user pulls the cover member with grasping the handgrip 34, the cover member 32 is detached from the upper surface of the body 16. Then, as shown in FIG. 8, when the pressing plate 44 is pressed with a force more than a certain intensity, the connection portion 42 is elastically deformed and at the same time the pressing plate 44 is
20 downwardly moved. According to this, the punching portion 58 of the cutting unit 46 formed at the lower side of the pressing plate 44 punches the edge of the sealing member 20.

Then, when the body 16 is rotated, the cutting unit 46 is rotated together with the body 16 and thereby the cutter 60 formed at both lateral

surfaces of the supporting portion 56 cuts the sealing member 20 as a circular shape. At this time, the sealing member 20 that has been cut by the cutter 60 is fitted into the accommodation portion 62. Then, as shown in FIG. 9, when the body 16 is upwardly pulled with grasping the handgrip 36 formed at the body 16, the stopping protrusion 22 formed at the inner circumferential surface of the body 16 is detached from the stopping rib 40 formed at the upper surface of the vessel opening 12 thereby to detach the vessel stopper 2 from the vessel opening 12.

According to this, the sealing member 20 that has been removed from the vessel opening 12 is fitted into the accommodation portion 62 formed in the body 16 thereby to be stored in the vessel stopper 2.

In the vessel stopper according to one embodiment of the present invention, the user presses the pressing plate 44 and then rotates the body 16 thereby to cut the sealing member 20 by the cutting unit 46. Then, when the vessel stopper 2 is detached from the vessel opening 12, the sealing member 20 that has been removed from the vessel opening 12 is stored in the body 16 thereby to facilitate usage and to prevent an environment pollution due to a discard of the sealing member 20.

FIG. 10 is a sectional view of a vessel stopper according to a second embodiment of the present invention.

The vessel stopper according to the second embodiment is the same as the vessel stopper according to the first embodiment except a mounting unit mounted at the vessel opening.

That is, in the vessel stopper aforementioned in the first embodiment,

applied is one-touch method that the vessel stopper is detached from the vessel opening 12 when the user pulls the vessel stopper with grasping the handgrip. On the contrary, in the vessel stopper according to the second embodiment, applied is a spiral coupling method that the vessel stopper is
5 detached from the vessel opening 12 when the user turns the vessel stopper.

The mounting unit of the vessel stopper according to the second embodiment of the present invention is composed of: a male screw portion 72 formed at the outer circumferential surface of the vessel opening 12; and a female screw portion 70 formed at the inner circumferential surface of the
10 body 16 to be spirally-coupled to the male screw portion 72. Also, a skirt portion 76 for maintaining a state that the vessel stopper is mounted at the vessel opening 12 is formed at the lower end of the body 16.

Operation of the vessel stopper according to the second embodiment of the present invention will be explained as follows.

15 When the pressing plate 44 is pressed with a force more than a certain intensity, the connection portion 42 is elastically deformed and at the same time the pressing plate 44 is downwardly moved. According to this, the punching portion 58 of the cutting unit 46 formed at the lower side of the pressing plate 44 punches the edge of the sealing member 20.

20 Then, when the body 16 is rotated in an open direction, the female screw portion 70 is detached from the male screw portion 72 formed at the vessel opening 12. When the body 16 is rotated, the cutter 60 of the cutting unit 46 is rotated together with the body 16 and at the same time cuts the sealing member 20 in a circumferential direction. Also, the sealing member 20

that has been removed from the vessel opening 12 is accommodated in the accommodation portion 62 formed at the inner circumferential surface of the body 16.

The vessel stopper according to the second embodiment of the present invention can be applied to any vessel that a vessel stopper is spirally-coupled to a vessel opening thus to be detached from the vessel opening once the vessel stopper is rotated.

FIG. 11 is a sectional view of a vessel stopper according to a third embodiment of the present invention.

The vessel stopper according to the third embodiment of the present invention is the same as the vessel stopper 2 aforementioned in the first embodiment or the second embodiment except that a spoon 78 with which the contents stored in the vessel 10 are taken is mounted in the vessel stopper 2.

That is, the vessel stopper 2 according to the third embodiment is provided with a holding portion 80 at an inner circumferential surface of an upper side of the body 16, and the spoon 78 is mounted at the holding portion 80.

The vessel stopper 2 according to the third embodiment is used when contents taken by the spoon 78 are stored in the vessel 10. First, the cover member 32 mounted at the upper side of the body 16 is detached from the body and then the spoon 78 mounted in the body 16 is taken out. Then, the operation aforementioned in the first embodiment is performed thereby to detach the vessel stopper 2 from the vessel opening 12 and at the same time

to remove the sealing member 20. Then, the user eats the contents stored in the vessel 10 by using the spoon 78.

FIG. 12 is a sectional view of a vessel stopper according to a fourth embodiment of the present invention, and FIG. 13 is an operational state view of the vessel stopper according to the fourth embodiment of the present invention.

The vessel stopper according to the fourth embodiment is for storing contents 60 different from contents 62 stored in the vessel 10 in the body 16, and then for mixing the contents 62 stored in the vessel 10 with the contents 60 stored in the vessel stopper before discharging the contents 62 stored in the vessel 10. The vessel stopper according to the fourth embodiment is mainly used at a vessel for mixing two kinds of drugs before a usage, and can be applied to any vessel for mixing two materials before a usage.

In the vessel stopper according to the fourth embodiment, the sealing member removing unit 18 for removing the sealing member 20 attached to the vessel opening 12 is mounted in the body 16, and contents 84 different from contents 86 stored in the vessel 10 are stored in the body 16.

The sealing member removing unit 18 includes: a connection portion 42 integrally connected to the inner circumferential surface of the body 16; a pressing plate 44 integrally formed with the connection portion 42 and protruded upwardly thus to be pressed by a user; a cutting unit 46 formed at a lower side of the pressing plate 44 in a circumferential direction, for punching the sealing member 20 by being moved downwardly when the pressing plate 44 is pressed and for cutting the sealing member 20 by being rotated when

the body 16 is rotated; and a punch 88 extended from the center of the lower side of the pressing plate 44, for punching the center of the sealing member 20 so that the contents 84 stored in the body 16 can be introduced into the vessel 10.

5 The connection portion 42, the pressing plate 44, and the cutting unit are equal to those of the first embodiment, thereby omitting their explanations.

 The punch 88 is sharply protruded as a conic shape at the end of a rod portion 90 extended downwardly from the center of the lower side of the
10 pressing plate 44 thus to punch the center of the sealing member 20 and thereby to form a hole 92. Through the hole 92, the contents 84 stored in the body 16 is introduced into the vessel 10.

 Since an outer diameter of the punch 88 is larger than that of the rod portion 90, a sufficient space for passing the contents 84 stored in the body
15 16 can be obtained even if the rod portion 90 passes through the hole 92 formed by the punch 88.

 Operation of the vessel stopper according to the fourth embodiment will be explained as follows.

 When the pressing plate 44 is pressed by a certain force after the
20 cover member 32 is detached from the body 16, the cutting unit 46 is downwardly moved thus to punch the edge of the sealing member 20. At the same time, the punch 88 is downwardly moved thus to punch the center of the sealing member 20 thereby to form the hole 92. According to this, the contents 84 stored in the body 16 is introduced into the vessel 10 through the

hole 92, and is mixed with the contents 86 stored in the vessel 10.

When the contents 84 stored in the body 16 is completely introduced into the vessel 10, the user rotates the body 16 and thereby the cutter 60 of the cutting unit 18 cuts the sealing member 20 as a circular shape. If the
5 vessel stopper is detached from the vessel opening 12, the sealing member 20 that has been removed from the vessel opening 12 is stored in the accommodation portion 62 inside the body 16.

FIG. 14 is an upper surface view of a vessel stopper according to a fifth embodiment of the present invention; FIG. 15 is a sectional view taken
10 along line VII-VII of FIG. 14; FIG. 16 is an enlargement view of 'B' of FIG. 15; and FIG. 17 is an operational state view of the vessel stopper according to the fifth embodiment of the present invention.

The vessel stopper according to the fifth embodiment is applied to a vessel having a relatively large vessel opening 16. In the vessel stopper, a
15 plurality of sealing member removing units 63 are formed in a circumferential direction of the body 16.

That is, in the vessel stopper 2 according to the fifth embodiment, a partition wall 94 of a disc shape is formed at the inner circumferential surface of the body 16, and at least two mounting holes 96 are formed in the
20 circumferential direction of the partition wall 94. The sealing member removing unit 63 is formed in each mounting hole 96.

The sealing member removing unit 63 includes: a connection portion 65 formed as a flexible form and connected to an inner circumferential surface of the mounting hole 96; a pressing plate 67 mounted at an inner

circumferential surface of the connection portion 65 and pressed by a user; and a cutting unit 69 formed at a lower surface of the pressing plate 67 for cutting a sealing member 20.

A width T1 of the connection portion 65 positioned at the edge of the partition wall 94 is wider than a width T2 positioned inside the partition wall 94, so that the pressing plate 67 is pressed with an inclined state.

The pressing plate 67 is formed as a triangular flat-plate so as to be easily pressed with an inclined state.

The cutting unit of the fifth embodiment of the present invention has the same shape as that of the aforementioned embodiment except that only one cutting unit 69 is formed at the lower surface of the pressing plate 67.

Operation of the vessel stopper according to the fifth embodiment will be explained. When the user downwardly presses each pressing plate 67 mounted in a circumferential direction of the partition wall 94, the connection portion 65 is elastically deformed and thereby the pressing plates 67 are downwardly moved. According to this, the cutting unit 69 formed at the lower surface of the pressing plate 67 punches the sealing member 20.

Under this state, when the vessel stopper is rotated, the cutting unit 69 cuts the sealing member 20 and the cut sealing member 20 is stored in the vessel stopper.

According to the vessel stopper of the first to fourth embodiments, since one sealing member removing unit is used when the vessel opening 12 is large, the size of the pressing plate 67 becomes large and a great force for pressing the pressing plate 67 is required. Also, since the pressing plate 67 is

not horizontally maintained easily at the time of pressing the pressing plate 67, cutting units that do not punch the sealing member exist among the plurality of cutting units formed at the lower surface of the pressing plate 67.

Therefore, in order to solve said problem, at least two sealing member
5 removing units 63 are installed in a circumferential direction of the partition wall 94 with the same interval in the fifth embodiment. According to this, the user can press each pressing plate 67 with less force thereby to have a convenient usage, and all the cutting units 69 punch the sealing member 20.

FIG. 18 is a sectional view of a vessel stopper according to a sixth
10 embodiment of the present invention, and FIG. 19 is an operational state view of the vessel stopper according to the sixth embodiment of the present invention.

The vessel stopper according to the sixth embodiment includes: a body
5 mounted at the vessel opening 12; and a cutting unit 7 formed at an inner
15 side surface of the body 5, for punching the sealing member 20 attached to the vessel opening 12 when the body 5 is rotated in a close direction of the vessel, and for cutting the sealing member 20 and thereby storing the sealing member 20 in the body 5 when the body 5 is rotated in an open direction of the vessel 10.

20 The body 5 has a cylindrical shape of which upper side is closed. A female screw portion 70 spirally-coupled to a male screw portion 72 formed at the outer circumferential surface of the vessel opening 12 is formed at the inner circumferential surface of the lower side of the body 5. Also, a skirt portion 9 for maintaining a state that the vessel stopper is fixed to the vessel

opening 12 is formed at the lower end of the body 5.

The skirt portion 9 has a certain interval H from the upper surface of the vessel 10, so that the body 5 can be rotated as much as the interval H in a close direction of the vessel.

5 The cutting unit 7 includes: a plurality of supporting portion 56 formed at an inner side surface of the body 5 in a circumferential direction with a certain interval; a punching portion 58 extended downwardly from the end portion of the supporting portion 56 and moved downwardly at the time of pressing the pressing plate 44, for punching the sealing member 20; a cutter
10 60 formed at both lateral surfaces of the supporting portion 56 and rotated together with the body 16 at the time of rotating the body 16, for cutting the sealing member 20 as a circular shape; and an accommodation portion 62 for accommodating the sealing member 20 that has been removed by the cutter 60 at the vessel opening 12.

15 Operation of the vessel stopper according to the sixth embodiment will be explained as follows. First, if the body 5 is rotated in a close direction of the vessel 10, the body 5 is downwardly moved. At this time, the body 5 can be downwardly moved as much as the interval H since the skirt portion 9 mounted at the lower side of the body 5 has the interval H from the upper
20 surface of the vessel 10.

According to this, the cutting unit 7 formed at the lower surface of the body 5 punches the sealing member 20. Under this state, if the body 5 is rotated in an open direction of the vessel 10, the cutting unit 7 is rotated together with the body 5 and at the same time cuts the sealing member 20 as

a circular shape. Also, the sealing member 20 that has been removed from the vessel opening 12 is fitted into the accommodation portion 62 formed in the body 5 thus to be stored in the vessel stopper.

FIG. 20 is a sectional view of a vessel stopper according to a seventh embodiment of the present invention, and FIG. 21 is an operational state view of the vessel stopper according to the seventh embodiment of the present invention.

A sealing member removing unit 150 according to the seventh embodiment of the present invention includes: a connection portion 152 elastically and deformably connected to an inner circumferential surface of the body 16; a pressing plate 154 connected to an outer circumferential surface of the connection portion 152 and pressed by a user; and a cutting unit 156 formed at a lower surface of the pressing plate 154 in a circumferential direction, for cutting an outer circumferential surface of the sealing member 20 by being downwardly moved when the pressing plate 154 is pressed and then storing in the body.

The connection portion 152 is formed as a thin film of a dome shape connected between the inner circumferential surface of the body 16 and the outer circumferential surface of the pressing plate 154. When the pressing plate 154 is pressed by a force more than a certain degree, the connection portion 152 is elastically deformed and the pressing plate 154 is downwardly moved.

The pressing plate 154 is formed as a circular plate, and is provided with the cutting unit 156 at the lower surface thereof.

The cutting unit 156 is composed of: a supporting portion formed at the lower side of the pressing plate 154 as a cylindrical shape; a cutter 162 formed at the end of the supporting portion 160 as a cylindrical blade shape, for cutting the sealing member 20 as a circular shape at the time of pressing
5 the pressing plate 154; and an accommodation portion 164 extended inwardly at an inner circumferential surface of the supporting portion 160 with a certain width, for accommodating the sealing member 20 that has been cut by the cutter 162.

At least one stopping portion 170 serving as a stopper for punching the
10 sealing member 20 when the pressing plate 154 is pressed and thereby accommodating the sealing member 20 to the inner circumferential surface of the body 16 is formed at the lower surface of the pressing plate 154.

The stopping portion 170 is composed of: a supporting bar 172 perpendicularly formed at the lower surface of the pressing plate 154; and a
15 stopping jaw 174 formed as a corn shape at the end of the supporting bar 172 and stopping the sealing member 20.

Operation of the sealing member removing unit according to the seventh embodiment will be explained as follows.

When the user presses the pressing plate 154 after removing the cover
20 member 32 mounted at the upper end of the body 16, the connection portion 152 is elastically deformed and the pressing plate 154 is downwardly moved. According to this, the cutting unit 156 formed at the lower surface of the pressing plate 154 is downwardly moved thereby to cut the edge of the sealing member 20 mounted at the vessel opening and then to accommodate

the edge to the inner circumferential surface of the body 16.

More specifically, when the pressing plate 154 is downwardly moved, the cylindrical cutter 162 is downwardly moved thereby to cut the sealing member as a circular shape. The sealing member 20 that has been removed
5 at the vessel opening 12 is stopped by the stopping portion 170 thereby to be accommodated in the body 16.

At this time, the stopping jaw 174 formed at the lower surface of the pressing plate 154 is also moved downwardly thus to punch the sealing member 20 and stop the sealing member 20, thereby more stably
10 accommodating the sealing member 20 in the body 16.

Then, when the user pulls the vessel opening upwardly with grasping the handgrip 36, the vessel opening is separated from the vessel 10 and thereby the sealing member 20 that has been removed from the vessel opening is accommodated in the body.

15 FIG. 22 is a sectional view of a vessel stopper having a sealing member removing unit according to an eighth embodiment of the present invention.

The sealing member removing unit 180 according to the eighth embodiment has the same as the sealing member removing unit 150 of the
20 seventh embodiment except the structure of a cutting unit 188.

That is, the cutting unit 188 includes: a supporting portion 182 formed at the edge of a lower side of the pressing plate 154 as a cylindrical shape; a cutter 184 formed at the end of the supporting portion 182 as a saw edge shape, for cutting the sealing member 20 as a circular shape; and an

accommodation portion 186 protruded at an inner side surface of the supporting portion 182, for accommodating the sealing member 20 that has been removed by the cutter 184.

The cutter 184 constructed as a triangular saw edge is repeatedly
5 formed is downwardly moved at the time of pressing the pressing plate 154, and cuts the sealing member 20 as a circular shape.

In the vessel stopper according to the present invention, the sealing member removing unit is installed in the stopper and the pressing plate of the sealing member removing unit is pressed before opening the stopper. Then, if
10 the user opens the stopper by rotating it, the sealing member is automatically removed from the vessel opening thereby to have a convenient usage.

Also, since the sealing member that has been removed from the vessel opening is stored in the accommodation portion inside the stopper, an environment pollution resulting from that the sealing member is discarded
15 outside can be prevented.

Additionally, the contents different from the contents stored in the vessel is stored in the stopper thus to be introduced into the vessel when the stopper is detached from the vessel. According to this, the contents stored in the stopper can be mixed with the contents stored in the vessel.

20 Also, the skirt portion for removing the sealing member is not required as the sealing member is removed by the sealing member removing unit, thereby reducing a usage amount of the sealing member and thus reducing a fabrication cost.

It will be apparent to those skilled in the art that various modifications

and variations can be made in the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention cover modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

CLAIMS

1. A vessel stopper comprising:
a body mounted at a vessel opening through which contents stored in
5 a vessel are discharged outwardly, and having a space therein;
a mounting unit formed at a lower side of the body, for mounting the
body at the vessel opening; and
a sealing member removing unit formed in the body, for removing a
sealing member sealed at the vessel opening and thereby storing the sealing
10 member in the body when the body is detached from the vessel opening .
2. The vessel stopper of claim 1, wherein a cover member for
protecting the sealing member removing unit is mounted at an upper end of
the body.
15
3. The vessel stopper of claim 1, wherein the body has a
cylindrical shape of which upper and lower sides are respectively opened,
and is composed of: a first body where the sealing member removing unit is
formed; and a second body having an inner diameter larger than that of the
20 first body and provided with the mounting unit.
4. The vessel stopper of claim 3, wherein the first body and the
second body are provided with a supporting rib at a connection portion
therebetween, the supporting rib protruded in a circumferential direction thus

to be adhered to an upper surface of the vessel opening where the sealing member is mounted.

5. The vessel stopper of claim 1, wherein the body is provided with
5 a plurality of protrusions at an outer circumferential surface thereof, and is provided with a handgrip to be held and pulled when the body is detached from the vessel opening at a lower end thereof.

6. The vessel stopper of claim 1, wherein the mounting unit is
10 constructed as a stopping protrusion protruded at an inner circumferential surface of the body in a circumferential direction thus to be stopped by a stopping rib formed at an upper surface of the vessel opening.

7. The vessel stopper of claim 1, wherein the mounting unit is a
15 female screw portion formed at an inner circumferential surface of the body to be spirally-coupled to a male screw portion formed at an outer circumferential surface of the vessel opening.

8. The vessel stopper of claim 1, wherein the sealing member
20 removing unit includes:

a connection portion elastically and deformably connected to an inner circumferential surface of the body;

a pressing plate connected to an inner circumferential surface of the connection portion and pressed by a user; and

a cutting unit formed at the edge of a lower surface of the pressing plate in a circumferential direction with the same interval, for punching the sealing member when the pressing plate is pressed and for cutting the sealing member and thereby storing in the body when the body is rotated.

5

9. The vessel stopper of claim 8, wherein the connection portion is formed as a thin film of a dome shape connected between an inner circumferential surface of the body and an outer circumferential surface of the pressing plate thus to be elastically deformed at the time of pressing the pressing plate.

10

10. The vessel stopper of claim 8, wherein the pressing plate is formed as a disc shape and is provided with a pressing portion protruded to be pressed by a user at the center of an upper surface thereof, and a reinforcing rib for reinforcing the pressing plate is radially formed at an upper surface of the pressing plate.

15

11. The vessel stopper of claim 8, wherein the cutting unit includes:
a plurality of supporting portions formed at the edge of a lower side of the pressing plate in a circumferential direction with the same interval;

20

a punching portion extended downwardly from the end portion of the supporting portion, for punching the sealing member;

a cutter formed at both lateral surfaces of the supporting portion and rotated together with the body at the time of rotating the body, for cutting the

sealing member as a circular shape; and

an accommodation portion for accommodating the sealing member that has been removed by the cutter at the vessel opening.

5 12. The vessel stopper of claim 11, wherein the supporting portion is formed as a flat plate having a certain curvature radius and arranged at the edge of the lower surface of the pressing plate with a certain interval, and is provided with the cutter at both lateral surfaces thereof and at both lateral surfaces of the lower end thereof.

10

13. The vessel stopper of claim 11, wherein the punching portion is formed at the lower end of the supporting portion with a width narrower than a width of the supporting portion, and has an end portion sharply formed to easily punch the sealing member.

15

14. The vessel stopper of claim 11, wherein the accommodation portion is constructed as a holding portion extended from the end portion of the punching portion to an inner side of the body with a certain inclination angle.

20

15. The vessel stopper of claim 1, wherein the body is provided with a spoon with which contents stored in the vessel are taken therein.

16. A vessel stopper comprising:

a body mounted at a vessel opening through which contents stored in a vessel are discharged outwardly, for storing contents different from contents stored in the vessel therein;

a connection portion connected to an inner circumferential surface of
5 the body;

a pressing plate connected to an inner circumferential surface of the connection portion and pressed by a user;

a cutting unit extended to a lower side of the pressing plate, for punching the sealing member by being moved downwardly when the pressing
10 plate is pressed and for cutting the sealing member when the body is rotated;
and

a punch extended from the lower side of the pressing plate, for punching the sealing member by being downwardly moved at the time of pressing the pressing plate and thereby introducing the contents stored in the
15 body into the vessel.

17. The vessel stopper of claim 16, wherein the body is provided with a spoon therein.

20 18. The vessel stopper of claim 16, wherein the cutting unit includes:

a plurality of supporting portions formed at the edge of a lower side of the pressing plate in a circumferential direction with the same interval;

a punching portion extended downwardly from the end portion of the

supporting portion, for punching the sealing member;

a cutter formed at both lateral surfaces of the supporting portion and rotated together with the body at the time of rotating the body, for cutting the sealing member as a circular shape; and

5 an accommodation portion for accommodating the sealing member that has been removed by the cutter at the vessel opening.

19. The vessel stopper of claim 16, wherein the punch is formed as a conic shape at the end of a rod portion extended downwardly from the
10 center of the pressing plate.

20. The vessel stopper of claim 19, wherein the punch has an outer diameter larger than that of the rod portion.

15 21. A vessel stopper comprising:

a body mounted at a vessel opening through which contents stored in a vessel are discharged outwardly, and having a partition wall therein; and

at least two sealing member removing units formed at the edge of the partition wall in a circumferential direction with the same interval, for removing
20 a sealing member sealed at the vessel opening and thereby storing the sealing member in the body when the body is detached from the vessel opening.

22. The vessel stopper of claim 21, wherein the partition wall is

provided with at least two mounting holes in a circumferential direction thereof, and the sealing member removing unit is formed in each mounting hole.

5 23. The vessel stopper of claim 22, wherein the sealing member removing unit includes:

 a connection portion connected to an inner circumferential surface of the mounting hole as a flexible form;

 a pressing plate connected to an inner circumferential surface of the
10 connection portion and pressed by a user; and

 a cutting unit formed at a lower surface of the pressing plate and for removing a sealing member.

 24. The vessel stopper of claim 23, wherein a width of the
15 connection portion positioned at an edge of the partition wall is wider than a width positioned inside the partition wall.

 25. A vessel stopper comprising:
 a body spirally-coupled to a vessel opening;
20 a mounting unit formed at an inner circumferential surface of the body
 thus to be coupled to the vessel opening; and

 a sealing member removing unit formed at an inner side surface of the body, for punching a sealing member attached to the vessel opening when the body is rotated in a close direction of the vessel, and for cutting the

sealing member and thereby storing the sealing member in the body when the body is rotated in an open direction of the vessel.

26. A vessel stopper comprising:

5 a body coupled to a vessel opening; and

a sealing member removing unit formed at an inner side surface of the body and for removing a sealing member mounted at the vessel opening, wherein the sealing member removing unit includes:

10 a connection portion elastically and deformably connected to an inner circumferential surface of the body;

a pressing plate connected to an inner circumferential surface of the connection portion and pressed by a user; and

15 a cutting unit formed at an edge of a lower surface of the pressing plate as a cylindrical shape, for cutting the sealing member and then storing in the body.

27. The vessel stopper of claim 26, wherein the cutting unit is composed of:

20 a supporting portion formed at a lower side of the pressing plate as a cylindrical shape;

a cutter formed at the end of the supporting portion as a cylindrical blade shape, for cutting the sealing member as a circular shape at the time of pressing the pressing plate; and

an accommodation portion extended inwardly at an inner

circumferential surface of the supporting portion with a certain width, for accommodating the sealing member that has been cut by the cutter.

28. The vessel stopper of claim 26, wherein the cutting unit is
5 composed of:

a supporting portion formed at a lower side of the pressing plate as a cylindrical shape;

a cutter formed at the end of the supporting portion as a triangular blade is repeatedly formed, for cutting the sealing member as a circular shape
10 at the time of pressing the pressing plate; and

an accommodation portion extended inwardly at an inner circumferential surface of the supporting portion with a certain width, for accommodating the sealing member that has been cut by the cutter.

15 29. The vessel stopper of claim 26, wherein the sealing member removing unit further includes a stopping portion formed at a lower surface of the pressing plate, for punching the sealing member when the pressing plate is pressed and thereby accommodating the sealing member to an inner circumferential surface of the body.

20

30. The vessel stopper of claim 29, wherein the stopping portion is composed of:

a supporting bar perpendicularly formed at the lower surface of the pressing plate; and

a stopping jaw formed as a corn shape at the end of the supporting bar and stopping the sealing member.