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Vacuum Container

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ABSTRACT

Disclosed is a vacuum container including a container body (10), a lid (20) for closing the upper end of the container body, a depression (24) defined on the lid, a boss (25) formed on the lid and defined with an air hole (26), a rotary cover (32) rotatably
5 arranged in the depression and having an accommodating space, and a closure member (45) having a through-hole (46) and coupled to the rotary cover.

VACUUM CONTAINER

BACKGROUND OF THE INVENTION

5 Field of the Invention

The present invention relates to vacuum containers, and more particularly, to a vacuum container which effectively and reliably maintains the inside of a container body under a vacuum state, has a simple structure, and allows a user to
10 easily confirm the vacuum state of the vacuum container with the naked eye.

Description of the Related Art

Containers are used to store and preserve various food
15 items such as meat, vegetables, and so on. However, conventional containers are not vacuumized in the inside thereof, so that it is impossible to store food items for a desired lengthy period of time while maintaining their freshness.

20 A variety of vacuum containers capable of storing food items for a desired lengthy period of time while maintaining their freshness have been proposed and used. As shown in FIG. 6, a conventional vacuum container includes an airtightening element 130 which is fitted around a boss (not shown) defining
25 an air hole. The airtightening element 130 thus maintains the

vacuum state of the inside of a container body (not shown).

In this type of conventional vacuum container, due to the fact that an upper end 130a of the airtightening element 130 possessing a hollow circular cylinder-shaped configuration has
5 the same thickness as the other portions, if the airtightening element 130 is not precisely coupled to the boss, the upper end 130a of the airtightening element 130 cannot be flushed with an upper end of the boss. Therefore, the possibility of a gap to be created between a valve element and the airtightening
10 element 130 is increased. For this reason, a problem is caused in that it is difficult to effectively and reliably maintain the inside of the vacuum container under a vacuum state.

In addition, the conventional vacuum containers do not allow a user to confirm a vacuum state of a container body with
15 the naked eye. Due to this fact, after a food item is received in a container body, the vacuum container is unlikely to be vacuumized.

It is thus necessary to provide a vacuum container which has a simple structure, and allows a user to easily confirm the
20 vacuum state of the vacuum container with the naked eye. In addition, when the vacuum container is provided with a means for allowing a user to check an initial vacuumization date of a food item or the remaining effective vacuumization periods, as occasion demands, the users may more effectively use the vacuum
25 containers.

SUMMARY OF THE INVENTION

Accordingly, the present invention has been made in an effort to solve the problems occurring in the related art, and
5 an object of the present invention is to provide a vacuum container which effectively and reliably maintains the inside of a container body under a vacuum state.

Another object of the present invention is to provide a vacuum container which has a simple structure, and allows a
10 user to easily confirm the vacuum state of the vacuum container with the naked eye.

A further object of the present invention is to provide a vacuum container which allows a user to check an initial vacuumization date of a food item or the remaining effective
15 vacuumization periods, as occasion demands.

In order to achieve the above objects, according to one aspect of the present invention, there is provided a vacuum container including a container body opened at an upper end thereof to receive a food item, a lid for closing the upper end
20 of the container body, a depression defined on the lid, a boss formed on the lid at a bottom of the depression and defined with an air hole for communicating the outside and the inside of the container body, a rotary cover rotatably arranged in the depression and having an accommodating space, and a closure
25 member having a through-hole and detachably coupled to the

rotary cover in such a way as to close the accommodating space,
the vacuum container comprising: an airtightening element
having a hollow body part detachably fitted around the boss and
a lip part extending in a radial direction at least partially
5 from the hollow body part; and a vacuum maintaining member
including: a semi-spherical body received in the closure member
and having an airtightening flange part which is brought into
contact with the lip part of the airtightening element; and an
exposure bar which extends upward from the semi-spherical body
10 such that at least a part of the exposure bar is exposed to the
outside through the through-hole of the closure member, said
exposure bar being moved upward and downward in accordance with
a vacuum state of the inside of the container body.

In an operating position of the vacuum container in which
15 the container body is vacuumized, the airtightening flange part
of the vacuum maintaining member is brought into airtight
contact with the airtightening element and the exposure bar is
moved downward, and in a non-operating position of the vacuum
container in which the container body is not vacuumized, the
20 airtightening flange part of the vacuum maintaining member is
separated from the airtightening element and the exposure bar
is moved upward.

At least one of the semi-spherical body and the exposure
bar of the vacuum maintaining member may be made of an elastic
25 material.

A sound generating part may be provided in the boss to generate an audible sound in the case that air flows through the air hole into or out of the container body.

5 The body part of the airtightening element is formed at least partially to have a tubular configuration.

In the vacuum container, a plurality of slots are formed on a sidewall of the accommodating space of said rotary cover in a manner such that the slots are arranged along a circumferential direction, and an engagement lever is formed on the closure member in a manner such that the lever is engaged
10 into the plurality of slots when the closure member is rotated.

Date patterns are formed on an upper surface of the closure member so that dates are circumferentially arranged thereon, and an indicator pattern is formed on an upper surface
15 of the rotary cover so that a desired date pattern is aligned with the indicator pattern.

BRIEF DESCRIPTION OF THE DRAWINGS

20 The above objects, and other features and advantages of the present invention will become more apparent after a reading of the following detailed description when taken in conjunction with the drawings, in which:

FIG. 1 is a perspective view illustrating a vacuum
25 container in accordance with the present invention;

FIG. 2 is a partial enlarged sectional view illustrating a main part of FIG. 1;

FIG. 3 is a partially broken-away plan view illustrating a main part of FIG. 1;

5 FIG. 4 is a partially broken-away perspective view illustrating an airtightening member used in the vacuum container according to an embodiment of the present invention;

FIGs. 5a through 5e are sectional views illustrating variations of the airtightening member of the present invention; and
10

FIG. 6 is a partially broken-away perspective view illustrating an airtightening member installed on the conventional vacuum container.

15 DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Reference will now be made in greater detail to a preferred embodiment of the invention, an example of which is illustrated in the accompanying drawings. Wherever possible,
20 the same reference numerals will be used throughout the drawings and the description to refer to the same or like parts.

In the present invention, a vacuum container has a container body 10 which is opened at an upper end thereof to
25 receive a food item, and a lid 20 which closes the upper end of

the container body 10, as shown in FIG. 1.

In the container body 10, there can be received various food items such as meat, vegetables, and so on, which can be stored under a vacuum state for an extended period of time while not being deteriorated in their freshness. In this regard, it is to be readily understood that, in addition to the configuration shown in FIG. 1, the container body 10 may have a variety of configurations such as a hollow square column, a hollow circular cylinder, a hollow trihedron, and so on, depending upon a kind of a food item.

Both front and rear sides of the container body 10 are formed with a pair of first locking segments (not shown), and both front and rear sides of the container lid 20 are formed with a pair of second locking segments 22. Due to this fact, after a food item is received in the container body 10, by engaging the first locking segments 21 into the second locking elements 22 and rotating the second locking segments 22 by a preset angle, the container body 10 can be closed by the lid 20.

At this time, it is not necessary for the container lid 20 to be locked to and unlocked from the container body 10 in obedience to the scheme shown in FIG. 1. Instead, it can be envisaged that a hinge (not shown) is provided at one sides of the container body 10 and lid 20, and the container body 10 is opened and closed by rotating the lid 20 about the hinge with

respect to the container body 10.

As shown in FIGS. 2 and 3, a depression 24 of a predetermined depth is defined at substantially a center portion of container lid 20. A boss 25 is projectedly formed on the lid 20 at a bottom of the depression 24.

The boss 25 is defined with an air hole 26. The air hole 26 serves as an air path through which air existing in the container body 10 can be discharged to the outside and outside air can flow into the container body 10. Below the boss 25, there is disposed a sound generating part 28. In the case that air flows through the air hole 26 into or out of the container body 10, the sound generating part 28 functions to generate an audible sound to allow the user to confirm whether or not the inside of the container body 10 is vacuumized.

A hollow airtightening element 30 (FIG. 4) is detachably fitted around the boss 25. In one example, the airtightening element 30 which may be made of rubber, urethane or sponge serving as an elastic element capable of shutting-off airflow is positioned on an upper end of the boss 25 to ensure that, when a rotary cover 32, which will be described later herein, is rotated toward the container body 10, the airtightening element 30 cooperates with a vacuum maintaining member 50 to vacuumize the inside of the container body 10.

The airtightening element 30 has a hollow body part 35 and lip parts 31 and 33. The hollow body part 35 is fitted

around the boss 25, and the lip parts extend radially outward from upper and lower ends of the body part 35, respectively. Hereafter, for the sake of clarity in explanation, the upper lip part will be referred to as a first lip part 31, and the
5 lower lip part will be referred to as a second lip part 33. When the body part 35 of the airtightening element 30 is fitted around the boss 25, the first lip part 31 is positioned slightly higher than the upper end of the boss 25.

A rotary cover 32 is rotatably arranged in the depression
10 24. A hinge part 34 is provided between the rotary cover 32 and the depression 24 to allow the rotary cover 32 to be rotated with respect to a wall of the lid 20 which defines the depression 24. A grasping part 36 is formed on an end of the rotary cover 32 which is opposite to the hinge part 34.
15 Therefore, in a state wherein the grasping part 36 is gripped, by rotating the rotary cover 32 about the hinge part 34 in one direction, the rotary cover 32 can be introduced into and removed out of the depression 24 so that the air hole 26 can be closed and opened, respectively.

20 At this time, the hinge part 34 comprises a hinge projection which is formed on one of the rotary cover 24 and the wall of the lid 20, defining the depression 24, and a pair of hinge grooves defined in the other of them. Here, the hinge projection and the hinge grooves are given with no reference
25 numerals, and the hinge part is representatively designated by

reference numeral 34.

The rotary cover 32 defines an accommodating space 41 in which the vacuum maintaining member 50 is accommodated as described later. A closure member 45 is detachably coupled to the rotary cover 32 in such a way as to close the accommodating space 41. A lower surface of the closure member 45 is opened, and a through-hole 46 is defined at a center portion of the closure member 45.

Adjacent to a lower end of a sidewall of the rotary cover 32 which defines the accommodating space 41, a plurality of slots 42 are defined in a manner such that they are spaced apart one from another in a circumferential direction. A plurality of engagement levers 47 are formed at a lower end of the closure member 45 in a manner such that they can be engaged into the plurality of slots 42 when the closure member 45 is rotated. The engagement levers 47 can be formed by partially cutting out the lower end of the closure member 45.

Due to the presence of the slots 42 and the engagement levers 47, the closure member 45 can be rotated within the accommodating space 41 in a stepwise manner. Date patterns 48 are formed on an upper surface of the closure member 45 so that dates are circumferentially arranged thereon, and an indicator pattern 38 is formed on an upper surface of the rotary cover 32. As a consequence, by rotating the closure member 45 within the accommodating space 41 in the stepwise manner so that a

desired date pattern 48 is aligned with the indicator pattern 38, it is possible to check an initial vacuumization date of a food item or the remaining effective vacuumization periods, as occasion demands.

5 The vacuum maintaining member 50 is accommodated in the closure member 45 so that vacuum can be introduced into and removed from the inside of the container body 10 by means of both the vacuum maintaining member 50 and the airtightening element 30. The vacuum maintaining member 50 includes a semi-
10 spherical body 51 having an airtightening flange part 51a at an edge thereof. The vacuum maintaining member 50 also includes an exposure bar 52 which extends upward from a center portion of the semi-spherical body 51 by a predetermined length such that the exposure bar 52 is exposed to the outside through the
15 through-hole 46 of the closure member 45. The exposure bar 52 may be made of a conventional plastic material, and the semi-spherical body 51 is preferably made of an elastic material.

 Describing operations of the vacuum maintaining member 50 according to the present invention, in an operating position of
20 the vacuum container in which the container body 10 is vacuumized, the airtightening flange part 51a of the semi-spherical body 51 of the vacuum maintaining member 50 is brought into airtight contact with the first lip part 31 of the airtightening element 30 and the exposure bar 52 is moved
25 downward, and in a non-operating position of the vacuum

container in which the container body 10 is not vacuumized, the airtightening flange part 51a of the vacuum maintaining member 50 is separated from the first lip part 31 of the airtightening element 30 and the exposure bar 52 is moved upward. Since the exposure bar 52 is moved downward in the operating position, that is, a vacuumizing position and upward in non-operating position, that is, a non-vacuumizing position, a user can easily confirm a vacuum state of the vacuum container 10 with the naked eye. Such an operation will be described in detail later herein.

Describing operation of the vacuum container of the present invention, in a state wherein the lid 20 is separated from the container body 10, a food item is received in the container body 10. Then, after placing the lid 20 to close the upper end of the container body 10, by rotating the second locking segments 22 by a preset angle, the lid 20 is locked to the container body 10.

Thereafter, with the grasping part 36 gripped, by rotating the rotary cover 32 about the hinge part 34, the rotary cover 32 is introduced into the depression 24. In a state wherein the rotary cover 32 is fully introduced into the depression 24, the airtightening flange part 51a of the vacuum maintaining member 50 is brought into airtight contact with the first lip part 31 of the airtightening element 30.

In this state, the lid 20 is pressed downward toward the

container body 10. By doing this, air existing in the container body 10 is discharged to the outside through the air hole 26 defined in the boss 25. At this time, air passing through the air hole 26 generates audible sound due to the presence of the sound generating part 28.

In the course of discharging air existing in the container body 10 to the outside by pressing the lid 20 downward, the airtightening flange part 51a of the vacuum maintaining member 50 is brought into airtight contact with the first lip part 31 of the airtightening element 30. That is to say, the first lip part 31 having a lip-shaped configuration is airtightly squeezed against the body part 35 to be fully brought into surface contact with the airtightening flange part 51a of the vacuum maintaining member 50. Accordingly, differently from the conventional art, it is possible to prevent a gap from being created between the vacuum maintaining member 50 and the airtightening element 30, whereby the inside of the container body 10 can be reliably maintained at a vacuum state.

At this time, the vacuum maintaining member 50 squeezed against the first lip part 31 by pressing the lid 20 downward is moved downward to some extent along with the first lip part 31 to press the inside of the container body 10. Hence, the exposure bar 52 of the vacuum maintaining member 50 is moved downward into the closure member 45 through the through-hole

46.

By this fact, from the downwardly moved exposure bar 52, the user can easily confirm a vacuum state of the vacuum container 10 with the naked eye.

5 As the inside of the container body 10 is vacuumized by pressing the container lid 20, it is possible to maintain freshness and an original state of a food item received in the container body 10 for an extended period of time.

10 In the case of using the food item received in the container body 10, with the grasping part 36 gripped, by rotating the rotary cover 32 about the hinge part 34 in the other direction, the depression 24 is held opened.

15 Thereupon, the airtightening flange part 51a of the vacuum maintaining member 50 is separated from the first lip part 31 and at the same time, the outside air flows into the container body 10 through the air hole 26 and the sound generating part 28 to vacuum-release the inside of the container body 10. Also, at this time, audible sound is generated in the sound generating part 28, and the exposure bar
20 52 of the vacuum maintaining part 50 is moved upward toward an initial position. In this way, vacuum governing the inside of the container body 10 is released.

25 Thereafter, by rotating the second locking segment 22 in the reverse direction, the second locking segment 22 is unlocked from the first locking segment 20. In this state, by

removing the container lid 20 from the container body 10, it is possible to use the food item received in the container body 10.

As described above, in the present invention by modifying
5 structure of the airtightening element 30, it is possible to effectively and reliably vacuumize the inside of the container body 10.

Moreover, in the present invention, by the provision of the exposure bar 52 which is moved downward and upward in
10 response to vacuumization and vacuum-release, it is possible to easily confirm a vacuum state of the container body 10 with the naked eye. In addition, it is possible to check an initial vacuumization date of a food item or the remaining effective vacuumization periods, as occasion demands.

15 In addition to the airtightening element as described above, variously configured airtightening elements 30a through 30e as shown in FIGs. 5a through 5e can be adopted.

The airtightening element 30a shown in FIG. 5a has a body part which is formed as a double-walled tubular structure, and
20 both of first and second lip parts 31a and 33a extend radially outward. In the airtightening element 30b shown in FIG. 5b, a first lip part 31b extends radially inward and a second lip part 33b extends radially outward.

The airtightening element 30c shown in FIG. 5c can be
25 obtained by modifying the body part 35c of the airtightening

member shown in FIG. 5b to have a double-walled tubular structure. In the airtightening element 30d shown in FIG. 5d, a first lip part 31d extends radially inward and a second lip part is not formed. Also, in the airtightening member 30e shown
5 in FIG. 5e, a second lip part is not formed, and a first lip part 31e extends radially outward.

It is to be noted that, even when these various airtightening elements 30a through 30e are used, the same working effects are attained by the present invention.

10 In addition to the above-mentioned embodiments, at least one of the container body 10 and the container lid 20 may be preferably made of a transparent material capable of allowing a user to know the kind of a food item contained in the container body 10.

15 As apparent from the above description, the vacuum container of the present invention effectively and reliably maintains the inside of the container body under a vacuum state.

Also, by employing a simple structure, it is possible to
20 allow a user to easily confirm the vacuum state of the vacuum container with the naked eye. In addition, it is possible to check an initial vacuumization date of a food item or the remaining effective vacuumization periods, as occasion demands.

In the drawings and specification, there have been
25 disclosed typical preferred embodiments of the invention and,

although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the following claims.

5

WHAT IS CLAIMED IS:

1. A vacuum container including a container body
opened at an upper end thereof to receive a food item, a lid
5 for closing the upper end of the container body, a depression
defined on the lid, a boss formed on the lid at a bottom of the
depression and defined with an air hole for communicating the
outside and the inside of the container body, a rotary cover
rotatably arranged in the depression and having an
10 accommodating space, and a closure member having a through-hole
and detachably coupled to the rotary cover in such a way as to
close the accommodating space, the vacuum container comprising:

an airtightening element having a hollow body part
detachably fitted around the boss and a lip part extending in a
15 radial direction at least partially from the hollow body part;
and

a vacuum maintaining member including:

a semi-spherical body received in the closure member
and having an airtightening flange part which is brought into
20 contact with the lip part of the airtightening element; and

an exposure bar which extends upward from the semi-
spherical body such that at least a part of the exposure bar is
exposed to the outside through the through-hole of the closure
member, said exposure bar being moved upward and downward in
25 accordance with a vacuum state of the inside of the container

body.

2. The vacuum container as set forth in claim 1,
wherein, in an operating position of the vacuum container in
5 which the container body is vacuumized, the airtightening
flange part of the vacuum maintaining member is brought into
airtight contact with the airtightening element and the
exposure bar is moved downward; and in a non-operating position
of the vacuum container in which the container body is not
10 vacuumized, the airtightening flange part of the vacuum
maintaining member is separated from the airtightening element
and the exposure bar is moved upward.

3. The vacuum container as set forth in claim 2, wherein
15 at least one of the semi-spherical body and the exposure bar of
the vacuum maintaining member is made of an elastic material.

4. The vacuum container as set forth in claim 1, wherein
the body part of the airtightening element is formed at least
20 partially to have a tubular configuration.

5. The vacuum container as set forth in claim 1, wherein
a plurality of slots are formed on a sidewall of the
accommodating space of said rotary cover in a manner such that
25 the slots are arranged along a circumferential direction, and

an engagement lever is formed on the closure member in a manner such that the lever is engaged into the plurality of slots when the closure member is rotated.

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Fig. 1

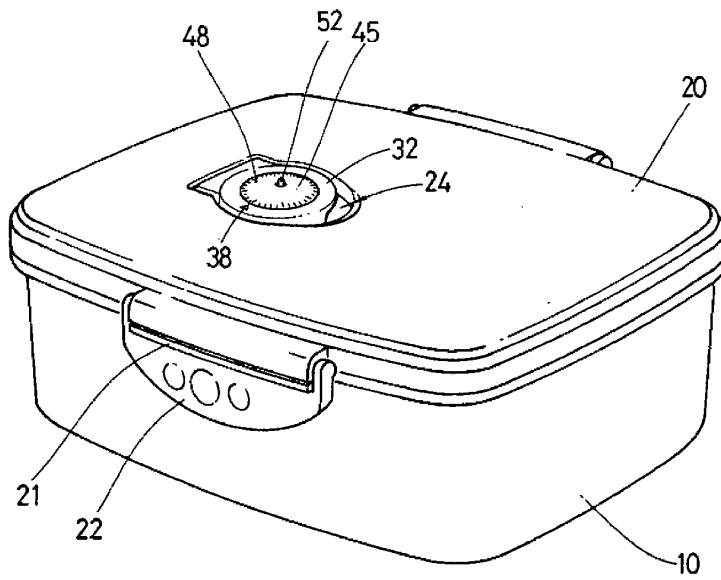


Fig. 2

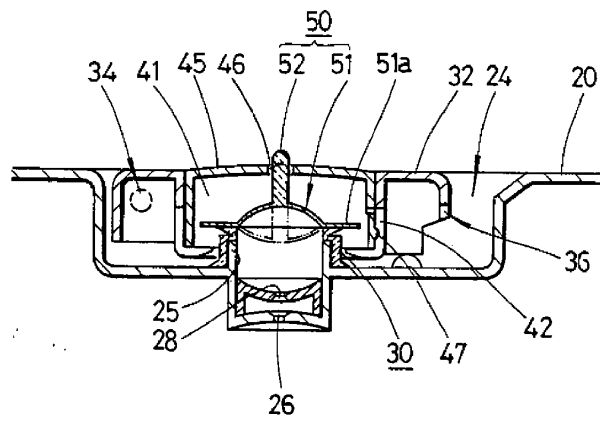


Fig. 3

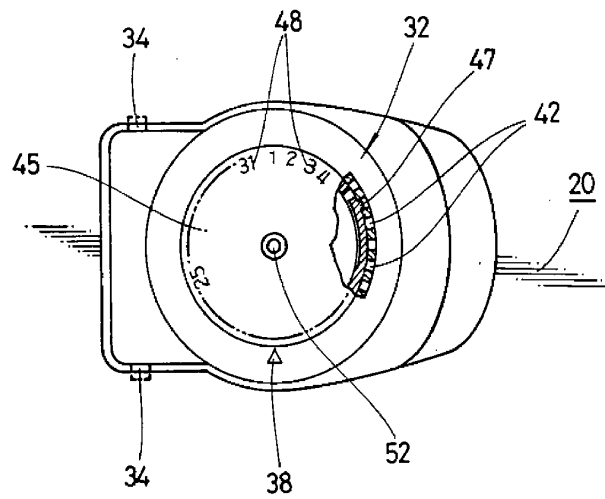


Fig. 4

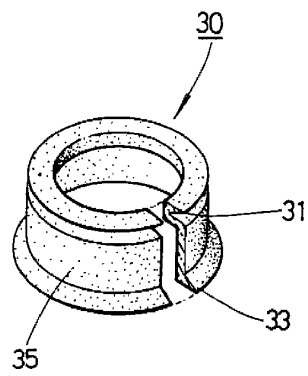


Fig. 5a

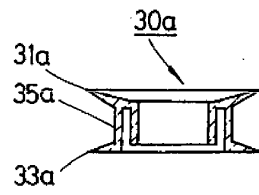


Fig. 5b

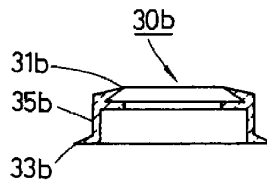


Fig. 5c

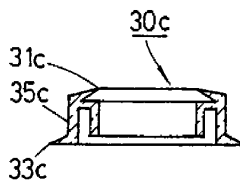


Fig. 5d

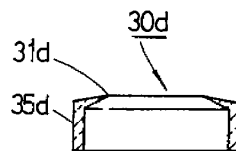


Fig. 5e

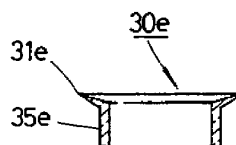


Fig. 6

