

# TOP PLATE PACKING FOR DROP-IN COOKING STOVE

## PRIORITY CLAIM

The present application is based on and claims the priority benefit of Japanese Patent  
5 Application 2009-146511 filed on June 19, 2009, the contents of which are incorporated  
herein by reference in its entirety.

## BACKGROUND OF THE INVENTION

### Field of the Invention

10 The present invention relates to a top plate packing for a drop-in cooking stove.

### Description of the Related Art

A drop-in cooking stove is installed by assembling with a counter top of a system  
kitchen. The drop-in cooking stove is provided with a main body of a box shape with an  
15 upper top thereof opened. The main body of the cooking stove is covered by a top plate.  
The top plate is disposed with a burner opening for exposing the gas burner (refer to  
Japanese Patent Laid-open No. 2006-105556).

An upper edge of the main body is disposed with an out-curved flange. By hanging  
the out-curved flange over an edge portion of an open space provided for the cooking stove  
20 in the counter top, the main body is supported by the counter top.

The top plate is made of glass, providing beautiful outer appearance and easy cleaning.

The top plate is covered on a top portion of the main body and is placed on the counter  
top. A top plate packing is disposed on a part of the counter top located at an outer  
circumference of the out-curved flange, then the top plate is disposed with a circumferential  
25 edge thereof seated on the top plate packing. According thereto, liquids such as cooking  
liquids flown onto the counter top can be prevented from enter into a clearance between the  
top place and the counter top.

In addition, there has been disclosed an art to seal a clearance between the burner  
opening and the burner protruded out of the burner opening (refer to Japanese Patent  
30 Laid-open No. 2002-13739). According thereto, cooking liquids or the like can be

prevented from entering into the inner side of the main body from the burner opening.

However, for a cooking stove with the clearance between the burner opening on the top plate and the burner sealed, if the clearance between the top plate and the counter top is further sealed, enough primary air cannot be taken into the main body for the burner to combust, consequently, the burner cannot combust with good efficiency.

Thereby, there has been considered an art to assure ventilation to the inner side of the main body by joining a frame member disposed adjacent to a rear end edge of the top plate to the top plate and disposing an air vent in the frame member (refer to Japanese Patent Laid-open No. H7-272842).

However, joining the frame member to the rear end edge of the top plate, especially when the top plate is made of glass, will lose the visual integrity of the top plate and the frame member and deteriorate the outer appearance of the top plate. Moreover, as the number of components increases, manufacture cost will also go higher.

## SUMMARY OF THE INVENTION

The present invention has been accomplished in view of the aforementioned problems, and it is therefore an object of the present invention to provide a top plate packing for a drop-in cooking stove capable of assuring ventilation to an inner side of a main body without deteriorating an outer appearance of the top plate.

The top plate packing of the present invention is disposed between a top plate of a drop-in cooking stove and a counter top of a system kitchen, wherein the top plate packing includes a metal core member configured to maintain a clearance between the top plate and the counter top at a predefined size and a rubber seal member disposed on an outer surface of the core member, and an air vent is disposed in the top plate packing between the top plate and the counter top for ventilation.

The top plate packing of the present invention can assure ventilation to the inner side of the main body according to the air vent, enough primary air can be taken into the main body for the burner to combust; thereby, the burner can combust with good efficiency. Further, by disposing the air vent in the top plate packing, it becomes unnecessary to dispose the other member for assuring ventilation to the inner side of the main body, leading to a low

manufacture cost. Since the top plate packing is disposed between the top plate and the counter top, it is hardly visible from outside, preventing the outer appearance of the top plate from being deteriorated for certain.

5 Additionally, even if the seal member is made of relatively flexible materials, for example, silicon rubber or the like having high seal ability, collapse or deformation of the seal member caused by a load or the like from the top plate can be prevented by the core member; thereby, ventilation through the air vent can still be assured for certain.

In the present invention, it is preferable that the air vent is disposed in the core member and the seal member is disposed to expose at least the air vent. According thereto, even if  
10 the seal member deforms, the air vent can be prevented from deformation for certain.

In the present invention, it is preferable that the air vent is disposed at a position with a predefined distance above the counter top. According thereto, liquids such as cooking liquids flown onto the counter top can be prevented from entering into the air vent.

## 15 BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a plan view illustrating a drop-in cooking stove having a top plate packing according to the present invention.

Fig. 2 is a perspective view illustrating a part of a top plate packing according to a first embodiment of the present embodiment.

20 Fig. 3 is a sectional view of a main part of the first embodiment of the present invention.

Fig. 4 is a sectional view of a main part of a second embodiment of the present invention.

25 Fig. 5 is a perspective view illustrating a part of a top plate packing according to a third embodiment of the present embodiment.

Fig. 6 is a sectional view of a main part of the third embodiment of the present invention.

Fig. 7 is a perspective view illustrating a part of a top plate packing according to a fourth embodiment of the present embodiment.

30 Fig. 8 is a sectional view of a main part of the fourth embodiment of the present

invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Firstly, a first embodiment of the present invention will be described with reference to Fig. 1 to Fig. 3. Fig. 1 illustrates a drop-in cooking stove 2 assembled into a counter top 1 of a system kitchen. The cooking stove 2 is provided with a main body 4 (partially illustrated in Fig. 2) installed in an open space 3 provided for the cooking stove in the counter top 1 and a top plate 5 covered on an upper portion of the main body 4.

As illustrated in Fig. 2, a flange 6 is formed at an upper end of the main body 4. By hanging the flange 6 on the circumferential edge of the open space 3, the main body 4 is supported by hanging down in the open space 3. A top plate packing 7 made of silicon rubber is installed at the circumferential edge of the flange 6 to seal a clearance between the flange 6 and the counter top 1.

As illustrated in Fig. 1, the top plate 5 exposed out of the counter top 1 is made of crystallized glass plate of superior heat resistance. The circumferential edge of the glass plate is not configured to be covered with an outer frame circumferentially, thus, the end edges of the glass plate are exposed to give a superior clean outer appearance. It is acceptable to form the top plate 5 with a material having equivalent beauty to the crystallized glass plate, such as a tempered glass plate of high shock resistance or an evenly-formed thick aluminum plate.

A burner opening 8 is formed in the top plate 5. The main part (not shown) of a gas burner is housed in the main body 4. A burner head 9 provided in the gas burner protrudes out of the burner opening 8 in the top plate 5. A front near side of the top plate 5 is disposed with operation switches 10 for operating the gas burner. Moreover, a trivet 11 is disposed around the burner head 9 for supporting a cooking container over the burner head 9.

The top plate 5 is held by the counter top 1 with the top plate packing 12 attached to the entire circumferential edge of the top plate 5. The top plate packing 12 is configured to have four linearly-formed parts. The four parts are disposed along the four sides of the top plate 5, respectively, to maintain a clearance between the top plate 5 and the counter top 1 at a predefined size circumferentially.

As illustrated in Fig. 2, the top plate packing 12 is provided with a flat lower contact portion 13 contacting the ~~counter top 1~~~~top plate 1~~, an uprising wall portion 14 uprisen from an outer side end of the lower contact portion 13, and a flat upper contact portion 15 extending horizontally from an upper end of the uprising wall portion 14. As illustrated in Fig. 2 and Fig. 3, the uprising wall portion 14 of the top plate packing 12 is disposed with a plurality of air vents 16.

The top plate packing 12 is composed of a seal member 17 made of silicon rubber, and a metal core member 18 buried in the seal member 17 as illustrated in Fig. 2. The core member 18 is formed by bending a belt-shaped metal plate. The seal member 17 is configured to be integral, covering the entire core member 18 except the air vents 16. Thereby, according to the seal member 17, the top plate packing 12 is made to have a close contact with the counter top 1 for certain; according to the core member 18, collapse or deformation of the seal member 17 is adequately inhibited; according to the air vents 16, the ventilation is assured for certain. Consequently, outer air can be taken into the main body 4 smoothly through the air vents 16 to provide sufficient primary air for the gas burner to combust.

Moreover, by disposing the air vents 16 in the top plate packing 12, the ventilation can be assured at a hidden position (lower side of the top plate 5) other than in the top plate 5, the beautiful outer appearance of the top plate 5 will not be deteriorated. Specifically, when disposing the top plate packing 12 between the top plate 5 and the counter top 1, if the top plate packing 12 is disposed at an inner side of the top plate 5 other than an end edge thereof so as to make a protruded portion 5a protruded from the end edge of the top plate 5 (protruded at a width of about 2 mm in the present embodiment), the top plate packing 12 can hardly be seen around the top plate 5, and water (over-boiled cooking liquids or the like) dropped down from the top plate 5 can hardly enter into the air vents 16.

The air vent 16 is formed at a position with a predefined distance above the counter top 1. Specifically, the distance from the upper surface of the counter top 1 (the lower surface of the lower contact portion 13) to the lower edge of the air vent 16 (hereinafter, referred to as width L) is configured to have a sum of a width of the seal member 17 and a width of the core member 18 to be equal to about 2 mm. According thereto, water (over-boiled cooking

liquids or the like dropped to the upper surface of the counter top 1 from side edges of the top plate 5) can be prevented from entering into the air vent 16. Herein, the inventors of the present invention have confirmed through experiments that it is easy for water to enter into the air vent 16 if the width L is less than 1 mm. Thereby, it is preferred to have the width L equal to or greater than 1 mm. Normally, the distance between the lower surface of the top plate 5 and the upper surface of the counter top 1 maintained by the top plate packing 12 is from 5 mm to 7 mm. If the width L is greater than 3 mm, the space remained for forming the air vent 16 is narrow, which will make the ventilation not sufficient. Therefore, it is preferred to set the width L appropriately in a range of 1 mm to 3 mm. Note that descriptions on the range for setting the distance (the width L) are omitted from a second embodiment to a fourth embodiment which will be explained hereinafter, it should be known that the same range is also available in the second embodiment to the fourth embodiment.

It is acceptable to dispose the top plate packing 12 with the above-mentioned configuration along the four sides of the top plate 5, it is also acceptable that the top plate packing 12 is disposed at appropriate positions along the four sides of the top plate 5 in combination with another silicon rubber top plate packing of a quadrangle shape in sectional view.

A second embodiment of the present invention is illustrated in Fig. 4. The top plate packing 20 is composed of the seal member 21 and the core member 22. Only the lower contact portion 13 of the core member 22 is covered by the seal member 21, and the uprising wall portion 14 and the upper contact portion 15 of the core member 22 are exposed. According thereto, the close contact to the counter top 1 is secured by the seal member 21, making it lighter than the top plate packing 12 of the first embodiment. Though not shown in the drawings, the upper surface of the upper contact portion 15 of the top plate packing 20 is adhered to the top plate 5 through a double-faced adhesive tape or the like.

A third embodiment of the present invention is illustrated in Fig. 5 and Fig. 6. In the top plate packing 30, the seal member 31 is configured to cover only the lower surface of the lower contact portion 13 provided in the core member 32. According thereto, as illustrated in Fig. 6, an air vent 33 of a relatively greater size can be formed; therefore, it is not only can make the top plate packing of the present more lighter but also can take outer air into the

main body 4 more smoothly. Though not shown in the drawings, the upper surface of the upper contact portion 15 of the top plate packing 30 is adhered to the top plate 5 through a double-faced adhesive tape or the like.

5 A fourth embodiment of the present invention is illustrated in Fig. 7 and Fig. 8. The top plate packing 40 is provided with the core member 41 made of a block metal. Only the lower surface of the lower contact portion 13 of the core member 41 is covered integrally by the seal member 42. A plurality of air vents 43 are formed by ~~laterally~~ penetrating through the core member 41 laterally. According thereto, it is easy for the core member 41 in the top plate packing 40 with the mentioned configuration to be produced through extrusion  
10 molding of aluminum, for example. The close contact to the counter top 1 is secured by the seal member 42, the ventilation can be provided by the air vents 43 smoothly, and the top plate 5 can be supported firmly with the core member of a high rigidity. Though not shown in the drawings, the upper surface of the upper contact portion 15 of the top plate packing 40 is adhered to the top plate 5 through a double-faced adhesive tape or the like.

What is claimed is:

1. A top plate packing disposed between a top plate of a drop-in cooking stove and a counter top of a system kitchen, wherein  
the top plate packing includes a metal core member configured to maintain a clearance  
5 between the top plate and the counter top at a predefined size and a rubber seal member disposed on an outer surface of the core member, and  
an air vent is disposed in the top plate packing between the top plate and the counter top for ventilation.
- 10 2. The top plate packing according to claim 1, wherein  
the air vent is disposed in the core member, and  
the seal member is disposed to expose at least the air vent.
3. The top plate packing according to claim 1, wherein the air vent is disposed at a  
15 position with a predefined distance above the counter top.