

GLASS TOP COOKING STOVE

PRIORITY CLAIM

The present application is based on and claims the priority benefit of Japanese
5 Patent Application 2009-149549 filed on June 24, 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 glass top cooking stove with a glass top plate
covered on a case body of the cooking stove.

Description of the Related Art

In recent years, due to beautiful outer appearance and convenient cleaning, a
15 glass top cooking stove with a glass top plate has come onto the market. The top plate
is made of tempered glass of high impact resistance or crystallized glass of superior heat
resistance.

However, when a thickness of a top plate made of crystallized glass or tempered
glass is made thinner in order to save weight, accordingly, the strength thereof will be
20 reduced. Therefore, for example when maintenance or cleaning is performed on a range
hood disposed above the cooking stove, a human steps on the top plate by mistake, or a
heavy component or the like falls from a higher place onto the top plate, the top plate
may be broken.

In this regarding, there has been known a glass top plate in which a solution has
25 been carried out in a conventional cooking stove to prevent a top plate from broken by
disposing beneath a trivet a supporting member joined to a bottom portion of a case body
of the cooking stove to support the top plate (refer to patent document 1). According to
the configuration, a load applied to the top plate via the trivet is sustained by the
supporting member, bending of the top plate is inhibited, and consequently, the top plate
30 becomes resistant to the load.

However, for such a configuration where the load applied to the top plate is sustained partially by an end edge or the like of an opening portion for exposing a burner, the broken of the top plate cannot be prevented from an impact, such as, when a heavy component falls onto the top plate directly. Moreover, if the top plate becomes broken, it is difficult to support the trivet stably around the burner. Therefore, even when the burner is functioning normally, if the top plate is broken, it is impossible to hold a cooking container stably on the trivet for cooking.

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 glass top cooking stove capable of having cooking performed thereon by preventing not only a glass top plate from broken through dramatically reducing a load applied to the glass top plate from a trivet but also supporting a cooking container stably on the trivet for cooking even if the top plate is broken.

The glass top cooking stove provided with a case body with an opened upper surface and a bottom, a gas burner which is disposed in the case body and provided with a burner head with a plurality of burner ports formed at an outer circumference thereof, a glass top plate covered on a top surface of the case body with a burner opening to expose the burner head out of the top plate, and a trivet disposed around the burner opening comprises: a seat member disposed around the burner opening at a position distant from the burner opening to seat the trivet, a perforating member perforating the top plate vertically with the seat member joined to an upper end thereof, and a supporting member erected on the bottom of the case body to support the seat member directly therebeneath via the perforating member.

According to the above-mentioned configuration, the seat member is joined to supporting member via the perforating member. Thereby, a load from the trivet seat on the seat member will be applied to the bottom of the case body through the supporting

member but not the top plate. Since the load from the trivet is not applied to the top plate, even if a heavy cooking container housed with cooking foods therein is supported on the trivet, the top plate will not be bent accordingly; thereby, the broken of the top plate due to the load from the trivet can be prevented for certain.

5 Further, since the trivet is supported by the supporting member through the seat member and the perforating member, even if the top plate is broken, the cooking container can be supported on the trivet stably. Therefore, the burner can function normally, even though the top plate is broken, the cooking can be performed without any problem.

10 In the present invention, it is preferable that the trivet is provided with a plurality of trivet legs and a trivet frame, the plurality of trivet legs are joined and supported by the trivet frame, the trivet frame is seated on the seat member, the seat member is configured to extend in accordance with the shape of the trivet frame, and the perforating member and the supporting member are of a plurality of numbers disposed with a
15 predefined interval in a longitudinal direction of the seat member. Since the seat member is configured to extend in accordance with the shape of the trivet frame, when the trivet frame is seated on the seat member, the seat member and the trivet frame are appeared to be integral when viewed from outside, deterioration of the outer appearance of the top plate due to the disposition of the seat member can be prevented.

20 Moreover, by extending the seat member in accordance with the shape of the trivet frame, the load from the trivet can be received by the seat member in not only a relatively greater area but also can be allocated by the plurality of supporting members.

However, when the seat member is extended in accordance with the shape of the trivet frame, the secondary combustion air flowing toward the burner along the top
25 surface of the top plate hits against the seat member and cannot go directly, therefore, a secondary combustion air may be hindered from flowing smoothly. In the present invention, a communicating member is provided in the seat member to communicate the seat member from an outer edge of the seat member to an inner edge thereof, thereby, the secondary combustion air can flow toward the burner by passing through the
30 communicating member, which makes the secondary combustion air to be supplied

smoothly to the burner.

In the present invention, it is acceptable that the seat member is of a plurality of numbers disposed with a predefined interval in a circumferential direction of the trivet frame. According thereto, even if over-boiled cooking liquids flow down to the top plate between the seat member and the burner opening, it is easy for it to flow to the outside of the seat member from the interval disposed between the plurality of the seat members, and consequently, the pollution to the top plate between the seat member and the burner opening by over-boiled cooking liquids can be reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a plan view of a glass top cooking stove according to an embodiment of the present invention.

Fig. 2 is a sectional view of a part of the glass top cooking stove of the present embodiment.

Fig. 3 is a plan view of a seat member.

Fig. 4 is an enlarged sectional view of a part joining a supporting member and the seat member.

Fig. 5 is a sectional view of the part illustrated in Fig. 4 with a top plate removed.

Fig. 6 is a perspective view of a variation example of the seat member.

Fig. 7 is a sectional view of a main part of another embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As illustrated in Fig. 1 as a plan view, a glass top cooking stove according to an embodiment of the present invention is a drop-in cooking stove provided with a glass top plate 1 made of crystallized glass or the like with of superior heat resistance.

A burner opening 2 is formed in the top plate 1. A gas burner 4 is housed in a case body 3 of the cooking stove. The gas burner 4 is provided with a burner head 5, which is exposed from the burner opening 2.

As illustrated in Fig. 2, a flange 6 is disposed circumferentially around the case body 3 which is assembled in to a counter top 7 of a system kitchen.

The gas burner 4 is fixed at a pedestal (not shown) disposed on a base plate 8 of the case body 3. As illustrated in Fig. 2, the gas burner 4 is provided with a burner head 5 formed with a plurality of burner pots concentrically with the burner opening 2. This is called the outer flame type. A removable blocking plate 9 is provided to block a space formed between a lower end of the burner head 5 and an inner circumferential edge of the burner opening 2 formed in the top plate 1.

The entire inner circumferential edge of the burner opening 2 is disposed with a protection member 10. The protection member 10 not only protects the end surface of the inner circumferential edge of the burner opening 2 from being damaged, but also protects over-boiled cooking liquids or the like from a cooking container such as a pot (not shown) from flowing into the inner side of the case body 3 during cooking.

As illustrated in Fig. 1, operation switches 11 for operating the gas burner 4 are disposed at a front near side of the top plate 1. Moreover, a trivet 12 for supporting the cooking container is installed in correspondence with the burner opener 2.

The trivet 12 is composed of a plurality of trivet legs 13 disposed with a predefined interval in a circumferential direction and a circular trivet frame 14 joining the plurality of trivet legs 13. In the present embodiment, each of the trivet legs 13 and the trivet frame 14 is made of iron-based metals (for example, stainless steel or the like). The trivet leg 13 is formed into a plate shape and is provided with a supporting portion 15 extended in a roughly horizontal direction for supporting a cooking container, and a leg portion 16 extended downward from the supporting portion 15. As illustrated in Fig. 2, the trivet frame 14 is formed from a rod of a quadrangular shape in sectional view, and a lower edge thereof serves as a contact surface 17 to the top plate. By welding a lower end of the leg portion 16 of the trivet leg 13 to the trivet frame 14, the trivet leg 13 and the trivet frame 14 are formed integral.

As illustrated in Fig. 2, a seat member 18 for seating the trivet 12 is disposed on the top plate 1. As illustrated in Fig. 3, a plurality of seat members 18 are disposed with a predefined distance outer to the burner opening 2, surrounding the burner opening 2.

Each seat member 18 is extended to have a curved shape corresponded with the shape of the trivet frame 14 and is fixed on the top plate 1 with a predefined interval between each other. Thus, the trivet 12 can be prevented from directly contacting the top plate 1 by each seat member 18, and consequently, damage to the upper surface of the top plate 1 can be avoided.

Although not shown in the drawings, it is acceptable to form the seat member 18 into a circular one. However, when over-boiled cooking liquids in the cooking container supported on the trivet 12 flows into the inner side of between the opening 2 and the seat member 18, as described in the present embodiment, by disposing the plurality of seat members 18 with a predefined interval, the over-boiled cooking liquids can flow out of the seat member 18 from gaps between adjacent seat members 18, therefore, it is advantageous to prevent the over-boiled cooking liquids from accumulating in the inner side of the seat members 18.

The seat member 18 is made of metals (for example, stainless steel or the like) into a band-like plate. As illustrated in Fig. 2 and Fig. 3, the seat member 18 is provided with a flat seat portion 19 for seating the trivet frame 14 when contacted by the contact surface 17 thereof and an uprising wall 20 uprisen from an inner side edge of the seat portion 19. As illustrated in Fig. 2, the uprising wall 20 is opposite to the inner circumferential surface of the trivet frame 14, preventing the trivet frame 14 seated on the seat portion 19 from being displaced.

The uprising wall 20 is formed with a plurality of concave portions 21 with an opened upper end. Each concave portion 21 is disposed in correspondence with each trivet leg 13, therefore, when the trivet 12 is seated on the seat member 18, the leg portion 16 of the trivet leg 13 is engaged in the concave portion 21. Accordingly, the trivet 12 seated on the seat member 18 is secured. Therefore, when a small burner port among the burner ports is disposed in the burner head 5 for preventing the trivet leg 13 from being broiled, the trivet leg 13 can be made to match with the position of the small burner port for certain.

As illustrated in Fig. 2 and Fig. 4, a pair of supporting members 22 are disposed directly beneath each seat member 18. A lower end of each supporting member 22 is

joined to a bottom plate 8 of the case body 3 and an upper end thereof is joined to the seat member 18 through a screw member 23. The screw member 23 is inserted through a hole portion 24 formed in the top plate 1, and a lower end thereof is screwed to the supporting member 22. A spacer 25 is mounted on the screw member 23 to maintain a distance between the seat member 18 and the supporting member 22 greater than the width of the top plate 1. The screw member 23 and the spacer 25 constitute a perforating member of the present invention.

A packing 26 is disposed between the seat member 18 and the top plate 1 in correspondence with the shape of the bottom surface of the seat member 18. The spacer 25 penetrates the packing 26, an upper edge of the spacer 25 contacts the seat member 18 and a lower edge thereof contacts the supporting member 22. An outer circumference of the spacer 25 between the top plate 1 and the supporting member 22 is disposed with a cushion packing 27.

According to the above-mentioned configuration, since the seat member 18 is disposed in accordance with the trivet frame 14 as illustrated in Fig. 1, it becomes integral with the trivet frame 14, thereby, the outer appearance of the top plate 1 will not be deteriorated due to the disposition of the seat member 18 will not occur. Further, as illustrated in Fig. 2, since the seat member 18 can be disposed at a position relatively distant from the burner opening 2 provided in the top plate 1, the trivet frame 14 can be formed with a greater diameter so as to improve stability. In this case, a relatively greater interval can be formed between the burner opening 2 and the seat member 18, which makes the circumference of the burner head 5 visually simple, improving the outer appearance.

Further, the seat member 18 for seating the trivet 12 is joined to the supporting member 22 through the screw member 23, and the distance between the seat member 18 and the supporting member 22 is maintained greater than the width of the top plate 1 by the spacer 25 mounted on the screw member 23, impact occurred when the cooking container placed on the trivet 12 is moved violently or load from the trivet 12 and the cooking container will be applied to the top plate 1 with extremely low possibility.

As illustrated in Fig. 5, even though the top plate 1 is removed from the case body 3, the seat member 18 is maintained to be joined to the supporting member 22 through the screw member 23 and the spacer 25. Thereby, even if the top plate 1 is broken, the heavy cooking container can be supported on the trivet 12 stably for cooking.

5 In addition, since the seat member 18 is separated from the trivet 12, it is not necessary for it to be made with the same material as the trivet 12. For example, it is advantageous to reduce the load applied to the top plate 1 if the seat member 18 is made of a metal (for example, aluminum or the like) lighter than that used in the trivet 12.

In the above-mentioned embodiment, as illustrated in Fig. 1, the trivet frame 14 is
10 formed into a circular shape in sectional view and plural seat members 18 are configured to have a curved shape in correspondence with the circular shape; however, it is not limited thereto. It is acceptable if the shape of the seat member of the present invention is matched with the shape of the trivet frame. In other words, although not shown in the drawings, if the trivet frame is formed into a quadrangular shape in sectional view, the
15 seat member can be formed into a quadrangular shape or a plurality of linear seat member may be disposed along the trivet frame with a predefined interval. In addition, if the trivet frame is formed into a quadrangular shape in sectional view, the concave portion 21 or the like is not needed to secure the trivet.

In the present embodiment, the seat member 18 is disposed in accordance with
20 the trivet frame 14; however, as illustrated in Fig. 6, it is acceptable to dispose a plurality of communicating portions 28 which communicate to the inner edge of the seat member 18 from the outer edge thereof by cutting a part away from the flat seat portion 19 and the uprising wall 20. According thereto, the secondary combustion air for each burner port in the burner head 5 can flow smoothly through the communicating portions 28 to
25 supply sufficient secondary combustion air. It is also advantageous to dispose the communicating portions 28 so that the over-boiled cooking liquids can flow from the inner side of the seat member 18 to the outer side thereof through the communicating portions 28.

As another embodiment illustrated in Fig. 7, a set member 32 can be formed to
30 have a quadrangular shape in cross sectional view when a trivet 30 is provided with a

planar trivet frame 31.

Specifically, a lower surface of the trivet frame 31 serves as a contacting surface 33 and the trivet frame 31 is bent downward around an outer circumference thereof to form a drooping wall 34, and an upper surface of the seat member 32 serves as a seat surface 35 to seat the trivet frame 31. According thereto, the drooping wall 34 of the trivet frame 31 contacts an outer circumferential edge of the seat member 32 to prevent for certain the trivet frame 31 seated on the seat surface 35 from deviation, and furthermore, the seat member 32 can be made cheaper with a simple structure. Additionally, since the seat member 32 is covered by the trivet frame 31, it is not visible from outside, improving the outer appearance of the cooking stove.

Although not shown in the drawings, if a groove communicating portion is formed in the bottom of the seat member 32 to make air flow freely between an outer edge side of the seat member 32 and an inner edge side thereof, the secondary combustion air can be supplied for the combustion by the burner, and additionally, it is also advantageous for the over-boiled cooking liquids to flow through the communicating portion to the outside of the seat member 32.

What is claimed is:

1. A glass top cooking stove provided with a case body with an opened upper surface and a bottom, a gas burner which is disposed in the case body and provided with a burner head with a plurality of burner ports formed at an outer circumference thereof, a glass top plate covered on a top surface of the case body with a burner opening to expose the burner head out of the top plate, and a trivet disposed around the burner opening, comprising:

a seat member disposed around the burner opening at a position distant from the burner opening to seat the trivet,

a perforating member perforating the top plate vertically with the seat member joined to an upper end thereof, and

a supporting member erected on the bottom of the case body to support the seat member directly therebeneath via the perforating member.

2. The glass top cooking stove according to claim 1, wherein

the trivet is provided with a plurality of trivet legs and a trivet frame,

the plurality of trivet legs are joined and supported by the trivet frame,

the trivet frame is seated on the seat member,

the seat member is configured to extend in accordance with the shape of the trivet frame, and

the perforating member and the supporting member are of a plurality of numbers disposed with a predefined interval in a longitudinal direction of the seat member.

3. The glass top cooking stove according to claim 2, wherein the seat member is provided with a communicating member communicating the seat member from an outer edge of the seat member to an inner edge thereof.

4. The glass top cooking stove according to any one of claims 1 to 3, wherein
the seat member is of a plurality of numbers disposed with a predefined interval
in a circumferential direction of the trivet frame, and

the perforating member and the supporting member are disposed directly beneath

5 each seat member.