

IMPROVED VERTICAL GRILL

TECHNICAL FIELD

This invention relates to cooking appliances for use in domestic and commercial kitchens. The invention relates particularly to electric grills that can
5 be used to cook food in a way that removes fat from the food that is cooked. In particular the invention relates to a vertical electric grill.

BACKGROUND ART

Obesity together with heart disease has been linked to high consumption of saturated fats and cholesterol found in most meat products. The American
10 Heart Association ("AHA") has recommended that individuals should, in order to reduce the risk of heart disease and cancer, reduce their daily intake of saturated fats and cholesterol.

Grills in which the radiant cooking elements and grilling space have been arranged vertically are particularly well adapted to remove fats from meat
15 that is being cooked. As the food is suspended between the cooking elements gravity and pressure of a holding clasp act on liquefied fats and oils such that they drip out of and away from the food being cooked. Vertical grills have been recommended by heart physicians as a suitable device to help patients and the public reduce their intake of saturated fats that would otherwise be ingested
20 with conventionally cooked meats. The vertical radiant heat grilling configuration was much favoured by the public as a real grill over 'grilling' on or frying on flat metal, Teflon or other fire resistant surfaces.

However, there were problems associated with prior art vertical grills. The prior art vertical grill used an internal drip tray to retain fats and oils that
25 drip down from the food being grilled between two radiant cooking elements. Unfortunately, the prior art vertical grill with an internal drip tray is prone to fire flare-ups and smoke.

As a result if the internal drip tray is not cleaned thoroughly before each use to ensure there are no combustible fats or solids present in the tray, there is a good chance that the contents of the tray will combust. Further, users were also recommended to add a small quantity of cold water to the internal drip tray
5 to reduce the volatility of the liquefied fats and oils that accumulated in the tray.

Because the drip tray was internal to the device some people were unaware of the requirement to clean out the drip tray and/or to add water and as a result the device would sometimes catch fire.

As a result of fire risk, some prior art vertical grill designs employed an
10 internal drip tray that features a fire suppressing perforated metal cover. However this design had its drawbacks. First, the perforated cover actually makes it more likely that a user of the device will forget to empty the contents of the drip tray as the retained oils and fats will be mostly obscured by the internal drip tray cover. In such a case where the internal drip tray is hidden from view
15 within the body of the vertical grill, dangerous reserves of retained fats and oils could easily go unobserved. Further, the use of a perforated metal fire suppressing shield resulted in solid spoils and embers from above, coming to rest on the protective fire shield. These solids sometimes blocked the perforations resulting in an accumulation of fats and oils on its surface which,
20 along with the solids themselves, can often result in smouldering embers and ignited fats entering into the internal cavities of the device, and/or cause the fats in the drip tray to ignite despite the presence of the fire suppressing shield. It is a common complaint by users of the vertical grill that a blocked or inappropriately prepared internal drip tray can permit smouldering embers to
25 activate kitchen fire alarms.

It is an object of the present invention to improve on the design of prior art vertical grills and/or to substantially ameliorate some of the shortcomings of the prior art vertical grills.

DISCLOSURE OF INVENTION

5 A first aspect of the invention comprises an electric grill for cooking food items, wherein the electric grill is comprised of a body containing at least one vertical grilling area disposed between at least two sources of radiant heat energy, and wherein the body is adapted to direct fats and breakaway solids generated during the cooking of the food away from the cooking element down
10 through the body of the electric grill and out into an external receptacle.

Preferably the body is adapted to direct fats and breakaway solids generated during cooking to an external drip tray by means of one or more slides that define a path to the external receptacle via an external opening formed in the body.

15 A first embodiment of the first aspect of the invention provides a electric grill with a body containing at least two slides that are disposed between sides of the body and the at least two sources of radiant heat, wherein the slides direct fats and breakaway solids generated during cooking to an external receptacle via the external opening.

20 Still more preferably the two slides are disposed in a y shaped assembly wherein the lower end of the longer slide in the y shaped assembly terminates near the external opening.

A second embodiment of the first aspect of the invention provides a electric grill with a body containing one vertical grilling area and a single angled
25 slide which is disposed below the grilling area and is pitched at an angle sufficient to direct fats and breakaway solids that drop down upon it to an external receptacle via the external opening.

Preferably the angled slide is planar and is adapted to be inserted and removed from the body of the vertical grill.

Still more preferably, the angled slide is adapted to be inserted from an upper portion of the side of the electric grill that is opposite the side that has the
5 external opening.

Alternatively, in a third embodiment of the first aspect of the invention, the angled slide of the second embodiment is adapted to be inserted and removed from the body via the external opening.

In a fourth embodiment of the first aspect of the invention, an electric grill
10 with a body that has one vertical grilling area and wherein the one or more slides is comprised of a wedge inserted into the body so that it is situated below the one vertical grilling area and wherein a top surface of the wedge is pitched at an angle sufficient to direct fats and breakaway solids generated during the cooking of the food that drop down upon it to an external receptacle via the
15 external opening.

In a fifth embodiment of the first aspect of the invention there is provided a electric grill with a body in which there are two vertical grilling areas disposed between at least three sources of radiant heat, such that there is at least a source of radiant heat on each side of each vertical grilling area and wherein
20 the body of the electric grill is adapted to direct fats and breakaway solids generated during the cooking of the food away from the cooking element down through the vertical grill and out into an external receptacle.

Preferably the body is adapted to direct fats and breakaway solids generated during the cooking of the food away from the cooking element down
25 through the vertical grill and out into an external receptacle by the inclusion of slide means which direct and/or guide splattered fats to the external receptacle from a position within the body.

Preferably the slide means comprises a single angled slide which is disposed below the grilling areas and is pitched at an angle sufficient to direct fats and breakaway solids generated during the cooking of the food that drop down upon it to the external receptacle via the external opening.

5 Still more preferably the single angled slide is introduced via a slot formed in the side of the body which is opposite to the side of the body which has the external opening.

Preferably, with respect of all of the embodiments of the invention, the external receptacle is adapted to engage with the external opening.

10 More preferably the external receptacle may be covered or partially covered by a protective hood.

Alternatively, the body of the electric grill features a protective hood which is adapted to at least partially cover the contents of an unhooded external receptacle.

15 Still more preferably with respect to all of the embodiments of the first aspect of the invention, the electric grill has a timer.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a prior art electric grill in which the internal drip tray is in place within the body of the electric grill;

20 Fig 2 is an exploded perspective view of a prior art electric vertical grill;

Fig 3 is a perspective view of a first embodiment of a first aspect of the invention;

Fig 4 is an exploded perspective view of the first embodiment of the first aspect of the invention;

25 Fig 5 is a partially exploded front perspective view of a second embodiment of the first aspect of the invention;

Fig 6 is a partially exploded rear perspective view of the second embodiment of the first aspect of the invention;

Fig 7 is an exploded perspective view of a fourth embodiment of the first aspect of the invention;

5 Fig 8 is an exploded perspective view of a fifth embodiment of the first aspect of the invention;

Fig 9 is a close up view of the grill according to the fifth embodiment according to the first aspect of the invention;

10 Fig 10 is a further exploded perspective view of the fifth embodiment of the first aspect of the invention;

Fig 11 is a perspective view of a third embodiment of the first aspect of the invention.

MODES FOR CARRYING OUT THE INVENTION

Referring to Figs. 1 and 2, these figures depict a prior art vertical electric grill 10 in which the following components are visible:

- 12: body
- 14: heat reflector and splatter shields
- 16: food clasp handle/grill
- 18: power switch
- 20: internal drip tray
- 22: external opening
- 24: cooking element
- 26: perforated cover

25 The prior art vertical grill 10 had the major disadvantage of collecting splattered fat and bits of food directly under the cooking area of the grill, either in the internal drip tray 20, or just above the perforated cover 26. These areas are subject to high radiant heat and high temperatures and as a result, the

contents of the internal drip tray 20 or the food and fat that may sit on the perforated cover 26, may catch fire or generate large amounts of smoke.

A potential solution provided herein to ameliorate the above stated problem involves providing a electric grill in which the fats and breakaway
5 solids are channelled to a receptacle or drip tray that sits outside of the body of the grill, away from high heats.

The first embodiment of the invention is shown in Figs. 3 and 4. In this embodiment the two heat reflector and splatter shields 14 of Figs. 1 and 2 have been replaced by multi-purpose evacuation slides 28 and 30. Evacuation slide
10 30 is longer and larger than evacuation slide 28. The evacuation slides 30 are inserted into the space between the side walls of the body 12 and the cooking elements 24. Evacuation slides 28 and 30 are also arranged in a y shaped assembly such that any splattered fat collected on evacuation slide 28 drops off the lower end of evacuation slide 28 onto evacuation slide 30 which then
15 delivers it to the external opening 22 for collection into the external receptacle or drip tray 32. The external drip tray 32 is adapted to have a small portion attach to or ride against the external opening 22. When inserted, food and fats that fall onto either of the evacuation slides 28 or 30 exit the external opening 22 and are received into the open top of the external drip tray 32. Grips 42
20 provide for the ability to handle the hot fats safely whilst at the same time, providing a stop mechanism to prevent the external drip tray 32 from being over inserted into the external opening 22. Grips 42 can also be adapted to engage external opening 22 by way of a mechanism, magnets or other means which allow the external drip tray 32 to remain in close association with the body 12
25 whilst remaining easily removable.

A hooded external drip tray 34 is shown in Fig. 3. This hooded external drip tray 34 is similar to external drip tray 32 except that it may have a tinted

and transparent hood portion 36 which covers the top of the tray so as to prevent users from touching the hot contents. The hood portion 36 is pivotally connected to the external drip tray base 34 via hinges 38 and features an aperture 40 that communicates with the external opening 22 so that fats and food can enter the tray for collection. The hooded external drip tray 36 may be used wherever the external drip tray 32 is shown with respect to all of the embodiments of the invention.

As an alternative (not shown) an external drip tray 32 without the hooded portion can be used with a body 12 that features a hood above the external opening 22 which is adapted to cover the hot contents of the external drip tray 32.

Depicted in Figs. 5 and 6 is the second embodiment of the invention. In this embodiment the two slides 28 and 30 from Figs 3 and 4 are replaced with flat slide 44 incorporating handle 52. This slide 44 is inserted at an angle into the rear side of the body 12 of the vertical grill 11 which is opposite the side of the body 12 which has the external opening 22.

The flat slide 44 is inserted between base element 48 and top guides 46 and comes to rest such that its lower edge 54 sits slightly higher than the top edge of external drip tray 32 so that food and fats that fall on the flat slide 44 fall into the external drip tray 32 where they are not subjected to high heat and accordingly will not catch fire.

The third embodiment depicted in Fig 11. is very similar to the second embodiment depicted in Figs. 5 and 6. The substantial difference between them is that the flat slide 44 has a pair of split handles to facilitate its insertion up into the body 12 of the vertical grill 11 where it sits between base 48 and top guides 46. In this embodiment the flat slide 44 is prevented from falling out

of the external opening 22 by means of the inserted external drip tray 32 which makes contact with the split handles 56.

The fourth embodiment depicted in Fig. 7 is similar to the third embodiment depicted in Fig 12 in that the flat slide 44 is replaced with a pitched wedge 58 which is inserted into the external opening 22. After insertion into the body 12 of the vertical grill 11, a portion of the external drip tray 32 is inserted into the external opening 22 so that it receives all of the food and fat collected on the surface of pitched wedge 58.

The fifth aspect of the invention depicted in Figs 8-10 comprises a electric grill 15 with a body 12 featuring two vertical grilling areas 64 divided by a removable reflector/splatter screen 62. Besides the oversized external drip tray 60 which can be used when both grilling areas are being used at the same time, the arrangements of base 48, flat slide 44, top guides 46 and external opening 22 are the same as the invention depicted in Figs. 5 and 6. The electric grill 15 has at least 3 sets of cooking elements 24 (with one central, common cooking element 24), however the preference is for there to be 4 sources of radiant energy, with one set of cooking elements 24 on each side of each cooking area.

In a sixth embodiment of the invention (not shown), the single flat slide which is installed at an angle is replaced with an inverted V shape slide which is centred under the removable reflector/splatter shield 62 such that each of the vertical grilling areas 64 sits over an angled portion of the inverted v slide, wherein the angled portion delivers splattered fats and breakaway solids to two external drip trays which are located at either side of the vertical grill. In this embodiment the inverted v slide is formed in one piece and is inserted and removed via one of the short sides via a v shaped slot formed in the short sides of the grill. Alternatively, the inverted v slide may be formed by introducing two

flat slides into the body of the vertical grill, through one or more sides, including the ends and the longer front or back sides. In this embodiment top guides and base elements may be used to guide the individual flat slides into place where they form the inverted V structure when both are inserted.

- 5 All of the embodiments described feature a power switch 18 and at least one separate timer knob 42. The heat emitted by the elements 24 may be controlled with a rheostat or other similar component. The second, third, fourth and fifth embodiments also feature space 50 for a cord storage area if desired, through the installation of a door, aperture, recess or compartment (not shown).

10 INDUSTRIAL APPLICABILITY

The present invention has industrial applicability within the manufacturing and consumer goods markets.

CLAIMS

1. An electric grill for cooking food items, wherein the electric grill is comprised of a body containing at least one vertical grilling area disposed between at least two sources of radiant heat energy, and wherein the body is adapted to direct fats and breakaway solids generated during the cooking of the food away from the cooking elements down through the body of the electric grill and out into an external receptacle.
2. The electric grill of claim 1 wherein the body is adapted to direct fats and breakaway solids generated during cooking to an external receptacle by means of one or more slides that define a path to the external receptacle via an external opening of the body.
3. The electric grill of claim 2 wherein the one or more slides that define a path to the external receptacle via the external opening comprises two evacuation slides that are disposed between sides of the body and the at least two sources of radiant heat.
4. The electric grill of claim 3 wherein the two evacuation slides are disposed in a y shaped assembly wherein the lower end of the longer evacuation slide in the y shaped assembly terminates near the external opening.
5. The electric grill of claim 2 wherein the one or more slides that define a path to the external receptacle via an external opening formed in the body comprises a single angled slide which is disposed below the vertical grilling area and is pitched at an angle sufficient to direct fats and

breakaway solids generated during the cooking of the food that drop down upon it to the external receptacle via the external opening.

6. The electric grill of claim 5 wherein the angled slide is planar and is adapted to be inserted and removed from the body of the vertical grill.

7. The electric grill of claim 6 wherein the angled slide is adapted to be inserted into the body from an upper portion of the side of the electric grill that is opposite the side that has the external opening.

8. The electric grill of claim 6 wherein the angled slide is adapted to be inserted and removed from the body via the external opening.

9. The electric grill of claim 2 wherein the one or more slides that define a path to the external receptacle via the external opening comprises a wedge inserted into the body so that it is situated below the vertical grilling area and wherein a top surface of the wedge is pitched at an angle sufficient to direct fats and breakaway solids that drop down upon it to the external receptacle via the external opening.

10. The electric grill of claim 2 wherein there are two vertical grilling areas disposed between at least three sources of radiant heat.

11. The electric grill of claim 10 where the one or more slides that define a path to the external receptacle via the external opening comprises a single angled slide which is disposed below the grilling areas and is

pitched at an angle sufficient to direct fats and breakaway solids that drop down upon it to the external receptacle via the external opening.

12. The electric grill of claim 11 wherein the single angled slide is introduced via a slot formed in the side of the body which is opposite to the side of the body which has the external opening.

13. The electric grill according to any of claims 1 to 12 wherein the external receptacle is adapted to engage with the external opening.

14. The electric grill according to any of claims 1 to 12 wherein the electric grill includes a timer and where the heat emitted by the electric elements is controlled by a rheostat.

15. The electric grill according to any of claims 1 to 12 wherein external receptacle further comprises a hood which is adapted to at least partially cover the contents of the external receptacle.

16. The electric grill according to any of claims 1 to 12 wherein the body further comprises a hood portion which is adapted to at least partially cover the contents of the external receptacle.