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A COOKING ACCESSORY

The present invention relates to a cooking accessory used in connection with and in close proximity to a heat source which is used to cook food.

PRIOR ART

Heat sources are commonly used to cook food. Typical heat sources are gas
10 burners and electric heater elements, and food may also be cooked over open flames created by heat sources such as burning wood, charcoal or other fuels.

When food is cooked by heat which comes from a heat source, the food is usually placed directly over the heat source, such as a fire. Alternatively, the food is placed in or on a cooking utensil that is placed over the heat source, so that the heat
15 source first heats the utensil in order to cook the food contained therein.

A problem with these cooking situations is that only a portion of the heat energy from the heat source is actually used to heat the food or the utensil. A significant portion of heat energy is lost and not put to any useful purpose.

An object of the present invention is to provide a cooking accessory which
20 enables at least a part of this heat energy, which would otherwise be lost or not utilised, to be put to use for heating liquid particularly water.

SUMMARY OF INVENTION

According to the present invention, there is provided a cooking accessory including:

25 a cooking support operatively adapted to support food or a utensil containing the food, and operatively adapted to be placed within heating range of a heat source to cook the food;

wherein the cooking support includes a liquid passage having an inlet and an outlet, the passage being positioned proximate the support, so that liquid in the
30 passage is able to be heated when the cooking support is heated by the heat source.

Preferably, the liquid passage is contained substantially in the support.

Preferably, the liquid passage is operatively adapted to surround the heat source when placed within heating range of the heat source.

Preferably, the liquid passage includes a plurality of passage portions each
35 being generally circular and generally concentric with respect to one another.

The liquid passage may be formed such that a second of said passage portions is adapted to be positioned closer to the heat source than a first of said passage portions, such that liquid in the second passage portion receives a greater



5 amount of heat from the heat source than liquid in the first passage portion.

The second passage portion may be closer to the outlet, and the first passage portion may be closer to the inlet.

The first and second passage portions may each be formed as nested shapes, the second being generally nested within the first.

10 The second passage portion may be operatively adapted to be heated to a greater degree than the first passage portion.

The inlet may be provided with a one-way valve that allows liquid to flow only into the liquid passage.

The outlet may be unrestricted.

15 The cooking accessory may be provided with a handle, the inlet and outlet each may be housed in the handle.

The accessory may be portable.

The cooking support may be provided with stand members that enable the support to be freestanding.

20 The liquid may be water.

The cooking frame may include a grip for supporting the food or utensil.

DRAWINGS

In order that the present invention might be fully understood, embodiments of the invention will be described, by way of example only, with reference to the
25 accompanying drawings, in which:

Figure 1 is a plan view of an embodiment of a cooking accessory which is capable of being used concurrently for cooking food and for heating liquid;

Figure 2 is a side view of the embodiment of Figure 1;

Figure 3 is a similar side view of the cooking support of Figure 1 shown with a
30 piece of food placed thereon;

Figure 4 is another similar side view of the cooking support of Figure 1 with a cooking utensil placed thereon;

Figure 5 is another embodiment of a cooking accessory which is provided with an elongated cooking support and a secondary cooking support; and

35 Figure 6 is a further embodiment of a cooking accessory in which the cooking support, with a liquid passage therein, is shaped as a convoluted grid.

In the drawings of the various embodiments, like parts are designated with like numerals, only for the sake of ease of understanding of the embodiments.

5 DESCRIPTION OF EMBODIMENTS

Referring to the drawings, Figure 1 illustrates an embodiment of a cooking accessory. The accessory includes a cooking support in the form of a cooking frame 10. The cooking frame 10 is designed to either directly support a piece of food as shown in Figure 3, or to support a cooking utensil thereon as shown in Figure 4

10 Figure 2 shows a side view of the cooking frame 10. The frame 10 provides a support area which consists of supporting regions that all lie in a common plane. In Figure 2, the supporting regions are found on the upper rim of the cooking frame 10. A food piece or a utensil may be supported by the rim of the cooking frame 10.

Figure 3 is a side view which illustrates the cooking frame 10 being used to support a piece of food 20. In this particular embodiment, the cooking frame 10 is provided with a cooking grid 30 (illustrated in cross section) which undergirds the piece of food.

Figure 4 is a further side view that illustrates the cooking frame 10 being used to support a cooking utensil 40 which contains the food piece 20.

20 In the embodiment in Figures 1 to 4, the cooking frame 10 is operatively adapted to be placed within heating range of a heat source, so that food which is placed on the cooking frame 10 can be cooked by the heat source.

Moreover, the cooking support is also operatively adapted to be heated by the heat source. In Figures 3 and 4, the heat source 50 is a ring gas burner. The circular cooking frame 10 is positioned around the circular gas burner 50, so that the food can be cooked. In the embodiments in Figures 1 to 4, the cooking frame 10 is circular, since these embodiments have been designed to be placed within heating range of a typical circular-shaped gas burner. The circular shape of the cooking frame 10 ensures that all portions of the cooking frame may be positioned in the proximity of the circular gas burner 50. However, it is appreciated that the shape of the cooking support is largely determined by the shape and configuration of the heat source. For instance, if the heat source is elongated, then the corresponding cooking support would also be elongated in order to be adapted for positioning within heating range of such an elongated heat source. The frame may be embodied in a square, rectangle or other suitable form or shape.

35 In Figure 2, the cooking support is provided with stand members in the form of legs 120. The legs 120 enable the support to be freestanding. The legs 120 are of such height as to allow a liquid passage, in the form of a tube 80, to be raised to a

5 level suitable to receive heat from the heat source. In the present embodiment, the cooking support is adapted for use with a gas burner, and so the legs are of such a height as to ensure that the tubes 80 are on the same horizontal plane as the gas flames. Furthermore, the height of the actual tube 80 (denoted as A-A in Figure 2) is such that a food piece or utensil placed on top thereof will be effectively heated, at
10 the same time as the tube 80 is heated. A situation is to be avoided where the height of the tube 80 is so great as to distance the food piece or utensil from the heat source to the extent that heating thereof is compromised.

The liquid passage of the cooking support is positioned in close proximity to the support. In the embodiment of Figure 1, the liquid passage is contained within
15 the frame 10, although in other embodiments the liquid passage may be separate to the frame. The outer cylindrical surfaces of the tube 80 define and act as the body of the cooking frame 10. When the cooking accessory is placed over and around a ring-shaped gas burner 50, parts of the tube 80 are positioned within heating range of the heat source 50, and thus are able to be heated by the heat source 50.

20 In a simple embodiment of the invention (not illustrated), the liquid passage is in the form of a single tube that surrounds the heat source once. However, in more complex embodiments, the liquid passage can consist of a plurality of passage portions that are placed proximate the heat source. A reason for having more than one passage portion is to maximise the surface area of the liquid passage that can
25 be placed close to the heat source. The various passage portions are connected to form the overall liquid passage.

In the embodiment in Figure 1, the liquid passage begins at an inlet in the form of inlet passage 60, and ends with an outlet in the form of outlet passage 70. Liquid flows through the inlet passage 60, into a first passage portion in the form of
30 first part (A) of the tube 80, and continues into a second passage portion in the form of second part (B) of the same tube 80, and eventually exits the tube through outlet passage 70.

The liquid passage is formed from a conductive material, such as a metal, since the liquid inside the passage is to be heated by conduction of heat which
35 derives from the external heat source.

In the portable embodiment in Figure 1, the inlet passage 60 and the outlet passage 70 are embedded in a handle portion 110. No handle is required in non-portable embodiments.

5 The inlet passage 60 is provided with a one way valve 90, which enables liquid to flow into the tube 80 through inlet passage 60, but not to leave the tube via the inlet. In contrast, the outlet passage 70 is unrestricted. Although the outlet passage 70 is unrestricted, the liquid passage is preferably oriented and arranged so that liquid in the tube 80 cannot leave the tube simply by force of gravity. As will be
10 described below, it is intended that liquid will only leave the tube 80 as a result of the heating of the liquid inside the tube. Heating of the liquid inside the tube is believed to contribute to the expulsion of liquid due to its effect of increasing the internal pressure within the tube which expels hot or boiling liquid from the tube 80.

 In the embodiment, the tube 80 is configured as two or more generally
15 concentric rings, designated respectively as A and B in Figure 1. The first (A) and second (B) parts of the tube are each formed as nested shapes. The second part (B) of the tube is generally nested within the first part (A). When the cooking frame 10 is used with a heat source in the form of a gas ring burner, the nesting of the first and second parts of the tube results in the second part (B) being positioned closer to the
20 heat source than the first part (A). When the heat source is, for example, a hot plate or an open fire, each of the passage portions of the liquid passage receives a similar amount of heat. The use of a plurality of tubes ensures that a greater amount of liquid in the tube can be placed within heating range of the heat source. An increased number of tubes also provides a greater surface area on which to rest the
25 cooking utensil or food.

 When the tube 80 is placed within heating range of the heat source 50, the liquid inside the tube is heated. This results in an increase in the volume and pressure of the liquid. Since the interior of the tube is a fixed volume, it is believed that the increase in pressure and/or volume of the liquid inside the tube contributes
30 to the expulsion of the liquid as will be described.

 The second part (B) of the tube is closer to the outlet passage 70 than the first part (A) of the tube. This means that the first part (A) of the tube is closer to the inlet passage 60. The pressurised liquid in the tube is prevented substantially from flowing back towards the inlet passage 60, due to the one-way valve 90. The
35 pressurised liquid in the tube is therefore forced to exit the outlet passage 70, which, in the present embodiment, is unrestricted. Thus, the heated liquid exits the tube 80 through the outlet passage.

 Any gas vapour bubbles, which form on the inner walls of the heated tube 80,

5 will also be propelled out of the tube by the flow of hot liquid towards the outlet passage 70. Thus, when water is used as the liquid, the outflow of water prevents the build up of pressurised water and gas vapour in the tube, which could otherwise place undue stress on the walls of the tube and which could lead to eventual failure of the tube.

10 It is believed that changes in density of the liquid as a result of heating may also possibly play a part in expelling the heated liquid from the tube.

As heated liquid is expelled from the tube through the outlet passage 70, the liquid pressure and amount of liquid in the tube decreases, which causes the one-way valve 90 to re-open. This re-opening of the valve 90 allows a further in-flow of
15 fresh liquid into the tube through the inlet passage 60. Thus, the heating process begins again with the fresh charge of liquid.

The invention is not restricted to a situation where one part of the tube is heated to a greater degree than other parts of the tube. It is possible to heat all parts of the tube at the same rate, for instance, by placing the entire tube over a fire. It is
20 found that this form of even heating works very effectively. It is believed that the liquid is expelled from the tube due to volumetric expansion of the heated liquid, or due to expansion caused by the creation of vapour given off by the boiling liquid, or due to increases in pressure, or a combination of one or more of these mechanisms.

In the embodiments of Figures 1 to 4, the liquid passage has been embodied
25 as a circular tube 80. However, in further embodiments, the tube need not be circular. For instance, in Figure 5, the heat source 50 is an elongated barbecue pit filled with burning coals, and consequently, the liquid passage and the cooking support consists of an elongated cooking frame 10a. In this embodiment, a secondary cooking support 10b is required to assist with fully supporting the food
30 piece or cooking utensil.

In yet a further embodiment in Figure 6, a liquid passage is contained within a further cooking frame which is shaped as a convoluted grid 100. The convoluted shape enables a piece of food to be placed directly on top of the cooking frame without an external grid being placed on top of the cooking frame. Moreover, this
35 embodiment is useful for being placed over open fires, since a larger portion of the cooking frame would be exposed to the flames. The liquid in the grid 100 is expelled from the tube once it has been heated or boiled, in the manner described above.

In yet further embodiments, the liquid passage may be embedded in a

5 cooking surface, such as a conductive steel or aluminium plate. Food may be fried directly on the cooking plate. This further embodiment would be useful in hotplates found on barbeques or cooktop stoves. Thus, food may be fried on top of the cooking support surface while the liquid passage embedded within the cooking plate is able to utilise the heat energy of the plate to boil water. In a preferred modification, 10 the liquid passage may be positioned beneath and proximate the cooking plate, so that the passage makes use of radiant energy that would otherwise be wasted.

An advantage of the present embodiment is that heat energy, which would otherwise be lost or not utilised, is able to heat or boil the liquid found in the liquid passage. This maximises the use of heat energy, which may lead to lower heating 15 costs. Moreover, since the tasks of cooking the food, and heating or boiling of water, for example, are able to be preformed concurrently, this saves time in performing the two tasks. Furthermore, since the cooking accessory enables the tasks of cooking and heating water to be performed using the same heating source, less space is required to fulfil these functions. This would be an advantage for instance in kitchens 20 with limited tabletop space.

It is anticipated that embodiments of this invention will usually be used to heat or boil liquid in the form of water.

In the embodiments of Figures 1 to 4, the cooking accessory has been embodied as a portable unit which is placed in proximity of the heating source only 25 when cooking and/or heating is required. However, further embodiments of cooking accessories may be designed as a permanent fixture to accompany the heating source. For instance, a permanent barbecue may be provided with a liquid passage which encircles, surrounds or borders the region at which the heating fuel would be placed. This would enable the barbecue to be provided with a source of hot or 30 boiling water which may be used to prepare drinks or for inclusion in the preparation of food. Likewise, other embodiments may be used in indoor kitchens as a permanent accessory for the cooking elements of a stove.

The legs 120, shown in Figure 2, are relatively short, since that embodiment is intended for placement on a kitchen surface. However, in other embodiments, the 35 stand members may be longer so that, conceivably, such embodiments may be used for camping, in which the cooking apparatus could be placed over an open fire. This would be a useful camping accessory since the two functions of supporting the cooking utensil, and boiling water, can be combined in one item, thus saving weight

5 that the camper has to carry.

In the embodiment as illustrated in Figure 1, the on-off valve 90 is placed on the right hand side of the handle portion 110. In another variation of the embodiment in Figure 1, the on-off valve 90 may be alternatively positioned on the left hand side of the handle. Hence, passage 70 would become the inlet and passage 60 would
10 become the outlet. In all other respects, the apparatus would function in the same manner.

It is noted that the invention in its broadest aspect is not limited to any one type of heat source, and may be used in connection with other heat sources such as electric heater elements, open fires, hotplates and even solid fuels such as wood,
15 coal or the like.

Although the outlet in the embodiment is unrestricted, the outlet may also be provided with an outlet valve that can be made to open when liquid inside the tube climbs above a certain pressure that is associated with hot or boiling liquid. Such an outlet valve may be adjustable to enable liquid to exit the tube only after it has
20 reached a certain temperature that is specified by adjusting the valve.

The embodiments have been described by way of example only, and modifications are possible within the spirit and scope of the invention as defined in the appended claims.



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CLAIMS:

1. A cooking accessory including:
a cooking support operatively adapted to support food or a utensil containing the food, and operatively adapted to be placed within heating range of a heat source to cook the food;
wherein the cooking support includes a liquid passage having an inlet and an outlet, the passage being positioned proximate the support, so that liquid in the passage is able to be heated when the cooking support is heated by the heat source.
2. A cooking accessory according to claim 1 wherein the liquid passage is contained substantially in the support.
3. A cooking accessory according to either claim 1 or 2 wherein the liquid passage is operatively adapted to surround the heat source when placed within heating range of the heat source.
4. A cooking accessory according to claim 3 wherein the liquid passage includes a plurality of passage portions each being generally circular and generally concentric with respect to one another.
5. A cooking accessory according to claim 4 wherein the liquid passage is formed such that a second of said passage portions is adapted to be positioned closer to the heat source than a first of said passage portions, such that liquid in the second passage portion receives a greater amount of heat from the heat source than liquid in the first passage portion.
6. A cooking accessory according to claim 5 wherein the second passage portion is closer to the outlet, and the first passage portion is closer to the inlet.
7. A cooking accessory according to either claim 5 or 6 wherein the first and second passage portions are each formed as nested shapes, the second being generally nested within the first.



8. A cooking accessory according to any one of claims 5 to 7 wherein the second passage portion is operatively adapted to be heated to a greater degree than the first passage portion.
9. A cooking accessory according to any one of the preceding claims wherein the inlet is provided with a one-way valve that allows liquid to flow only into the liquid passage.
10. A cooking accessory according to any one of the preceding claims wherein the outlet is unrestricted.
11. A cooking accessory according to any one of the preceding claims wherein the cooking accessory is provided with a handle, the inlet and outlet each being housed in the handle.
12. A cooking accessory according to any one of the preceding claims wherein the accessory is portable.
13. A cooking accessory according to any one of the preceding claims wherein the cooking support is provided with stand members that enable the support to be freestanding.
14. A cooking accessory according to any one of the preceding claims wherein the liquid is water.
15. A cooking accessory according to any one of the preceding claims wherein the cooking frame includes a grip for supporting the food or utensil.
16. A cooking accessory substantially as hereinbefore described and illustrated with reference to each of the embodiments described and/or illustrated in the accompanying drawings.

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