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Inventor(s)

MIKULA; Christian et al.

### KITCHEN APPARATUS FOR ACCOMMODATING A WIRED FOOD MONITORING SENSOR

#### Abstract

A kitchen apparatus, comprising a food preparation chamber, is provided. The kitchen apparatus also includes a first housing portion and a second housing portion movable relative to each other to enable the food preparation chamber to be opened and closed. At least part of a channel for receiving at least one wire, e.g. wire(s) connected to a food monitoring sensor, is located at an interface between the first housing portion and the second housing portion so as to permit routing of the at least one wire received in the channel into the food preparation chamber.

**Inventors:** MIKULA; Christian (Eindhoven, NL), SCHRATTER; Bernhard (Eindhoven, NL), EGGER; Christian (Eindhoven, NL)

**Applicant:** VERSUNI HOLDING B.V. (Eindhoven, NL)

**Family ID:** 1000008589007

**Assignee:** VERSUNI HOLDING B.V. (Eindhoven, NL)

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## **Background/Summary**

### **FIELD OF THE INVENTION**

[0001] This invention relates to routing of wire(s) of a food monitoring sensor into a closed food preparation chamber of a kitchen apparatus having a first housing portion and a second housing portion that are moveable relative to each other to enable opening and closing of the food preparation chamber.

### **BACKGROUND OF THE INVENTION**

[0002] The use of sensors in food preparation chambers of kitchen appliances is well known. A wireless or wired connection to the sensor enables communication with the kitchen appliance.

[0003] The most common sensor arrangement is a food temperature probe insertable into a piece of food, to sense a core temperature of food. The connection to such a food temperature probe tends to be wired, in other words via a wire.

[0004] A disadvantage of the wired connection to the sensor is that the wire can be damaged and/or interfered with to accidentally dislodge the sensor, in particular by the extending of the wire between the outside and the inside of the food preparation chamber.

[0005] CN 217 365 464 U is an air fryer comprising a heating element, a circulation system and a food cooking chamber. The air fryer also has a first housing portion and a second housing portion, which is movable relative to each other to enable the food cooking chamber to be opened and closed. Its first housing portion has a U-shape wire notch at its open edge for receiving a wire connected to a temperature sensor, with a sealing element at the wire notch. A hole is configured through the sealing element to form a channel to permit routing of the wire into the food cooking chamber.

### **SUMMARY OF THE INVENTION**

[0006] The invention is defined by the claims.

[0007] According to examples in accordance with an aspect of the invention, there is provided a kitchen apparatus comprising: a food preparation chamber; a first housing portion; a second housing portion, the first housing portion and the second housing portion being movable relative to each other to enable the food preparation chamber to be opened and closed; and a channel for receiving at least one wire connected to a food monitoring sensor, at least part of the channel being at an interface between the first housing portion and the second housing portion so as to permit routing of the at least one wire received in the channel into the food preparation chamber.

[0008] At least part of the channel being at the interface between the first housing portion and the second housing portion may mean that a first surface of the first housing portion faces a second surface of the second housing portion, with the channel being defined between the first and second surfaces.

[0009] The channel may assist to minimize the risk of damage to the at least one wire by pinching between the first and second housing portions. This can assist to improve the longevity of the at least one wire. Similarly, the channel may assist to minimize the risk of the at least one wire causing damage, e.g. scratching and/or permanent deformation, to edges of the first and second housing portions at the interface.

[0010] The channel may further lessen the risk of unintentional disconnection of the at least one wire from a connection point external to the food preparation chamber.

[0011] In certain embodiments, the channel can assist to minimize uncontrolled release of gas from the closed food preparation chamber associated with, when no such channel is provided, the at least one wire opening up a gap at the interface between the first and second housing portions.

[0012] Moreover, by at least part of the channel being at the interface between the first and second housing portions, the user is enabled to, following arrangement of the food monitoring sensor in the food, straightforwardly route the at least one wire extending from the food monitoring sensor from the inside to the outside of the food preparation chamber with minimal disruption to the placement of the food monitoring sensor, for example with less risk of the food monitoring sensor falling out of the food.

[0013] In some embodiments, one of the first and second housing portions is a drawer that is slidably moveable relative to the other of the first and second housing portions to enable the food preparation chamber to be opened and closed. This may provide a particularly convenient way of accessing the food preparation chamber in order to receive food, as well as the above-mentioned food monitoring sensor, therein.

[0014] In other embodiments, one of the first and second housing portions is a lid or door that is moveable relative to the other of the first and second housing portions to enable the food preparation chamber to be opened or closed.

[0015] Such relative movement of the lid or door may, for example, be via the lid or door being pivotable relative to, and/or detachable from, the other of the first and second housing portions.

[0016] In some embodiments, one of the first and second housing portions comprises a food basket receivable in the food preparation chamber, in particular when the food preparation chamber is closed.

[0017] In embodiments in which one of the first and second housing portions is a drawer that is slidably moveable relative to the other of the first and second housing portions, the food basket is advantageously included in the drawer.

[0018] This can facilitate monitoring of the food being cooked in the food preparation chamber because the food monitoring sensor can be straightforwardly arranged in the food basket, e.g. in food received in the food basket, prior to the food basket being received in the food preparation chamber via sliding of the drawer to close the food preparation chamber.

[0019] In some embodiments, at least one of the first and second housing portions comprises a rounded surface that at least partially delimits the channel.

[0020] Such a rounded surface may assist to minimize the risk of damage to the at least one wire received in the channel.

[0021] The rounded surface can, for example, comprise a concave, in other words U-shaped, surface that extends along at least part of the channel, e.g. the at least part of the channel at the interface between the first and second housing portions.

[0022] Such a concave surface can assist to retain the at least one wire within the channel.

[0023] As an alternative or in addition to the rounded surface delimiting the channel, the channel may be delimited by a plastic or rubber material, e.g. a molded plastic or rubber material.

[0024] Such materials may assist to protect the at least one wire from damage, and may also provide additional electrical insulation.

[0025] In some embodiments, the channel is at least partly defined by a groove arranged in, in other words set into, an edge portion of one of the first and second housing portions.

[0026] In such embodiments, the edge portion faces a further edge portion of the other of the first and second housing portions. The further edge portion may assist to retain the at least one wire in the groove when the food preparation chamber is closed.

[0027] The groove may have any suitable shape. In some embodiments, the groove has a concave cross-sectional shape.

[0028] Such a concave cross-sectional shape may assist to protect the at least one wire from damage.

[0029] A further groove may be arranged in, in other words set into, the further edge portion, with the channel being defined between the groove and the further groove.

[0030] In such embodiments, the channel may, for instance, have a circular or elliptical cross-sectional shape resulting from semicircular or semielliptical cross-sectional shapes of the opposing groove and the further groove.

[0031] In alternative embodiments, the groove is arranged in the edge portion but no further groove is arranged in the further edge portion.

[0032] In some embodiments, the kitchen apparatus comprises a handle mounted to one of the first and second housing portions via a mounting portion extending between the respective housing portion and the handle.

[0033] The handle may facilitate relative movement of the first and second housing portions to open and close the food preparation chamber.

[0034] In some embodiments, the handle may be mounted to, and thereby facilitate sliding of, one of the first and second housing portions in the form of a drawer, e.g. a drawer comprising a food basket, relative to the other of the first and second housing portions.

[0035] In some embodiments, at least part of the channel may be arranged in, e.g. set into a surface of, the mounting portion. This may provide a particularly ergonomic position for the channel, since, following arrangement of the food in the food basket and/or in the food preparation chamber, the user can straightforwardly locate the at least one wire in the channel while in the process of manipulating the handle to close the food preparation chamber.

[0036] In some embodiments, the kitchen apparatus comprises a closure member arranged to close the channel when the at least one wire is not received in the channel.

[0037] The closure member may assist to minimize or prevent gases from escaping from the food preparation chamber via the channel when the channel is not accommodating the at least one wire. Thus, the closure member may assist to alleviate efficiency of kitchen apparatus being compromised due to the inclusion of the channel, when the channel is not being used to route the at least one wire into the food preparation chamber.

[0038] In some embodiments, the closure member is biased into a closed position in which the channel is closed by the closure member when the at least one wire is not received in the channel.

[0039] Such biasing can be implemented in any suitable manner. In some embodiments, the biasing is achieved by the closure member being spring-loaded, with a spring urging the closure member to close the channel.

[0040] In such embodiments, the biasing may be overcome by the at least one wire being received in the channel. The at least one wire accommodated in the channel may force the closure member back against the bias urging the closure member into the closed position, for example against the force exerted by the above-mentioned spring.

[0041] In some embodiments, the closure member includes a rounded profile for contacting the at least one wire when the at least one wire is received in the channel.

[0042] This rounded profile may assist to minimize or prevent the at least one wire being damaged by the closure member pressing against the at least one wire when the at least one wire is received in the channel.

[0043] In some embodiments, the kitchen apparatus comprises one or more labyrinth seals and/or deformable part(s) and/or flexible part(s) mounted in, or provided together with the channel to hold the at least one wire when inserted in the channel, and to seal the channel when no wire is received in the channel.

[0044] Such components can, for example, be made of an elastomeric material, such as rubber.

[0045] In some embodiments, the kitchen apparatus comprises a wire retention and release mechanism configured to releasably retain the at least one wire following receiving of the at least one wire in the channel. Releasably retaining the at least one wire in this manner may assist to reduce the risk of the at least one wire being damaged, e.g. by being pinched between the first and

second housing portions.

[0046] In some embodiments, the wire retention and release mechanism is configured to urge release of the retained wire(s) in response to movement of the first and second housing portions relative to each other to open the food preparation chamber.

[0047] This release of the at least one wire may assist to minimize the risk of unintentional deformation and/or disconnection of the at least one wire, for example at a user-accessible connection point, e.g. jack socket, due to the relative movement of the first and second housing portions to open the food preparation chamber.

[0048] In embodiments in which one of the first and second housing portions is a drawer, the length of the at least one wire between the interface and the user-accessible connection point may be shorter than the length of travel of the drawer required to open the food preparation chamber.

[0049] The risk of unintentional deformation and/or disconnection of the at least one wire in such embodiments may nonetheless be lessened due to the release of the at least one wire implemented by the wire retention and release mechanism.

[0050] Moreover, user convenience may be enhanced, since the user need only open the food preparation chamber in order to cause the wire retention and release mechanism to urge release of the retained wire(s).

[0051] The wire retention and release mechanism may comprise a wire reception portion configured to align with the channel to enable release of the at least one wire from the wire reception portion via the channel when the food preparation chamber is open, and to be displaced relative to the channel to retain the at least one wire in the wire reception portion while the food preparation chamber is closed.

[0052] The wire reception portion may be configured to align with the channel in response to the first and second housing portions being moved relative to each other to open the food preparation chamber.

[0053] In this way, the wire retention and release mechanism may urge release of the retained wire(s).

[0054] Alternatively or additionally, the wire reception portion may be configured to be displaced relative to the channel in response to user actuation and/or to the first and second housing portions being moved relative to each other to close the food preparation chamber.

[0055] In some embodiments, the closure member configured to close the channel when the at least one wire is not received in the channel is further configured to urge the wire(s) out of the wire reception portion and out of the channel, when the wire reception portion is aligned with the channel.

[0056] In some embodiments, the kitchen apparatus comprises a user-accessible connection point at which the at least one wire is electrically connectable to a cooking control and/or monitoring system.

[0057] The user-accessible connection point may, for example, be arranged at an exterior of a kitchen appliance, e.g. air fryer, included in the kitchen apparatus.

[0058] In some embodiments, the user-accessible connection point comprises a socket, e.g. a jack socket, into which a plug, e.g. a jack plug, at an end of the at least one wire is locatable to electrically connect the at least one wire to the cooking control and/or monitoring system.

[0059] In some embodiments, the cooking control and/or monitoring system is included in the kitchen apparatus and comprises a user interface configured to communicate, e.g. display, cooking monitoring information based on sensor signals communicated from the food monitoring sensor via the at least one wire.

[0060] The user-accessible connection point, e.g. jack socket, may be adjacent to the user interface, e.g. display.

[0061] In some embodiments, the kitchen apparatus comprises the at least one wire, and the food monitoring sensor arrangeable in the food preparation chamber to monitor food received therein

while the at least one wire is routed via the channel from the food monitoring sensor to outside the food preparation chamber.

[0062] In at least some embodiments, the food monitoring sensor comprises a food temperature monitoring probe.

[0063] Such a food temperature monitoring probe may be insertable into food received in the food preparation chamber in order to sense a core temperature of the food during cooking within the food preparation chamber.

[0064] In other embodiments, the kitchen apparatus is provided, e.g. supplied to the user, separately from the food monitoring sensor and/or the at least one wire.

[0065] More generally, the at least one wire may be formed of any suitably thermally robust material, in particular suitably thermally robust insulating material(s) surrounding electrically conductive material(s), in order to enable the at least one wire to withstand cooking conditions inside the food preparation chamber.

[0066] In some embodiments, the at least one wire comprises a fluoropolymer insulating material, such as polytetrafluoroethylene.

[0067] The kitchen apparatus can include, or be, a kitchen appliance, such as a cooking appliance.

[0068] Examples of cooking appliances include an air fryer, a convection oven, a food steamer, and so on.

[0069] Particular mention is made of the kitchen apparatus comprising, or being, an air fryer.

[0070] The air fryer can achieve a frying effect with no or only a relatively small amount of cooking oil being required. It is nonetheless desirable to monitor the cooking process taking place in the air fryer's food preparation chamber with the above-mentioned food monitoring sensor, e.g. food temperature probe, to ensure that the desired cooking result is attained.

[0071] The slight overpressure in the food preparation chamber, in other words cooking chamber, of an air fryer, may provide an increased risk of uncontrolled release of gas from the closed food preparation chamber in the scenario that the at least one wire opens up a gap at the interface between the first and second housing portions. Such uncontrolled gas release towards the user can compromise the user's comfort and safety. The avoidance of such a gap being opened up due to the channel at the interface between the first and second housing portions may assist to reduce this gas release-related risk.

[0072] In some embodiments, the kitchen apparatus comprises a heating element and a circulation system arranged to circulate gas heated by the heating element in the food preparation chamber. In such embodiments, the kitchen apparatus can be regarded as comprising, for example, a convection oven or an air fryer.

[0073] In some embodiments, the food preparation chamber has, when orientated for use, a top and a bottom, with the circulation system being arranged to circulate said gas upwardly through food received in the food preparation chamber in the direction of the top and/or downwardly through food received in the food preparation chamber in the direction of the bottom.

[0074] This upward and/or downward circulation of gas, e.g. air, smoke and/or steam, through the food received in the food preparation chamber may provide the above-described frying effect provided by an air fryer.

[0075] These and other aspects will be apparent from and elucidated with reference to the embodiment(s) described hereinafter.

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## Description

### BRIEF DESCRIPTION OF THE DRAWINGS

[0076] For a better understanding of the invention, and to show more clearly how it may be carried into effect, reference will now be made, by way of example only, to the accompanying drawings, in

which;

[0077] FIG. 1 shows part of a kitchen apparatus according to an example;

[0078] FIG. 2 shows a housing portion of a kitchen apparatus according to an example;

[0079] FIG. 3 provides a cutaway view of a kitchen apparatus according to another example;

[0080] FIG. 4 shows a wire being guided into a food preparation chamber of the kitchen apparatus shown in FIG. 3;

[0081] FIG. 5 shows just one of the housing portions of the kitchen apparatus shown in FIGS. 3 and 4;

[0082] FIG. 6 shows part of a housing portion of a kitchen apparatus according to yet another example;

[0083] FIG. 7 provides a side view of a wire retention and release mechanism mounted to the housing portion shown in FIG. 6; and

[0084] FIG. 8 provides a perspective view of the wire retention and release mechanism mounted to the housing portion shown in FIG. 6.

#### DETAILED DESCRIPTION OF THE EMBODIMENTS

[0085] The invention will be described with reference to the Figures.

[0086] It should be understood that the detailed description and specific examples, while indicating exemplary embodiments of the apparatus, systems and methods, are intended for purposes of illustration only and are not intended to limit the scope of the invention. These and other features, aspects, and advantages of the apparatus, systems and methods of the present invention will become better understood from the following description, appended claims, and accompanying drawings. It should be understood that the Figures are merely schematic and are not drawn to scale. It should also be understood that the same reference numerals are used throughout the Figures to indicate the same or similar parts.

[0087] Provided is a kitchen apparatus comprising a food preparation chamber. The kitchen apparatus also includes a first housing portion and a second housing portion movable relative to each other to enable the food preparation chamber to be opened and closed. At least part of a channel for receiving at least one wire, e.g. wire(s) connected to a food monitoring sensor, is located at an interface between the first housing portion and the second housing portion so as to permit routing of the at least one wire received in the channel into the food preparation chamber.

[0088] FIG. 1 shows part of a kitchen apparatus **100** according to an example. The kitchen apparatus **100** comprises a first housing portion **102** and a second housing portion **104**. The first and second housing portions **102**, **104** are movable relative to each other to enable a food preparation chamber (not visible in FIG. 1) to be opened and closed.

[0089] The kitchen apparatus **100** can include any type of kitchen appliance, such as an air fryer, a convection oven, a food steamer, and so on.

[0090] Particular mention is made of the kitchen apparatus **100** comprising, or being, an air fryer. An example of this is shown in FIG. 1.

[0091] The air fryer can achieve a frying effect with no or only a relatively small amount of cooking oil being required. It is nonetheless desirable to monitor the cooking process taking place in the air fryer's food preparation chamber with a suitable food monitoring sensor, e.g. food temperature probe, to ensure that the desired cooking result is attained. Facilitating food monitoring via such a food monitoring sensor is a key aim of the present disclosure, as will be described in more detail herein below.

[0092] In at least some embodiments, the kitchen apparatus **100** comprises a heating element and a circulation system (not visible) arranged to circulate gas heated by the heating element in the food preparation chamber. In such embodiments, the kitchen apparatus **100** can be regarded as comprising, for example, a convection oven or an air fryer.

[0093] In some embodiments, the food preparation chamber has, when orientated for use, a top and a bottom, with the circulation system being arranged to circulate said gas upwardly through food

received in the food preparation chamber in the direction of the top and/or downwardly through food received in the food preparation chamber in the direction of the bottom.

[0094] This upward and/or downward circulation of gas, e.g. air, smoke and/or steam, through the food received in the food preparation chamber may provide the above-described frying effect provided by an air fryer.

[0095] The relative movement of the first and second housing portions **102**, **104** can be implemented in any suitable manner provided that the food preparation chamber can be opened and closed, for example in order to enable food to be placed within, and removed from, the food preparation chamber.

[0096] In some embodiments, such as those shown in FIGS. **1** to **4**, one of the first and second housing portions **102**, **104** is a drawer that is slidably moveable relative to the other of the first and second housing portions **104**, **102** to enable the food preparation chamber **106** to be opened and closed.

[0097] In the non-limiting examples shown in FIGS. **1** to **4**, the second housing portion **104** constitutes such a drawer, with the second housing portion **104** being slidable in and out of a statically mounted first housing portion **102** in order to close and open the food preparation chamber **106** respectively.

[0098] In other embodiments (not visible in the Figures), one of the first and second housing portions **102**, **104** is a lid or door that is moveable relative to the other of the first and second housing portions **104**, **102** to enable the food preparation chamber **106** to be opened or closed.

[0099] Such relative movement of the lid or door may, for example, be via the lid or door being pivotable relative to, and/or detachable from, the other of the first and second housing portions **104**, **102**.

[0100] In some embodiments, such as that shown in FIG. **2**, one of the first and second housing portions **102**, **104** comprises a food basket receivable in the food preparation chamber **106**, in particular when the food preparation chamber **106** is closed.

[0101] In such embodiments, the food basket may comprise a perforate food supporting portion **108** on which food, e.g. for cooking/baking/frying/steaming in the food preparation chamber **106**, may be supported.

[0102] In embodiments in which one of the first and second housing portions **102**, **104** is a drawer that is slidably moveable relative to the other of the first and second housing portions **104**, **102**, the food basket is advantageously included in the drawer. This can facilitate monitoring of the food being cooked in the food preparation chamber **106** because a food monitoring sensor, such as a food temperature probe, can be straightforwardly arranged in the food basket, e.g. in food received in the food basket, prior to the food basket being received in the food preparation chamber **106** via sliding of the drawer to close the food preparation chamber **106**.

[0103] Such a food monitoring sensor may, more generally, be arrangeable in the food preparation chamber **106** to monitor food received therein while wire(s) **110** extending from the food monitoring sensor is or are routed from the inside to the outside of the food preparation chamber **106**.

[0104] In some embodiments, such as that shown in FIG. **1**, the kitchen apparatus **100** comprises a cooking control and/or monitoring system **112**, and a user-accessible connection point **114** at which the at least one wire **110** is electrically connectable to the cooking control and/or monitoring system **112**.

[0105] The user-accessible connection point **114** may, for example, be arranged at an exterior of the kitchen appliance, e.g. air fryer, included in the kitchen apparatus **100**.

[0106] In some embodiments, such as that shown in FIG. **1**, the user-accessible connection point **114** comprises a socket, e.g. a jack socket, into which a plug **116**, e.g. a jack plug, at an end of the at least one wire **110** is locatable to electrically connect the at least one wire **110** to the cooking control and/or monitoring system **112**.



[0107] In some embodiments, the cooking control and/or monitoring system **112** includes a user interface **118** configured to communicate, e.g. display, cooking monitoring information based on sensor signals communicated from the food monitoring sensor via the at least one wire **110**.

[0108] Alternatively or additionally, the cooking control and/or monitoring system **112** may comprise one or more user input interfaces **120A**, **120B**, **120C** configured to permit the user to select cooking control parameters, such as a temperature of the food preparation chamber **106** and/or duration of heating of the food preparation chamber **106** via control of the heating element, and/or to permit the user to connect, e.g. wirelessly connect, the cooking control and/or monitoring system **112** to an external device (not visible), such as a smart phone or tablet computer, separate from the kitchen appliance.

[0109] It is noted, more generally, that the at least one wire **110** may provide a facile way of communicating sensor signals from the food monitoring sensor to the outside of the food preparation chamber **106**. However, the at least one wire **110** can risk becoming damaged by being pinched between the first and second housing portions **102**, **104** when the cooking chamber **106** is closed. The at least one wire **110** can also cause damage, e.g. scratching and/or permanent deformation, to edges of the first and second housing portions **102**, **104** at the interface therebetween.

[0110] In some instances, an uncontrolled release of gas from the closed food preparation chamber **106** can result from the at least one wire **110** opening up a gap at the interface between the first and second housing portions **102**, **104**.

[0111] There is also a risk that the at least one wire **110** is accidentally pulled from the user-accessible connection point **114**, for instance by the plug **116** being pulled from the above-mentioned socket included in, or defining, the user-accessible connection point **114**, when the first and second housing portions are moved relative to each other to open or close the food preparation chamber **106**.

[0112] For at least these reasons, the kitchen apparatus **100** comprises a channel **122** for receiving the at least one wire **110**, with at least part of the channel **122** being at the interface between the first housing portion **102** and the second housing portion **104** so as to permit routing of the at least one wire **110** into the food preparation chamber **106**.

[0113] At least part of the channel **122** being at the interface between the first housing portion **102** and the second housing portion **104** may mean that a first surface of the first housing portion **102** faces a second surface of the second housing portion **104**, with the channel **122** being defined between the first and second surfaces.

[0114] The channel **122** may assist to minimize the risk of damage to the at least one wire **110** by pinching between the first and second housing portions **102**, **104**, as well as lessening the risk of unintentional disconnection of the at least one wire **110** from the user-accessible connection point **114**.

[0115] Moreover, by the channel **122** being arranged at the interface between the first and second housing portions **102**, **104**, the user is enabled to, following arrangement of the food monitoring sensor in the food, straightforwardly route the at least one wire **110** from the inside to the outside of the food preparation chamber **106** with minimal disruption to the placement of the food monitoring sensor.

[0116] The channel **122** can be regarded as a grommet for the at least one wire **110** of the food monitoring sensor, e.g. food temperature probe. This is owing to the channel's **122** function in protecting the at least one wire **110** from opposing edges of the first and second housing portions **102**, **104** at the interface.

[0117] In some embodiments, at least one of the first and second housing portions **102**, **104** comprises a rounded surface that at least partially delimits the channel **122**.

[0118] Such a rounded surface may assist to minimize the risk of damage to the at least one wire **110**.

[0119] The rounded surface can, for example, comprise a concave, in other words U-shaped, surface that extends along at least part of the channel **122**, e.g. the at least part of the channel **122** at the interface between the first and second housing portions **102**, **104**.

[0120] Such a concave surface can assist to retain the at least one wire **110** within the channel **122**.

[0121] As an alternative or in addition to the rounded surface delimiting the channel **122**, the channel **122** may be delimited by a plastic or rubber material, e.g. a molded plastic or rubber material.

[0122] Such materials may assist to protect the at least one wire **110** from damage, and may also provide additional electrical insulation.

[0123] In some embodiments, such as those shown in FIGS. **1** and **2**, the channel **122** is at least partly defined by a groove arranged in, in other words set into, an edge portion **124** of one of the first and second housing portions **102**, **104**.

[0124] In such embodiments, the edge portion **124** faces a further edge portion **126** of the other of the first and second housing portions **104**, **102**. The further edge portion **126** may assist to retain the at least one wire **110** in the groove **122** when the food preparation chamber **106** is closed.

[0125] In embodiments in which one of the first and second housing portions **102**, **104** is a drawer, the edge portion **124** may be an edge portion **124** of the drawer. The edge portion **124** of the drawer thus faces the further edge portion **126** of the other of the first and second housing portions **104**, **102**.

[0126] As shown in FIGS. **1** and **2**, the edge portion **124** of the drawer **124** may be an upper edge portion, and the further edge portion **126** may be a lower edge portion, when the kitchen apparatus **100** is orientated for use.

[0127] The groove may have any suitable shape. In some embodiments, such as those shown in FIGS. **1** and **2**, the groove has a concave cross-sectional shape.

[0128] Such a concave cross-sectional shape may assist to protect the at least one wire **110** from damage.

[0129] Whilst not visible in the Figures, a further groove may be arranged in, in other words set into, the further edge portion **126**, with the channel **122** being defined between the groove and the further groove.

[0130] In such embodiments, the channel **122** may, for instance, have a circular or elliptical cross-sectional shape when the groove and the further groove each have semicircular or semielliptical cross-sectional shapes.

[0131] In alternative embodiments, no further groove is arranged in the further edge portion **126**.

[0132] In some embodiments, such as those shown in FIGS. **1** and **2**, the kitchen apparatus **100** comprises a handle **128** mounted to one of the first and second housing portions **102**, **104** via a mounting portion **130** extending between the respective housing portion and the handle **128**.

[0133] The handle **128** may facilitate relative movement of the first and second housing portions **102**, **104** to open and close the food preparation chamber **106**.

[0134] In some embodiments, such as those shown in FIGS. **1** and **2**, the handle **128** may be mounted to, and thereby facilitate sliding of, one of the first and second housing portions **102**, **104** in the form of a drawer, e.g. comprising a food basket, relative to the other of the first and second housing portions **104**, **102**.

[0135] In some embodiments, at least part of the channel **122** may be arranged in, e.g. set into a surface of, the mounting portion **130**. This may provide a particularly ergonomic position for the channel **122**, since, following arrangement of the food in the food basket and/or in the food preparation chamber **106**, the user can straightforwardly locate the at least one wire **110** in the channel **122** while in the process of manipulating the handle **128** to close the food preparation chamber **106**.

[0136] In some embodiments, the kitchen apparatus **100** comprises the at least one wire **110**, and the food monitoring sensor arrangeable in the food preparation chamber **106** to monitor food

received therein while the at least one wire is routed via the channel **122** from the food monitoring sensor to outside the food preparation chamber **106**.

[0137] In at least some embodiments, the food monitoring sensor comprises, or is, a food temperature probe.

[0138] Such a food temperature probe may be insertable into food received in the food preparation chamber **106** in order to sense a core temperature of the food during cooking within the food preparation chamber **106**.

[0139] In other embodiments, the kitchen apparatus **100** is provided, e.g. supplied to the user, separately from the food monitoring sensor and/or the at least one wire **110**.

[0140] More generally, the at least one wire **110** may be formed of any suitably thermally robust material, in particular suitably thermally robust insulating material(s) surrounding electrically conductive material(s), in order to enable the at least one wire **110** to withstand the cooking conditions inside the food preparation chamber **106**.

[0141] In some embodiments, the at least one wire **110** comprises a fluoropolymer insulating material, such as polytetrafluoroethylene.

[0142] In some embodiments, such as that shown in FIGS. **3** to **5**, the kitchen apparatus **100** comprises a closure member **132** arranged to close the channel **122** when the at least one wire **110** is not received in the channel **122**.

[0143] The closure member **132** can be regarded as a gate that can assist to minimize or prevent gases from escaping from the food preparation chamber **106** via the channel **122** when the channel **122** is not accommodating the at least one wire **110**. Thus, the closure member **132** may assist to alleviate efficiency of kitchen apparatus **100** being compromised due to the inclusion of the channel **122**, when the channel **122** is not being used to route the at least one wire **110** into the food preparation chamber **106**.

[0144] The closure member **132** may close the channel **122** by protruding across part **134** of the channel **122** that would otherwise be occupied by the at least one wire **110**.

[0145] In some embodiments, such as that shown in FIGS. **3** to **5**, the closure member **132** is biased into a closed position in which the channel **122** is closed by the closure member **132** when the at least one wire **110** is not received in the channel **122**.

[0146] Such biasing can be implemented in any suitable manner. In some embodiments, such as that shown in FIGS. **3** to **5**, the biasing is achieved by the closure member **132** being spring-loaded, with a spring **136** urging the closure member **132** to close the channel **122**.

[0147] In such embodiments, the biasing may be overcome by the at least one wire **110** being received in the channel **122**. In other words, if the at least one wire **110** is present in the channel **122**, the closure member **132** may be pushed upwards when the food preparation chamber **106** is closed by the first and second housing portions **102**, **104** being in position. This is shown in FIG. **4**.

[0148] Thus, the at least one wire **110** accommodated in the channel **122** may force the closure member **132** back against the bias urging the closure member **132** into the closed position, in this non-limiting example against the force exerted by the spring **136**.

[0149] The closure member **132** may include a rounded profile **138** for contacting the at least one wire **110** when the at least one wire **110** is received in the channel **122**.

[0150] This rounded profile **138** may assist to minimize or prevent the at least one wire **110** being damaged by the closure member **132** pressing against the at least one wire **110** when the at least one wire **110** is received in the channel **122**.

[0151] In some embodiments, the kitchen apparatus **100** comprises one or more labyrinth seals and/or deformable part(s) and/or flexible part(s) (not visible) mounted in, or provided together with the channel **122** to hold the at least one wire **110** when inserted in the channel **122**, and to seal the channel **122** when no wire **110** is received in the channel **122**.

[0152] Such components can, for example, be made of an elastomeric material, such as rubber.

[0153] FIG. **5** shows the first housing portion **102** with the closure member **132** when the second

housing portion **104**, in this non-limiting example being in the form of a drawer, is moved to open the food preparation chamber **106**, e.g. with the food basket being concomitantly removed.

[0154] In a particular non-limiting example, the kitchen apparatus **100** comprises a drawer assembly comprising one of the housing portions **102**, **104** in the form of a drawer that is slidable relative to the other of the housing portions **104**, **102** in the form of a pan. The drawer comprises the food basket, and the handle **128** is mounted to the food basket.

[0155] In such an example, the channel **122**, in other words grommet, may be integrated into the handle **128** of the food basket.

[0156] A significant advantage of this particular example is that the user can place the food into the food basket, and insert the food monitoring sensor, e.g. food temperature probe, into the food while the food basket is displaced relative to the pan, e.g. the pan of an air fryer.

[0157] As the at least one wire **110** and thus the food monitoring sensor is fixed by the channel **122** in a defined position, the food basket, the food received therein, the at least one wire **110** and the food monitoring sensor can easily be placed in the food preparation chamber **106** by sliding the drawer relative to the pan to close the food preparation chamber **106**.

[0158] In this way, unintentional displacement of the food monitoring sensor during closing of the food preparation chamber **106** via sliding of the drawer may be minimized or even eliminated.

[0159] When the drawer is in place to close the food preparation chamber **106**, the user can connect the at least one wire **110** to the user-accessible connection point **114**, e.g. jack socket. The user-accessible connection point **114** may be conveniently positioned next to the user interface **118**, e.g. display, as shown in FIG. 1.

[0160] It is noted that the channel **122** need not be integrated into the handle **128**, and may be provided at an alternative position at the interface between the first and second housing portions **102**, **104**. The channel **122** may, for example, be arranged in an edge portion of a front panel defining the second housing portion **104**, as shown in FIG. 6. This may, for instance, be a front panel of a drawer.

[0161] In some embodiments, such as that shown in FIGS. 6 to 8, the kitchen apparatus **100** comprises a wire retention and release mechanism configured to releasably retain the at least one wire **110** following receiving of the at least one wire **110** in the channel **122**.

[0162] Releasably retaining the at least one wire **110** in this manner may assist to reduce the risk of the at least one wire **110** being damaged, e.g. by being pinched between the first and second housing portions **102**, **104**.

[0163] In some embodiments, the wire retention and release mechanism is configured to urge release of the retained wire(s) **110** in response to movement of the first and second housing portions **102**, **104** relative to each other to open the food preparation chamber **106**.

[0164] This release of the at least one wire **110** may assist to minimize the risk of unintentional deformation and/or disconnection of the at least one wire **110**, for example at the user-accessible connection point **114**, e.g. jack socket, due to the relative movement of the first and second housing portions **102**, **104** to open the food preparation chamber **106**.

[0165] In embodiments in which one of the first and second housing portions **102**, **104** is a drawer, the length of the at least one wire **110** outside the kitchen appliance, e.g. air fryer, may be shorter than the length of travel of the drawer required to open the food preparation chamber **106**.

[0166] The risk of unintentional deformation and/or disconnection of the at least one wire **110** in such embodiments may nonetheless be lessened due to the release of the at least one wire **110** implemented by the wire retention and release mechanism.

[0167] Moreover, user convenience may be enhanced, since the user need only open the food preparation chamber **106** in order to cause the wire retention and release mechanism to urge release of the retained wire(s) **110**.

[0168] In the non-limiting example shown in FIGS. 6 to 8, the at least one wire **110** may be lifted upwards when being released, e.g. in a direction away from the second housing portion **104**, e.g.

drawer.

[0169] The wire retention and release mechanism may comprise a wire reception portion **140** configured to align with the channel **122** to enable release of the at least one wire **110** from the wire reception portion **140** via the channel **122** when the food preparation chamber **106** is open, and to be displaced relative to the channel **122** to retain the at least one wire in the wire reception portion **140** while the food preparation chamber **106** is closed.

[0170] The wire reception portion **140** may be configured to align with the channel **122** in response to the first and second housing portions **102**, **104** being moved relative to each other to open the food preparation chamber **106**.

[0171] In this way, the wire retention and release mechanism may urge release of the retained wire(s) **110**.

[0172] Alternatively or additionally, the wire reception portion **140** may be configured to be displaced relative to the channel **122** in response to user actuation and/or to the first and second housing portions **102**, **104** being moved relative to each other to close the food preparation chamber **106**.

[0173] In some embodiments, the wire reception portion **140** is included in a movable member **142** mounted at one of the first and second housing portions **102**, **104**.

[0174] In a first set of embodiments, a biasing mechanism urges the moveable member **142** into a position in which the wire reception portion **140** is displaced relative to the channel **122**. An example of this is best shown in FIGS. **6** and **7**.

[0175] In this first set of embodiments, when the user wishes to insert the at least one wire **110** of the food monitoring sensor, he/she may rotate the movable member **142** against the bias to open the channel **122** to receive the at least one wire **110**. The at least one wire **110** may then be inserted into the channel **122** and into the wire reception portion **140**. Once the movable member **142** is subsequently released by the user, the at least one wire **110** may be retained in the wire reception portion **140**, owing in part to the shape of the wire reception portion **140**.

[0176] In an alternative, second set of embodiments, a biasing mechanism instead urges the moveable member **142** into a position that brings the wire reception portion **140** into alignment with the channel **122** when the first and second housing portions **102**, **104** are moved relative to each other such that the food preparation chamber **106** is open.

[0177] In this second set of embodiments, the movable member **142** can also have an engagement portion **144** configured to engage a part of one of the housing portions **102**, **104** when the food preparation chamber **106** is closed. When thus engaged, the engagement portion **144** is configured to restrict movement of the movable member **142**, against the urging of the biasing mechanism, so as to retain displacement of the wire reception portion **140** relative to the channel **122** while the food preparation chamber **106** is closed.

[0178] Upon relative movement of the first and second housing portions **102**, **104** to open the food preparation chamber **106**, the biasing mechanism is enabled to urge the moveable member **142** into a position that brings the wire reception portion **140** into alignment with the channel **122**, thereby releasing the retained wire(s) **110**.

[0179] The above-described closure member **132** can be combined with the movable member **142** to facilitate release of the wire(s) **110**.

[0180] The closure member **132** may be configured to urge the wire(s) **110** out of the wire reception portion **140** and out of the channel **122**, when the wire reception portion **140** is aligned with the channel **122**.

[0181] In some embodiments, and as best shown in FIGS. **6** and **7**, the movement of movable member **142** may be rotation about a pivot point **146**.

[0182] The biasing mechanism may comprise a spring **148** arranged to urge rotation of the movable member **142** about the pivot point **146**.

[0183] In such embodiments, the movable member **142** can be regarded as a rotatable, spring-

loaded gate.

[0184] In some embodiments, and as best shown in FIG. 8, the engagement portion **144** comprises a set of teeth **150**. The set of teeth **150** can assist the user to rotate the movable member **142**, as in the above-described first set of embodiments.

[0185] Alternatively or additionally, and in the context of the above-described second set of embodiments, the set of teeth **150** can, for instance, engage a complementarily shaped part of the first or second housing portion **102**, **104** in order to restrict movement of the movable member **142** while the food preparation chamber **106** is closed.

[0186] It is noted that the movable member **142** comprising the toothed engagement portion **144** can be regarded as a bevel.

[0187] Variations to the disclosed embodiments can be understood and effected by those skilled in the art in practicing the claimed invention, from a study of the drawings, the disclosure and the appended claims. In the claims, the word “comprising” does not exclude other elements or steps, and the indefinite article “a” or “an” does not exclude a plurality.

[0188] The mere fact that certain measures are recited in mutually different dependent claims does not indicate that a combination of these measures cannot be used to advantage.

[0189] If the term “adapted to” is used in the claims or description, it is noted the term “adapted to” is intended to be equivalent to the term “configured to”.

[0190] Any reference signs in the claims should not be construed as limiting the scope.

## Claims

1. A kitchen apparatus comprising: a food preparation chamber; a first housing portion; a second housing portion, the first housing portion and the second housing portion being movable relative to each other to enable the food preparation chamber to be opened and closed; and a channel for receiving at least one wire connected to a food monitoring sensor, at least part of the channel being at an interface between the first housing portion and the second housing portion so as to permit routing of the at least one wire received in the channel into the food preparation chamber; wherein a handle mounted to one of the first and second housing portions via a mounting portion extending between the respective housing portion and the handle, wherein at least part of the channel is arranged in the mounting portion.
2. The kitchen apparatus of claim 1, wherein one of the first and second housing portions is a drawer that is slidably moveable relative to the other of the first and second housing portions to enable the food preparation chamber to be opened and closed.
3. The kitchen apparatus of claim 1, wherein one of the first and second housing portions comprises a food basket receivable in the food preparation chamber.
4. The kitchen apparatus of claim 1, wherein at least one of the first and second housing portions comprises a rounded surface that at least partially delimits the channel.
5. The kitchen apparatus of claim 1, wherein the channel is at least partly defined by a groove arranged in an edge portion of one of the first and second housing portions, which edge portion faces a further edge portion of the other of the first and second housing portions.
6. The kitchen apparatus of claim 1, comprising a closure member arranged to close the channel when the at least one wire is not received in the channel.
7. The kitchen apparatus of claim 6, wherein the closure member is biased into a closed position in which the channel is closed by the closure member when the at least one wire is not received in the channel.
8. The kitchen apparatus of claim 1, comprising a wire retention and release mechanism configured to releasably retain the at least one wire following receiving of the at least one wire in the channel.
9. The kitchen apparatus of claim 8, wherein the wire retention and release mechanism is configured to urge release of the retained wire(s) in response to movement of the first and second

housing portions relative to each other to open the food preparation chamber.

**10.** The kitchen apparatus of claim 8, wherein the wire retention and release mechanism comprises a wire reception portion configured to align with the channel to enable release of the at least one wire from the wire reception portion via the channel when the food preparation chamber is open, and to be displaced relative to the channel to retain the at least one wire in the wire reception portion while the food preparation chamber is closed.

**11.** The kitchen apparatus of claim 1, comprising a user-accessible connection point at which the at least one wire is electrically connectable to a cooking control and monitoring system.

**12.** The kitchen apparatus of claim 1, comprising the at least one wire, and said food monitoring sensor arrangeable in the food preparation chamber to monitor food received therein while the at least one wire is routed via the channel from the food monitoring sensor to outside the food preparation chamber.

**13.** The kitchen apparatus of claim 1, wherein the kitchen apparatus comprises an air fryer.

**14.** The kitchen apparatus of claim 1, comprising a heating element, and a circulation system arranged to circulate gas heated by the heating element in the food preparation chamber; wherein the food preparation chamber has, when orientated for use, a top and a bottom, the circulation system being arranged to circulate said gas upwardly through food received in the food preparation chamber in the direction of the top or downwardly through food received in the food preparation chamber in the direction of the bottom.

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