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(54) Title: CONVEYOR-TYPE GRILLING APPLIANCE FOR COOKING OR RE-THERMALIZING FOOD

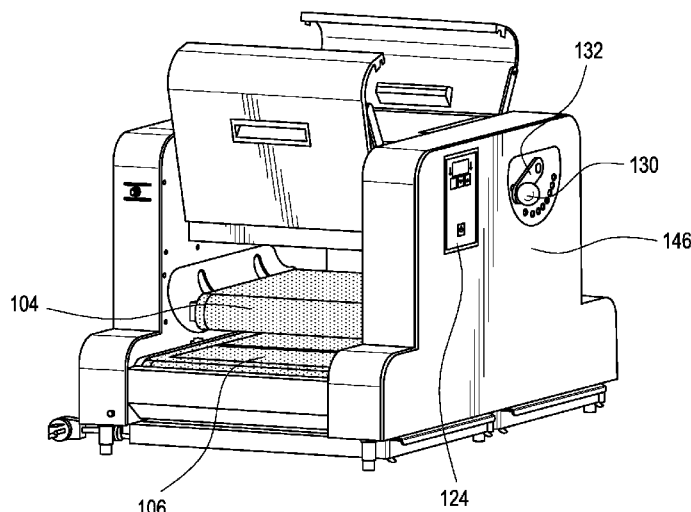


FIG. 4

(57) Abstract: A grilling appliance is disclosed for preparing various different types of food wherein the food is conveyed through the appliance, from a food insert end of the appliance to a food removal end of the appliance, by means of continuously movable flow-through upper and lower cooperating conveyors operatively associated with platen-type heating members over which the upper and lower conveyors are conveyed so as to be heated by the platen-type heating members and thereby, in turn, heat, brown, or caramelize the food as desired or required.



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CROSS-REFERENCE TO RELATED APPLICATION

This patent application is a non-provisional patent application conversion of United States Provisional Patent Application Serial Number **62/240,553** which was filed on **October 13, 2015**, the priority benefits of which are hereby
5 claimed.

TITLE OF THE INVENTION

CONVEYOR-TYPE GRILLING APPLIANCE FOR COOKING OR RE-THERMAL-IZING FOOD

FIELD OF THE INVENTION

10 The present invention relates generally to food preparation apparatus, equipment, or appliances, and more particularly to a grilling appliance for preparing various different types of food wherein the food is conveyed through the appliance, from a food insert end of the appliance to a food removal end of the appliance, by means of continuously movable flow-through upper and lower cooperating convey-
15 ors operatively associated with platen-type heating members over which the upper and lower conveyors are conveyed so as to be heated by the platen-type heating members and thereby, in turn, heat, brown, or caramelize the food as desired or required.

BACKGROUND OF THE INVENTION

In the food preparation industry, particularly within the fast-food industry, various types of apparatus, equipment, or appliances are utilized to cook or prepare various different types of food such as, for example, burritos, Panini sandwiches, crunch wraps, and the like. The apparatus, equipment, or appliances that are conventionally employed are either flat grills which effectively cook or toast one side of the food, and then they cook or toast the other side of the food when the food is flipped or turned over onto its other side upon the flat grill. Alternatively, clam-shell apparatus or appliances have also been employed which can effectively cook or toast both sides of the food simultaneously as a result of the food being placed upon a lower food support cooking platform or grill when the clamshell apparatus is disposed at its open position, and then the clamshell apparatus is pivotally moved to its closed position so as to bring the upper food cooking grill portion into contact with the food. The operational drawback or disadvantage of such apparatus, equipment, or appliances, however, is the fact that the cooking time is effectively monitored and necessarily controlled by means of the personnel doing the grilling or cooking, with the result that sometimes, the food is undercooked, overcooked, or even burned, neither one of which operations and resulting conditions produces a satisfactory and tasty end food product.

A need therefore exists in the art for a new and improved grilling appliance for cooking food wherein the aforementioned disadvantages or operational drawbacks characteristic of conventional cooking apparatus, equipment, or appliances are effectively overcome or eliminated. More particularly, a need exists in the art for a new and improved grilling appliance wherein the cooking process or procedure is effectively controlled in such a manner that the food being cooked or prepared cannot be undercooked, overcooked, or burned. Still more particularly, a need exists in the art for a new and improved grilling appliance wherein the entire cooking process

dure or process is automatically controlled from the beginning of the cooking cycle to the end of the cooking cycle and is predeterminedly controlled in light of the particular food product that is being cooked or re-thermalized.

OVERALL OBJECTIVES OF THE INVENTION

5 The overall objectives of the present invention are to provide a new and improved grilling appliance for cooking food which will overcome and eliminate the various disadvantages and drawbacks characteristic of conventional grilling apparatus, equipment, or appliances for cooking food, to provide a new and improved grilling appliance for cooking food which will effectively overcome and eliminate the
10 poor cooking results often encountered with conventional grilling appliances, apparatus, or equipment for cooking food, to provide a new and improved grilling appliance which will enhance the efficiency of the food-cooking procedure or process, and to provide a new and improved grilling appliance which will automatically control the food-cooking procedure or process, from the beginning of the food-cooking
15 cycle to the end of the food cooking cycle, so as to provide a properly cooked or re-thermalized and tasty end food product.

SUMMARY OF THE INVENTION

 The foregoing and other objectives are achieved in accordance with the teachings and principles of the present invention through the provision of a new
20 and improved grilling appliance for cooking food wherein the grilling appliance comprises upper and lower endless conveyor belts which are routed over and around

upper and lower heated platens and which are fabricated, for example, from PTFE, polytetrafluoroethylene, which are adapted to be disposed in contact with the food articles being cooked, and yet the food articles will not adhere or stick to the conveyor belts. The conveyor belts are flow-through conveyor belts, that is, they extend from a first food-insert end of the appliance toward a second oppositely disposed food-output end of the appliance, and consequently, depending upon the speed of the conveyor belts, which can be optimally controlled, the time during which the food articles are exposed to the heated conveyor belts, which are heated by means of the heated platens, is predetermined such that the food articles are not in fact undercooked or overcooked but are properly cooked so as to result in a very satisfactorily cooked and tasty end food product. It is further noted that the disposition of the upper platen, around which the upper conveyor belt is routed, can be adjusted with respect to the lower platen and the lower conveyor belt so as to effectively adjust the gap defined between the upper and lower platens and the upper and lower conveyor belts. In this manner, the grilling appliance can accommodate different foods having different height dimensions such as, for example, burritos, Panini sandwiches, crunch wraps, and the like. Still further, the appliance provides for the easy removal of the conveyor belts for cleaning, maintenance, or exchange of the belts.

BRIEF DESCRIPTION OF THE DRAWINGS

Various other features and attendant advantages of the present invention will be more fully appreciated from the following detailed description when considered in connection with the accompanying drawings in which like reference characters designate like or corresponding parts throughout the several views, and wherein:

FIGURE 1 is a schematic front-side perspective view of the new and improved conveyor type grilling machine as constructed in accordance with the teachings and principles of the present invention and showing the various component parts thereof;

5 **FIGURE 2** is a schematic side elevational view of the new and improved conveyor type grilling machine as illustrated within **FIGURE 1**;

FIGURE 3 is a top plan view of the new and improved conveyor-type grilling machine as illustrated within **FIGURES 1 and 2**;

10 **FIGURE 4** is a schematic front-side perspective view of the new and improved conveyor type grilling machine, similar to that of **FIGURE 1**, showing, however, the entry end and exit end doors of the grilling machine in their opened positions so as to facilitate, for example, maintenance, cleaning, and conveyor belt exchange operations which may need to be performed upon the appliance at pre-determined times;

15 **FIGURE 5** is a partial perspective view of the new and improved conveyor type grilling machine as illustrated within **FIGURES 1-4** showing the provision of, for example, a portion of the lower endless conveyor belt assembly, comprising the lower heated platen and tensioned idler roller, over and around which the lower conveyor belt is conducted so as to be heated by means of the lower heated plat-
20 en;

FIGURE 6 is a plan view of an embodiment of a uniquely constructed endless conveyor belt, which may be used as an upper conveyor belt, a lower conveyor belt, or as both conveyor belts, whereby either one or both of the upper and/or lower surface portions of the cooked food product will effectively have grill lines

formed thereon so as to simulate grill lines that would otherwise appear upon such food products if the food products were actually cooked, for example, upon a charcoal grill;

FIGURE 7 is a perspective plan view showing the installation of a food holding tray which may be fixedly secured upon the exit end of the grilling machine so as to effectively catch and hold the food products which have been cooked and which have been discharged from the grilling machine by means of the lower endless conveyor belt;

FIGURE 8 is a schematic front-side perspective view of the grilling appliance showing the internal components, comprising a rack and pinion drive mechanism, of the grilling compliance, which permits the upper endless conveyor belt and its operatively associated heated platen to have its elevational position, relative to the lower endless conveyor belt and its operatively associated heated platen, to be vertically adjusted so as to permit the grilling appliance to be utilized to cook different foods have different height or thickness dimensions, and wherein a circle area **A** is noted;

FIGURE 8A is an enlarged view of the circled area denoted **A** illustrated in **FIGURE 10** illustrating the details of the rack and pinion drive mechanism, the pilot pin locator plate having a multitude of pilot pin locator holes defined therein, and the pilot pin located upon the distal end of a pivotally or arcuately movable arm fixedly connected to the pinion of the rack and pinion drive mechanism, whereby the upper conveyor belt and its operatively associated heated platen are disposed at their lowest position relative to the lower conveyor belt and its operatively associated heated platen;

FIGURE 9 is a schematic front-side perspective view of the grilling

appliance, similar to that of **FIGURE 8**, showing, however, the internal components, comprising the rack and pinion drive mechanism, of the grilling compliance, which permits the upper endless conveyor belt and its operatively associated heated platen to have its elevational position, relative to the lower endless conveyor belt and its operatively associated heated platen, to be vertically adjusted so as to permit the grilling appliance to be utilized to cook different foods have different height or thickness dimensions, and wherein a circle area **B** is noted; and

FIGURE 9B an enlarged view of the circled area denoted **B** illustrated in **FIGURE 9** showing the details of the rack and pinion drive mechanism, the pilot pin locator plate having a multitude of pilot pin locator holes defined therein, and the pilot pin located upon the distal end of a pivotally or arcuately movable arm fixedly connected to the pinion of the rack and pinion drive mechanism, whereby the upper conveyor belt and its operatively associated heated platen are disposed at their highest position relative to the lower conveyor belt and its operatively associated heated platen;

FIGURE 10 is a schematic front-side perspective view of the grilling appliance with a side housing wall portion of the appliance illustrated as having been removed such that access can be gained to the internal components of the appliance in order to achieve a lower conveyor belt exchange operation;

FIGURE 11A is a schematic front-side perspective view of the grilling appliance with a side housing wall portion of the appliance illustrated as having been removed such that access can be gained to the internal components of the appliance in order to achieve an upper conveyor belt exchange operation;

FIGURE 11B is a schematic front-side perspective view of the grilling appliance, similar to that of **FIGURE 11A**, wherein the side housing wall portion of

the appliance illustrated has been removed such that access can be gained to the internal components of the appliance in order to achieve an upper conveyor belt exchange operation, and wherein the front access door has been moved to its open position, and the pair of pivot links, connecting the rack of the height adjustment mechanism for the upper conveyor belt to the upper conveyor belt mounting system, have been moved to their out-of-the way position so as to permit removal of the upper conveyor belt side cover so as to, in turn, permit access to and removal of the upper conveyor belt; and

FIGURE 11C is a schematic front-side perspective view of the grilling appliance, similar to that of **FIGURES 11A** and **11B**, wherein, as a result of the removal of the upper conveyor belt side cover, the upper conveyor belt can in fact be removed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, and more particularly to **FIGURES 1-5** thereof, a new and improved conveyor-type grilling appliance for cooking or re-therm-
malizing food is disclosed and is generally indicated by the reference character 100. More particularly, it is seen that the new and improved conveyor-type grilling appliance 100 comprises a housing 102 within which a pair upper and lower conveyor belts 104, 106 are disposed as can best be appreciated from **FIGURES 1,3, and 4**. The upper and lower conveyor belts 104,106 are endless conveyor belts that flow through the housing 102 from a food product input or entrance end 108 of the housing 102 to a food product output or exit/discharge end 110 of the housing 102. The upper conveyor belt 104 is wholly enclosed within the housing 102, while the opposite ends of the lower conveyor belt 106 extend beyond each end of the

housing 102. In this manner, a first movable platform region 112 of the lower conveyor belt 106 is defined at the food product input or entrance end 108 of the housing 102 for permitting food-cooking personnel to effectively place the food, to be cooked, onto the input platform region 112 of the lower conveyor belt 106 whereby the lower conveyor belt 106 will then move the food, to be cooked, into the appliance 100. Once the food, to be cooked, is inside the appliance 100, the food, to be cooked, will effectively be captured between the upper and lower conveyor belts 104, 106 and will be propelled forwardly by the upper and lower conveyor belts 104, 106 until the food exits from the oppositely disposed exit or discharge end 110 of the appliance housing 102. The oppositely disposed exit or discharge end 110 of the lower conveyor belt 106, disposed at the exit or discharge region of the appliance 100, effectively forms a second movable platform region 114 from which food cooking personnel can re-move the cooked food. Alternatively, as disclosed within **FIGURE 7**, a suitable tray 116 can be fixedly attached to the housing 102 at the exit or discharge end 110 of the appliance 100 for effectively catching and holding the cooked food 118 as the cooked food is discharged and deposited into the tray 116 by means of the mov-able lower conveyor belt 106.

With reference being made to **FIGURE 5**, there is disclosed a partial perspective view of, for example, a portion of the lower endless conveyor belt support and drive assembly 118 which is seen to comprise, for example, a lower heated platen 120 fixedly mounted upon a platen platform 121 and a tensioned front idler roller 122 over and around which the lower endless conveyor belt 106, not shown, is conducted so as to be heated by means of the lower heated platen 120. A rear drive roller, not shown, is also provided, and both the upper and lower endless conveyor belts 104, 106 are fabricated, for example, from polytetrafluoroethylene (PTFE) such that the upper and lower endless conveyor belts 104, 106, which are adapted to be disposed in contact with the food articles being cooked as a result of the upper and lower endless conveyor belts 104, 106 propelling the food to be cook-

ed or re-thermalized through the appliance 100 from the food input or entrance end 108 of the housing 102 to the food output or exit/discharge end 110 of the housing 102, will effectively prevent the food products being cooked from adhering or sticking to the upper and lower endless conveyor belts 104,106. The drive system, not shown, for the rear drive roller can of course be any suitable conventional drive system, such as, for example, a suitable chain and sprocket drive assembly. It is to be further noted that a user interface or similar control panel 124 is provided upon a side wall portion of the housing 102, as can best be seen in **FIGURES 1,2, and 4**, in this manner, the temperature of both the upper and lower heated platens, exemplified by means of the lower heated platen 120, as well as the speed of the upper and lower endless conveyor belts 104,106, which are driven at the same synchronous speed, can be optimally controlled so as to in turn control the real time during which the food articles are exposed to the upper and lower endless conveyor belts 104,106 heated by means of the heated platens exemplified by means of the lower heated platen 120. In this manner, the actual or real cooking time is effectively predetermined such that the food articles are not in fact undercooked or overcooked but are properly cooked or re-thermalized so as to result in a very satisfactorily cooked or re-thermalized and tasty end food product.

With reference being made to **FIGURE 6**, there is disclosed a uniquely fabricated conveyor belt which may be used either as the upper endless conveyor belt 104, the endless lower conveyor belt 106, or as both the upper and lower endless conveyor belts 104,106. As has been noted, the endless conveyor belt 104 or 106 is fabricated from polytetrafluoroethylene (PTFE), however, in accordance with the unique fabrication techniques employed in fabricating the endless conveyor belt 104 or 106, it is seen that the endless conveyor belt 104 or 106 comprises a first base endless conveyor belt 104 or 106 fabricated from a first polytetrafluoroethylene (PTFE) component 126, upon top of which a second polytetrafluoroethylene (PTFE) component 128, comprising a plurality of transversely spaced strips, is

fixedly secured. Accordingly, those regions of the composite endless conveyor belt 104 or 106, which have the transversely spaced strips defining the second polytetrafluoroethylene (PTFE) 128 fixedly secured thereon, will effectively have a larger thickness dimension than those regions of the composite endless conveyor belt 104 or 106 which do not have the transversely spaced strips defining the second polytetrafluoroethylene (PTFE) 128 fixedly secured thereon. Accordingly, as the food articles are conveyed through the appliance housing 102 by means of the operatively cooperative upper and lower endless conveyor belts 104, 106, the transversely spaced strips comprising the second polytetrafluoroethylene (PTFE) 128 will effectively be forced into contact with the external surface portions of the food articles being conveyed through the appliance 102, to a greater degree than that of the base endless conveyor belt portion 126, so as to effectively form visual stripes upon the external surface portions of the food articles which simulate grill marks or lines that would appear upon the food articles as if the food articles had actually been cooked or prepared upon, for example, a charcoal grill.

It is lastly noted that the disposition of the upper platen, around which the upper conveyor belt is routed, can be adjusted with respect to the lower platen and the lower conveyor belt so as to effectively adjust the gap defined between the upper and lower platens and the upper and lower endless conveyor belts. In this manner, the grilling appliance can accommodate different foods having different height or thickness dimensions such as, for example, burritos, Panini sandwiches, crunch wraps, and the like. Still further, the appliance provides for the easy removal of the upper and lower endless conveyor belts 104, 106 for cleaning, maintenance, or exchange of the conveyor belts 104, 106 as may be needed or required. With reference therefore being made to **FIGURES 8, 8A, 9, and 9B**, the vertical adjustment of the upper heated platen and the upper endless conveyor belt 104 that is disposed therearound, with respect to the lower heated platen and the lower endless conveyor belt 106 disposed therearound, will be discussed first. It is to be noted that

while the vertical adjustment of the upper heated platen and the upper endless conveyor belt 104, with respect to the lower heated platen and the lower endless conveyor belt 106 can be achieved by various means, including the use of, for example, hydraulic, pneumatic, or electrical actuators, a manual adjustment system has
5 been incorporated within the conveyor-type grilling appliance 100 of the present invention. As disclosed within **FIGURES 8,8A,9, and 9B**, both sides of the conveyor-type grilling appliance housing 102 are provided with a manual adjustment pilot pin 130 which is fixedly secured to a first distal end of a pilot pin mounting arm 132, while the second opposite proximal end of the pilot pin mounting arm 132 is fixedly
10 connected to the axial center of a circular disk-type pinion 134, it being noted that only one adjustment system comprising one pilot pin 130, one pilot pin mounting arm 132, and one circular disk-type pinion 134 is illustrated in these side perspective views. These components can likewise be seen in **FIGURES 1,2, and 4**, it being noted that the side wall of the appliance housing 102 is to be considered transparent for visual purposes of this disclosure so as to effectively see, for example, the
15 mounting arm 132 which is disposed internally of the appliance housing 102.

In addition to the aforementioned components, a rack 136, having gear teeth 138 formed upon an upper arcuate edge portion thereof, is provided for engagement with gear teeth 140 formed upon the outer circumferential peripheral
20 surface of the pinion 134, the rack 136 and pinion 134 assembly being biased toward their uppermost position by spring-biasing means, not shown. Still further, a pilot pin locator plate 142 is provided with a multitude of pilot pin locator holes 144 which are defined within an arcuate array covering an angular extent of approximately 45° extending from a leftmost or western position upon the pilot pin locator
25 plate 142 to a lowermost or southern position upon the pilot pin locator plate 142. The pilot pin 130 is a spring-biased pull-pin that is capable of being moved in a direction along the axis around which the pilot pin 130 is defined. The pilot pin 130 is thus pulled axially outwardly so as to effectively be disengaged from one of the pilot

pin locator holes 144 defined within the pilot pin locator plate 142 whereby the pilot pin 130 can then be moved toward another pilot pin locator hole 144 defined within the pilot pin locator plate 142, and is permitted to be moved axially inwardly under the biasing force of its biasing spring, not shown, so as to permit the locking pin
5 130 to be inserted into another or different pilot pin locator hole 144 in order to effectively lock the upper heated platen and the upper endless conveyor belt 104 at a particular vertical position with respect to the lower heated platen and the lower endless conveyor belt 106 when the vertical adjustment of the upper heated platen and the upper endless conveyor belt 104 relative to the lower heated platen and the
10 lower endless conveyor belt 106 is to be achieved.

Each pilot locator hole 144 permits the upper heated platen and the upper endless conveyor belt 104 to be moved one quarter of an inch (0.25"), vertically upwardly or vertically downwardly, with respect to the lower heated platen and the lower endless conveyor belt 106. As disclosed within **FIGURES 8 and 8A**, it is
15 seen that the upper heated platen and the upper endless conveyor belt 104 are disposed at their lowermost position with respect to the lower heated platen and the lower endless conveyor belt 106 as a result of the pilot pin mounting arm 132 extending horizontally to the left and the pilot pin 130 being disposed within the uppermost and leftmost pilot pin locator hole 144 of the arcuate array of pilot pin locator
20 holes 144 defined within the pilot pin locator plate 142, whereas, as disclosed within **FIGURES 9 and 9B**, it is seen that the upper heated platen and the upper endless conveyor belt 104 are disposed at their uppermost position with respect to the lower heated platen and the lower endless conveyor belt 106 as a result of the pilot pin mounting arm 132 extending substantially vertically downwardly whereby the
25 pilot pin 130 is disposed within the lowermost or southernmost pilot pin locator hole 144 of the arcuate array of pilot pin locator holes 144 defined within the pilot pin locator plate 142. It is to be lastly noted that an arcuate slot, not shown, must be provided within a portion of each external side wall 146 of the housing 102 so as to

permit the pilot pin 130 to project through the side wall 146 of the housing 102 and yet travel or be moved through its arcuate path when the pilot pin 130 is being moved from one pilot pin locator hole 144 to another pilot pin locator hole 144 in order to vertically adjust the disposition of the upper heated platen and the upper endless conveyor belt 104 with respect to the lower heated platen and the lower endless conveyor belt 106. In addition, a linkage plate 148, having a substantially triangular configuration, is connected at one corner thereof to the rack 136 while another corner thereof is operatively connected to the drive chain, not shown, which is operatively associated with the upper conveyor belt drive roller. The linkage plate 148 is seen to move, as can be appreciated with reference being made to **FIGURES 8,9, and 9B**, as the vertical adjustment of the upper heated platen and the upper endless conveyor belt 104, with respect to the lower heated platen and the lower endless conveyor belt 106, is achieved in order to effectively eliminate any slack in the drive chain operatively associated with the upper conveyor belt drive roller.

Lastly, with reference being made to **FIGURES 10 and 11A-11C**, the removal of the upper and lower endless conveyor belts 104,106, for cleaning, maintenance, or exchange of the conveyor belts 104,106 as may be needed or required, will now be discussed. With reference first being made to **FIGURE 10**, the removal and exchange of the lower conveyor belt 106 will be discussed first. In order to remove and exchange the lower conveyor belt 106, one of the external side walls 146 of the housing 102 is initially removed so as to provide access to the inner components of the appliance 100. A lower door 150 of the housing 102, operatively associated with and covering the lower conveyor belt idler roller 152, is then initially moved from its closed position to its opened position so as to in fact provide access to the lower conveyor belt idler roller 152. The lower conveyor belt idler roller 152, which may be similar to conveyor belt idler roller 122, is spring-biased by means of a suitable tensioning spring, not shown, whereby the lower conveyor belt 106 will remain properly tensioned about the lower conveyor belt drive roller, not shown,

and the lower conveyor belt idler roller 152. In addition, an idler roller lock mechanism 154, which is mounted upon an interior side wall portion of the appliance 100, is pivotally moved from its upper position, at which it is effectively disposed within a slot 156 which can best be seen in **FIGURE 10**, to a pivotally lower position at which the idler roller lock mechanism 154 is removed from the slot 156. Accordingly, the lower conveyor belt idler roller 152 may now be moved inwardly toward the internal part of the housing 102 and against the biasing force of its biasing spring, not shown, in view of the fact that the idler roller lock mechanism 154 has effectively been moved from a position at which it blocks the internal movement of the lower conveyor belt idler roller 152 to a position at which it no longer blocks the internal movement of the lower conveyor belt idler roller 152. Therefore, the tension imposed upon the lower conveyor belt 106 by means of the spring-biased lower conveyor belt idler roller 152 has effectively been relieved, whereby the lower conveyor belt 106 can then be removed from its disposition overlying the lower conveyor belt drive and idler rollers as well as the lower heated platen.

With reference lastly being made to **FIGURES 11A-11C**, the removal and exchange of the upper conveyor belt 104 will now be discussed. Once again, one of the side walls 146 of the appliance is initially removed so as to permit personnel to gain access to the interior components of the appliance. The rack and pinion assemblies 136,134 have been moved to and locked at their uppermost positions. It is seen that each one of the rack and pinion assemblies 136,134 are operatively connected to each side of the upper conveyor belt heated platen platform, which may be similar to the heated platen platform 121, by means of two linkage members 158,158 which can best be seen in **FIGURE 10**. Each side set of linkage members 158,158 is pivotally attached or mounted at relatively central portions thereof to an interior sidewall portion 160 of the appliance 100 as at 162. Upper end portions of the linkage members 158,158 are pivotally connected to the rack 134 by means of a first set of pull-pins 164,164 which can best be seen in **FIGURE 10**,

while lower end portions of the linkage members 158,158 are pivotally connected to the upper heated platen platform, not shown, by means of a second set of pull-pins 166,166, as can also best be seen in **FIGURE 10**. Accordingly, the next step in the procedure to be conducted in connection with the removal and exchange of the upper conveyor belt 104 is the removal of the first and second sets of pull-pins 164, 166 so as to permit the opposite end portions of the linkage members 158,158 to be disconnected from the rack 134 and the upper heated platen platform, not illustrated. The linkage members 158,158 can then be moved to horizontally oriented positions, as shown in **FIGURE 11A**, at which positions the linkage members 158, 158 no longer overlie an upper conveyor belt side cover panel 168.

Accordingly, the upper conveyor belt side cover panel 168 can now be removed from the interior side wall portion 160 of the appliance as shown in **FIGURE 11B** after suitable fasteners, not shown, are removed which have effectively connected the upper conveyor belt side cover panel 168 to the interior side wall portion 160 of the appliance 100. As can also best be seen in **FIGURE 11B**, the upper conveyor belt side cover panel 168 has a pair of arcuate slots 170,170 formed therein for permitting the second set of pull pins 166,166, attached to the lower end portions of the linkage members 158,158, to traverse such slots 170,170 as the rack and pinion assembly 136,134 serves to alter or adjust the vertical disposition of the upper heated platen and the upper conveyor belt 104 relative to the lower heated platen and the lower conveyor belt 106. Once the foregoing procedures have been accomplished, the front or rear access door 172 of the appliance, which is pivotally connected to and operatively associated with that end of the appliance 100 at which the upper conveyor belt idler roller 174, as shown in **FIGURE 11C**, is positioned, is moved to and locked at its opened position. Access is now gained with respect to the upper conveyor belt 104 and its idler roller 174. As was the case with the removal or exchange operation previously noted in connection with the lower conveyor belt 106, the upper conveyor belt idler roller 174 may now

be moved inwardly toward the internal part of the housing 102 and against the biasing force of its biasing spring, not shown. Therefore, the tension imposed upon the upper conveyor belt 104 by means of the spring-biased upper conveyor belt idler roller 174 has effectively been relieved, whereby the upper conveyor belt 104
5 can then be removed from its disposition overlying the upper conveyor belt drive and idler rollers as well as the upper heated platen.

Obviously, many variations and modifications of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the present invention may be practiced
10 otherwise than as specifically described herein.

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KEY TO REFERENCE NUMBERS IN THE DRAWINGS

- 100 – Conveyor type grilling appliance**
- 102 – Housing of 100**
- 5 **104 – Upper endless conveyor belt**
- 106 – Lower endless conveyor belt**
- 108 – Food product input/entrance end of housing 102**
- 110 – Food product output or exit/discharge end of housing 102**
- 112 – First movable platform region of lower conveyor belt 106**
- 10 **114 – Second movable platform region of lower conveyor belt 106**
- 116 – Food product discharge tray at food product discharge end of 102**
- 118 – Lower endless conveyor belt support and drive assembly 118**
- 120 – Lower heated platen**
- 121 – Platen platform**
- 15 **122 – Lower front tensioned conveyor belt idler roller**
- 124 – User interface/control panel upon side wall portion of housing 102**
- 126 – First base polytetrafluoroethylene (PTFE) component**
- 128 – Second polytetrafluoroethylene (PTFE) sealed atop 126**
- 130 – Adjustment pilot pin**
- 20 **132 – Pilot pin mounting arm**
- 134 – Pinion of upper platen/conveyor belt adjustment system**
- 136 – Rack of upper platen/conveyor belt adjustment system**
- 138 – Gear teeth of rack 136**
- 140 – Gear teeth of pinion 134**
- 25 **142 – Pilot pin locator plate**
- 144 – Pilot pin locator holes defined within pilot pin locator plate 142**
- 146 – Side wall of housing 102**
- 148 – Linkage plate**
- 150 – Lower door of housing 102**

152 - Lower front tensioned conveyor belt idler roller

154 – Idler roller lock mechanism

156 – Slot for accommodating idler roller lock mechanism in its up position

158 – Linkage members connecting the rack/pinion to upper heated platen

5 **160 – Interior side wall of appliance 100**

162 – Pivotal attachment of linkages 158 to 160

164 – First set of pull-pins connecting linkage members 158 to rack 136

166 – Second set of pull-pins connecting linkage members 158 to upper platen

168 - Upper conveyor belt side cover panel

10 **170 – Arcuate slots within side cover panel 168**

172 – Access door of appliance 100

174 – Upper conveyor belt idler roller

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**WHAT IS CLAIMED AS NEW AND DESIRED TO BE PROTECTED BY LETTERS
PATENT, IS:**

1. A conveyor-type grilling appliance for cooking or re-thermalizing food, comprising:

a housing;

a food insert entrance portion defined within a first end portion of said housing for inputting food, to be cooked, into said housing;

a food extraction exit portion defined within a second opposite end portion of said housing for extracting food, that has been cooked, out from said housing;

an upper endless conveyor belt and a lower endless conveyor belt disposed within said housing and cooperating with each other for propelling the food, to be cooked, from said food insert entrance portion of said housing to said food extraction exit portion of said housing; and

a pair of heated platens respectively associated with said upper and lower endless conveyor belts for heating said pair of upper and lower conveyor belts whereby said heated upper and lower conveyor belts cook the food within said housing while the food is transported through said housing from said food insert entrance portion of said housing to said food extraction exit portion of said housing.

2. The grilling appliance as set forth in Claim 1, wherein:

said upper endless conveyor belt is wholly disposed internally within said housing while opposite end portions of said lower endless conveyor belt are

disposed externally of said housing so as to define food insert and food output platforms upon which the food to be cooked, and the cooked food, are respectively disposed.

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3. The grilling appliance as set forth in Claim 1, wherein:

a cooked food tray is fixedly attached to said exit end portion of said housing for capturing cooked food products discharged from said appliance housing by said lower endless conveyor belt.

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4. The grilling appliance as set forth in Claim 1, wherein;

said upper and lower endless conveyor belts are respectively disposed around said pair of heated platens so as to be heated by said heated platens.

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20 5. The grilling appliance as set forth in Claim 1, wherein:

the speed of said upper and lower endless conveyor belts is adjustable so as to alter the time during which the food to be cooked is exposed to and heated by said upper and lower endless conveyor belts which are respectively heated by said pair of heated platens.

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6. The grilling appliance as set forth in Claim 1, wherein:

the speed of said upper and lower endless conveyor belts is the same

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so as to synchronously convey the food to be cooked through said appliance housing.

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7. The grilling appliance as set forth in Claim 1, wherein:

said upper and lower endless conveyor belts are fabricated from polytetrafluoroethylene so as to prevent the food to be cooked from sticking to said upper and lower endless conveyor belts.

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8. The grilling appliance as set forth in Claim 7, wherein:

at least one of said upper and lower endless conveyor belts, fabricated from said polytetrafluoroethylene, comprises a composite fabric wherein first linear portions of said composite fabric are fabricated from polytetrafluoroethylene, are thicker than second linear portions of said composite fabric fabricated from polytetrafluoroethylene such that grill lines are effectively impressed upon the cooked food so as to simulate the food having been cooked upon a charcoal grill.

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9. The grilling appliance as set forth in Claim 8, wherein:

said at least one of said upper and lower endless conveyor belts, fabricated from said composite fabric, comprises both of said upper and lower endless conveyor belts.

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10. The grilling appliance as set forth in Claim 1, wherein:

the temperature of said pair of upper and lower heated platens is adjustable.

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11. The grilling appliance as set forth in Claim 1, wherein:

said upper endless conveyor belt and said upper heated platen are disposed at a predetermined distance from said lower endless conveyor belt and said lower heated platen which is adjustable so as to permit different food, having different thickness dimensions, to be cooked within said housing of said grilling appliance.

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12. The grilling appliance as set forth in Claim 11, wherein:

said distance defined between said upper endless conveyor and said upper heated platen, with respect to said lower endless conveyor and said lower heated platen, is adjustable by a rack and pinion gear assembly operatively connected to said upper heated platen.

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13. The grilling appliance as set forth in Claim 12, further comprising:

a pilot pin locator plate operatively associated with said rack and pinion gear assembly;

a pilot pin operatively connected to said pinion of said rack and pinion gear assembly; and

a plurality of pilot pin holes defined within said pilot pin locator plate

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so as to permit adjustment of said rack and pinion gear assembly, and adjustment of said upper heated platen operatively connected to said rack and gear assembly, as a result of said pilot pin being engaged within a predetermined one of said pilot pin holes defined within said pilot pin locator plate.

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14. The grilling appliance as set forth in Claim 13, wherein:

10 said plurality of pilot pin locator holes defined within said pilot pin
locator plate are disposed within an arcuate array.

15. The grilling appliance as set forth in Claim 14, wherein:

15 said plurality of pilot pin locator holes, defined within said pilot pin
locator plate, are spaced apart from each other a predetermined distance such that
when said pilot pin is moved from a particular one of said plurality of pilot pin locat-
or holes to an adjacent one of said plurality of pilot pin locator holes, the distance
between said upper heated platen and said upper endless conveyor belt, with re-
20 spect to said lower heated platen and said lower endless conveyor belt, will be ap-
proximately one quarter of an inch (0.25").

25 16. The grilling machine as set forth in Claim 4, wherein:

 said upper and lower heated platens are respectively disposed upon
upper and lower platen platforms; and

 drive and idler rollers are disposed upon opposite ends of said upper
and lower platen platforms.

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17. The grilling machine as set forth in Claim 4, wherein:

said upper and lower endless conveyor belts are respectively disposed around said drive and idler rollers and are disposed above and below said upper and lower platen platforms so as to effectively encircle said drive and idler rollers,
5 and said upper and lower platen platforms.

18. The grilling appliance as set forth in Claim 17, wherein:

10 said upper and lower endless conveyor belts are respectively removable from said upper and lower platen platforms.

15 19. The grilling machine as set forth in Claim 18, wherein:

said upper and lower idler rollers are spring biased so as to properly tension said upper and lower endless conveyor belts disposed around said upper and lower drive and idler rollers, and said upper and lower heated platens.

20 20. The grilling machine as set forth in Claim 19, wherein:

said upper and lower idler rollers can move inwardly toward the interior portion of said housing so as to reduce the tension impressed upon said upper and lower endless conveyor belts so as to permit said upper and lower endless conveyor belts to be removed from said upper and lower platen platforms.
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21. The grilling machine as set forth in Claim 20, further comprising:

an idler roller locking mechanism operatively associated with said lower idler roller and movable between a first position at which said idler roller locking mechanism prevents said idler roller from being moved inwardly so as to in turn prevent the removal of said lower endless conveyor belt from said lower platen platform, and a second position at which said idler roller locking mechanism permits said idler roller to be moved inwardly so as to in turn permit the removal of said lower endless conveyor belt from said lower platen platform.

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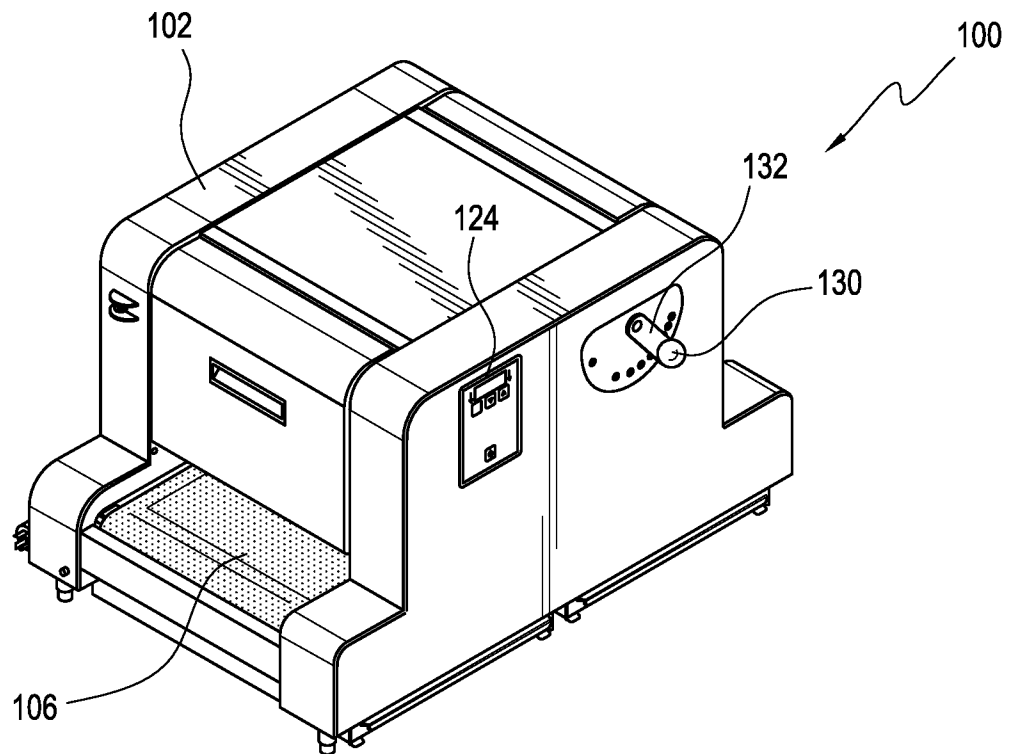


FIG. 1

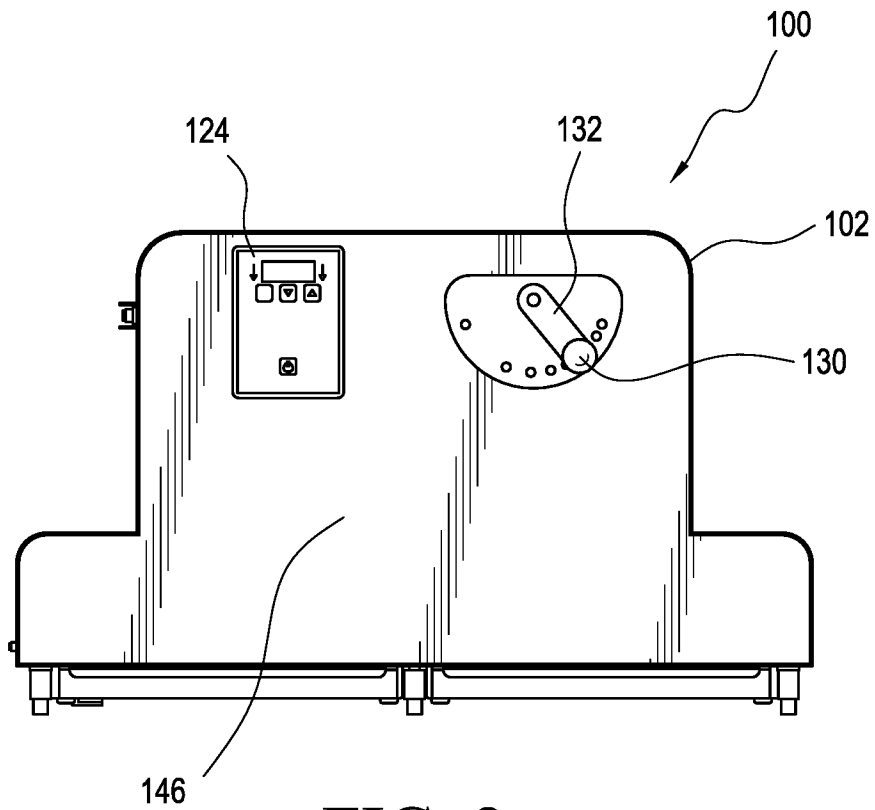


FIG. 2

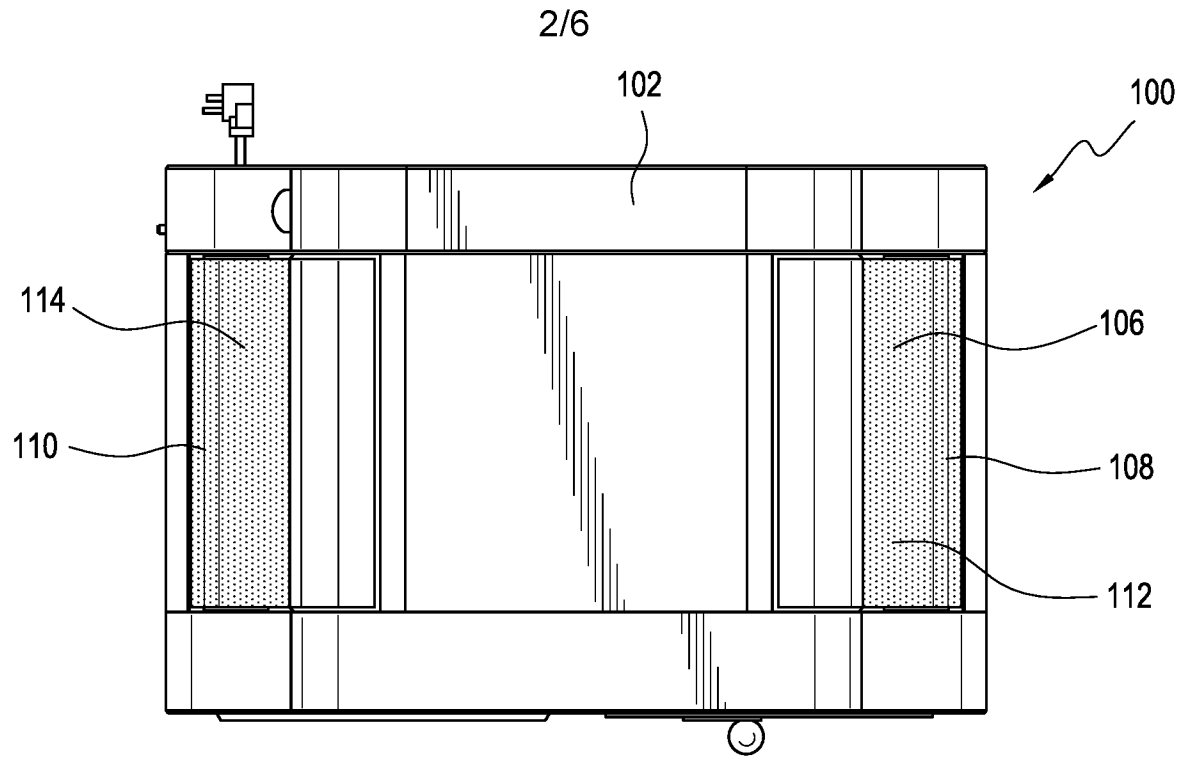


FIG. 3

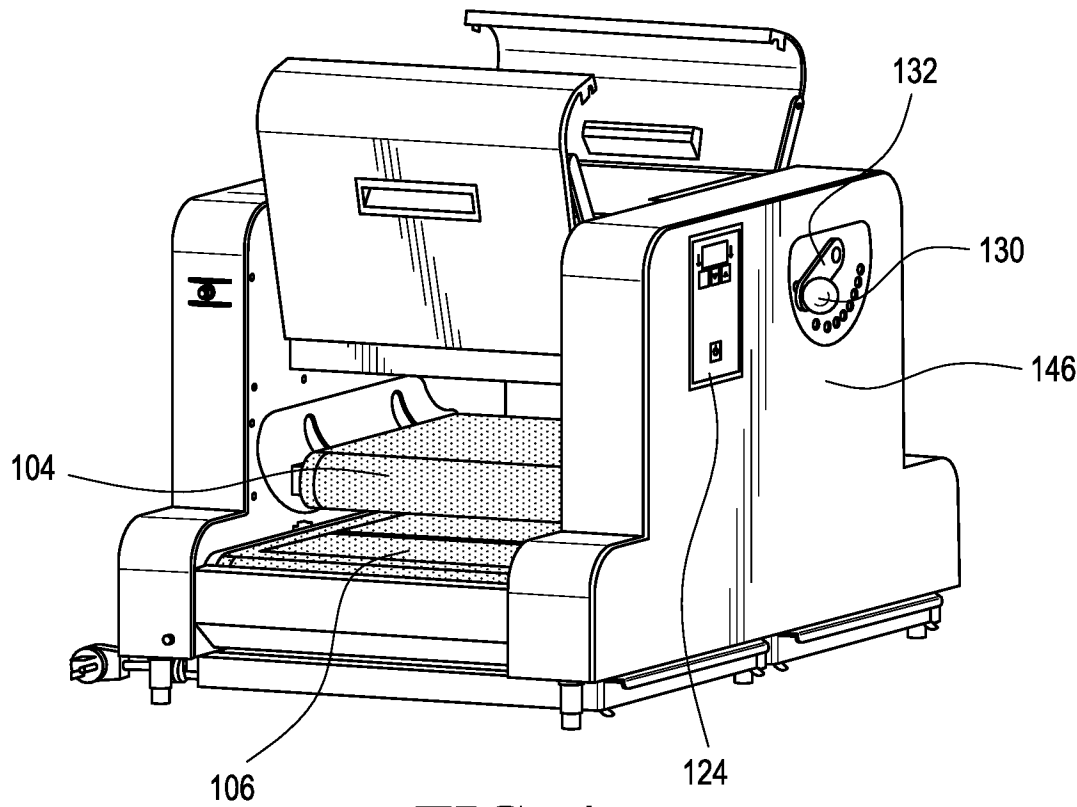


FIG. 4

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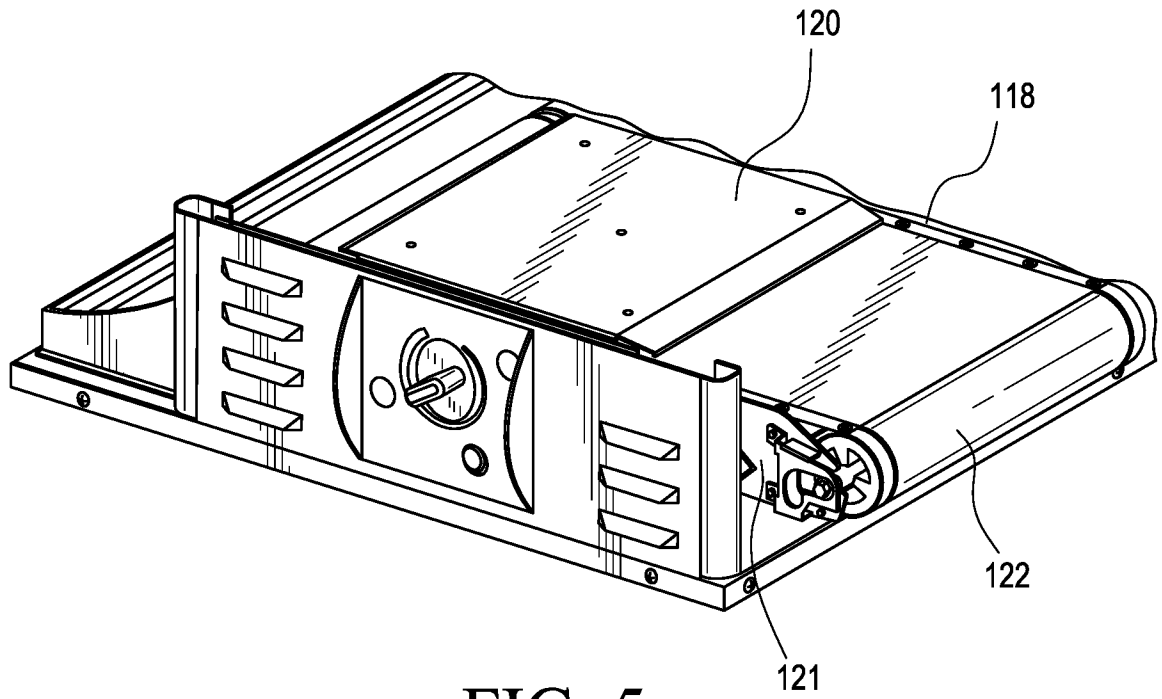


FIG. 5

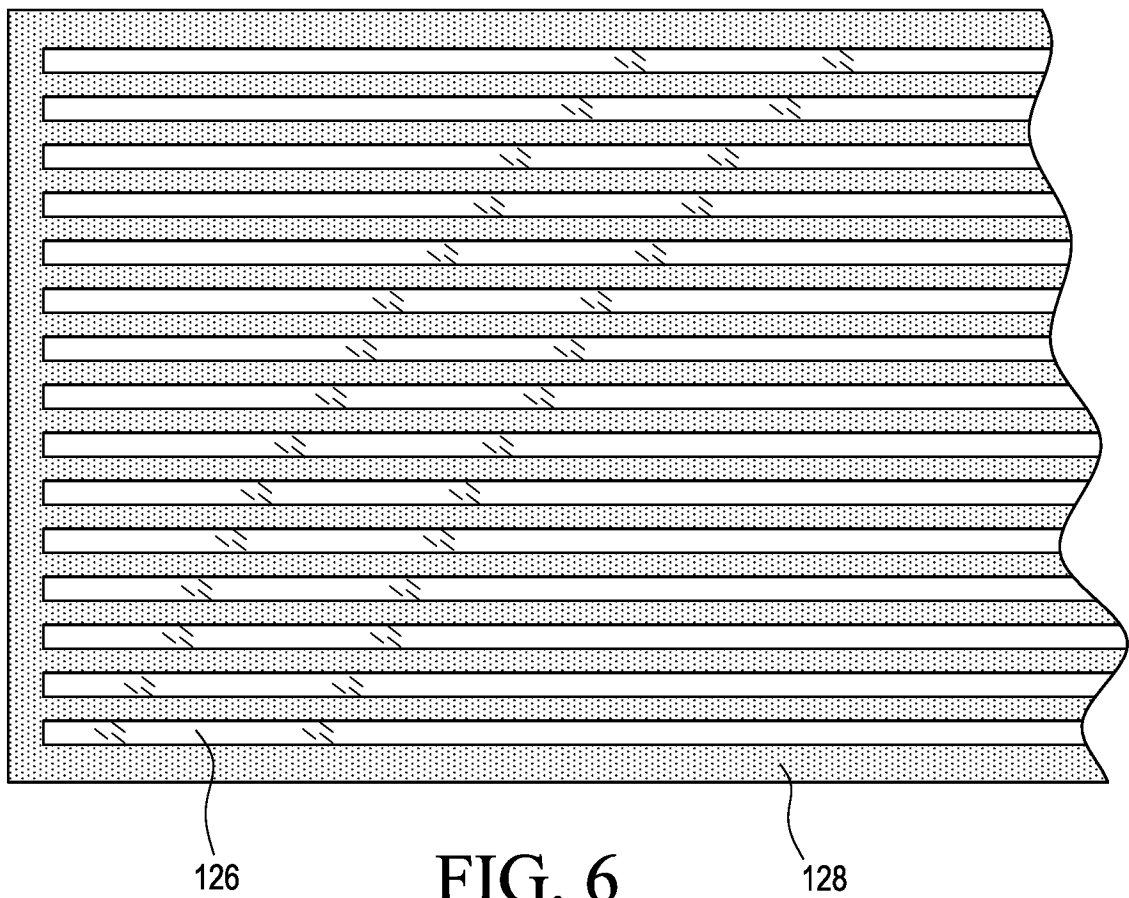


FIG. 6

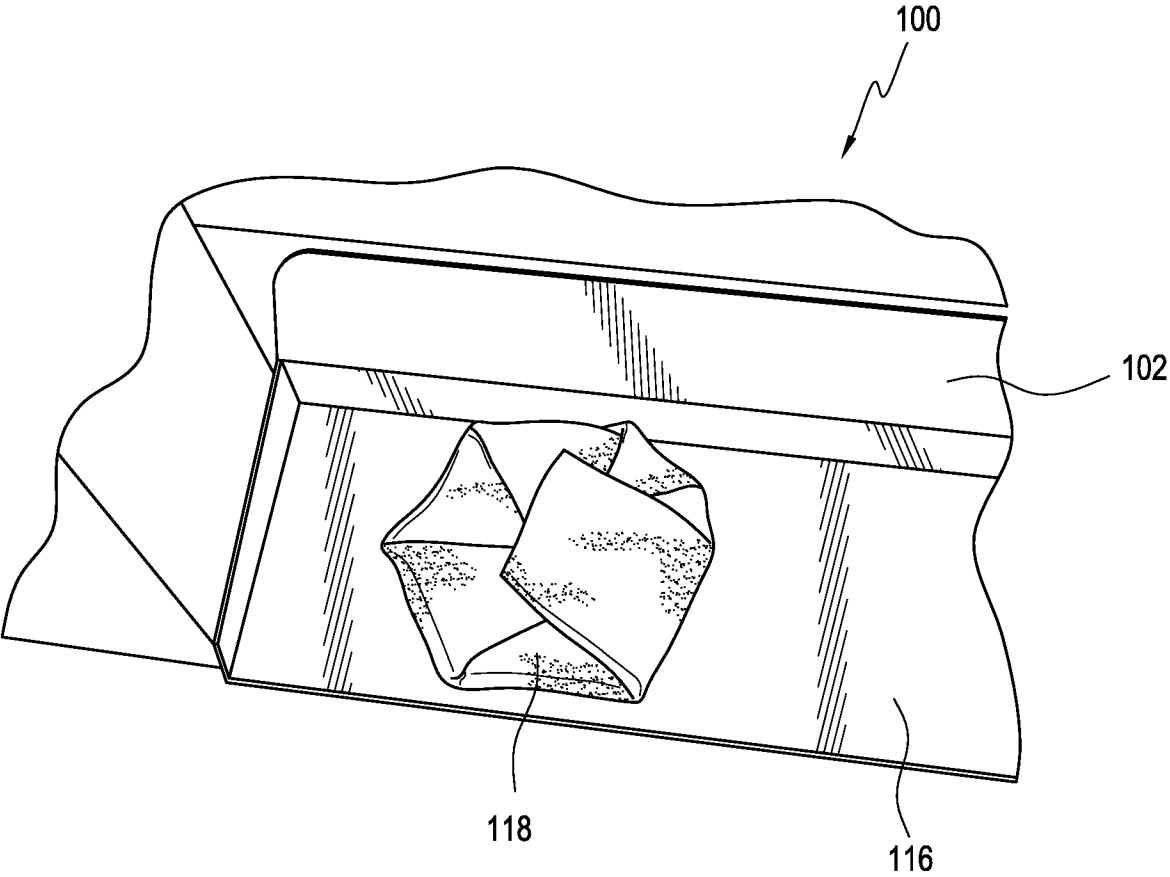


FIG. 7

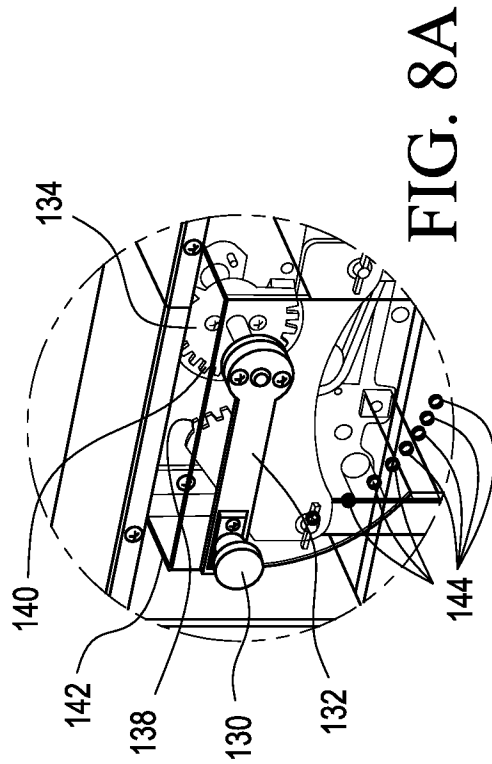


FIG. 8A

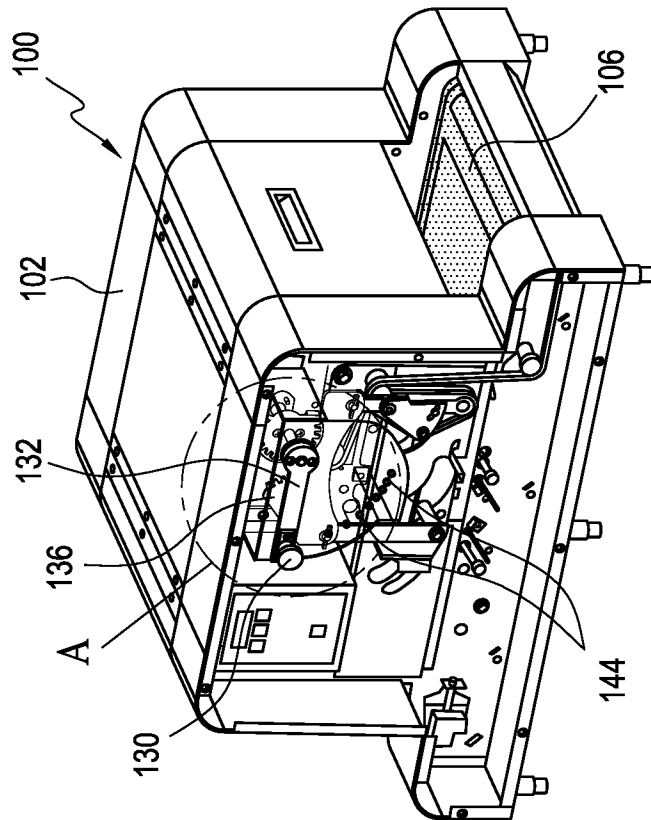


FIG. 8

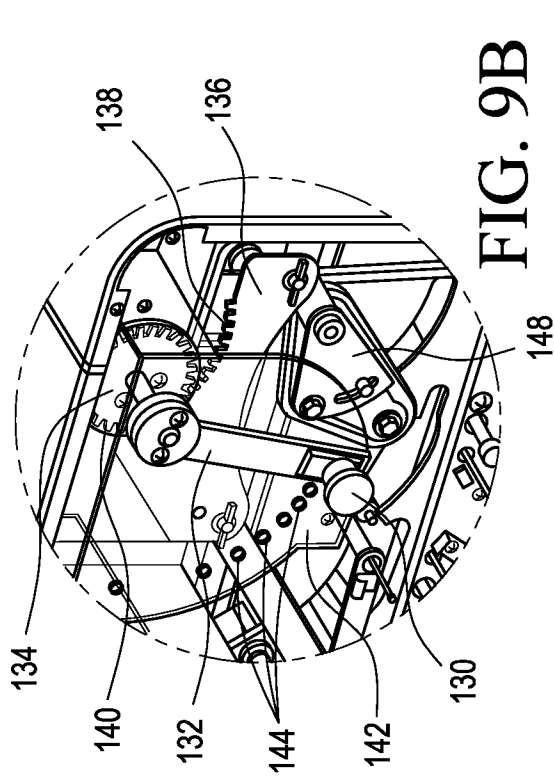


FIG. 9B

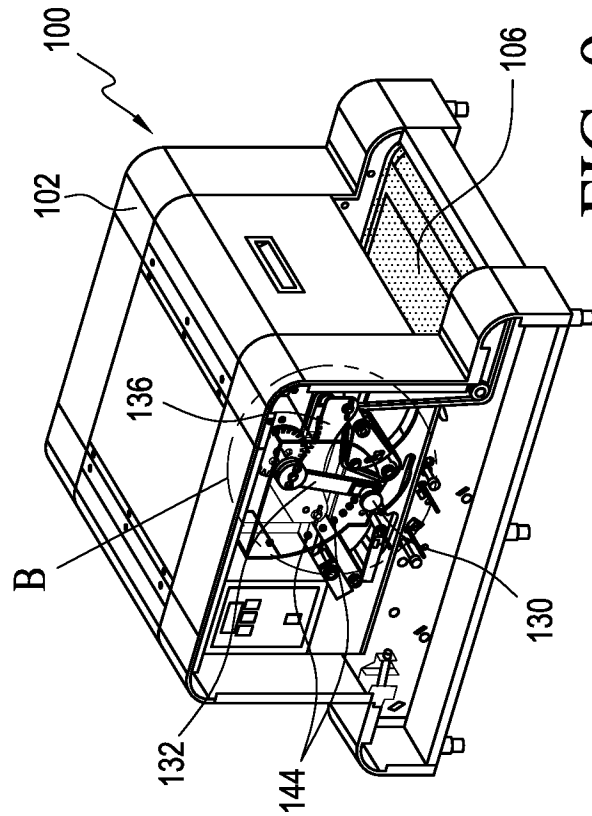


FIG. 9

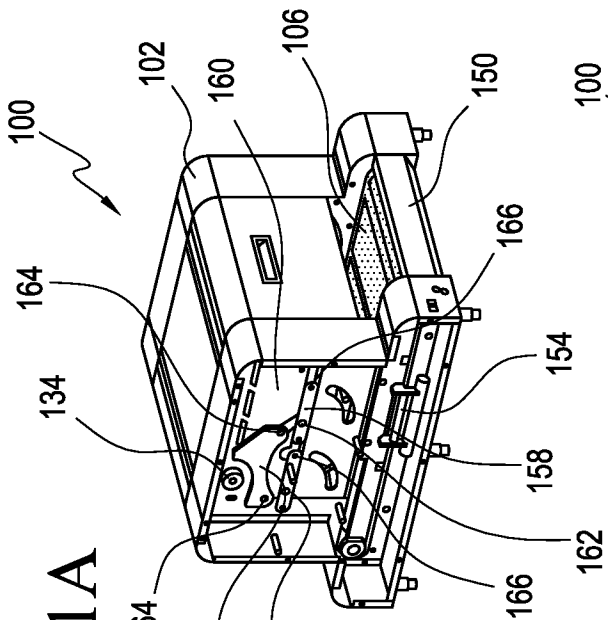


FIG. 11A

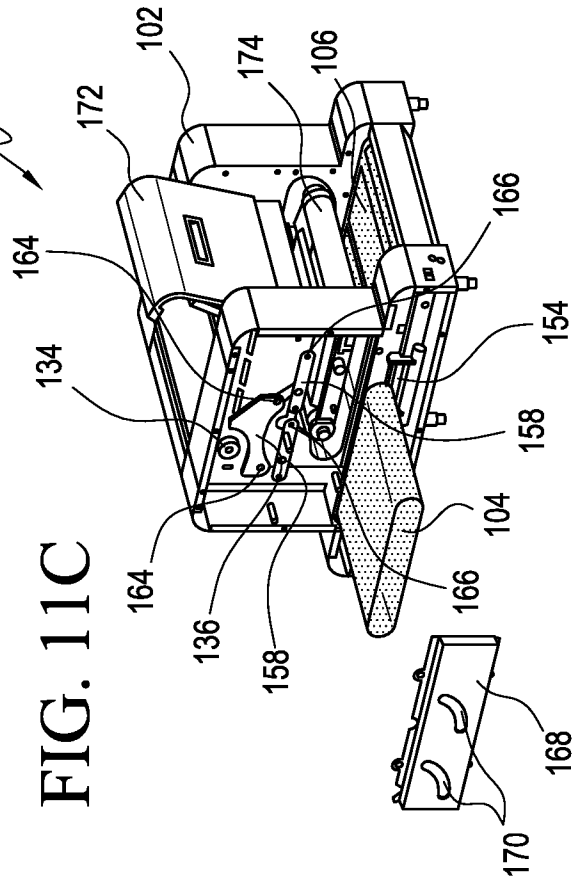


FIG. 11C

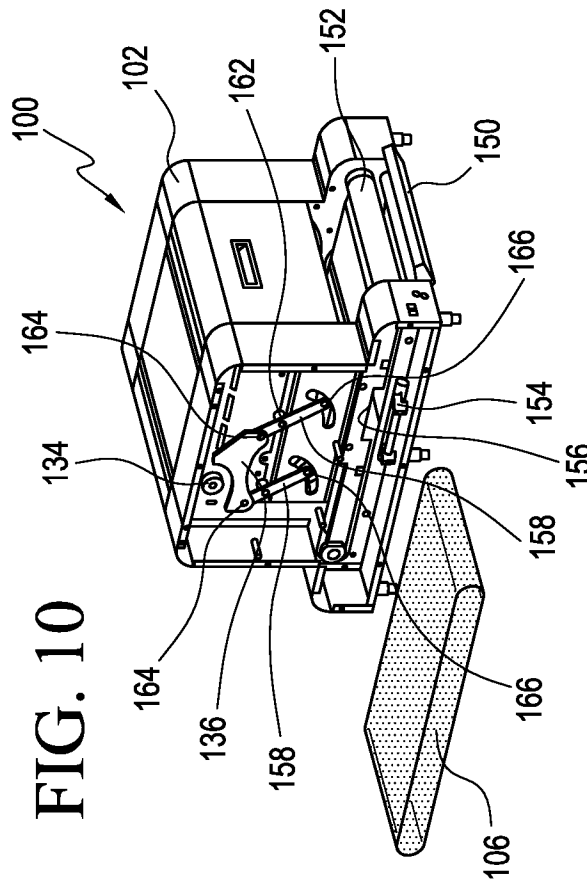


FIG. 10

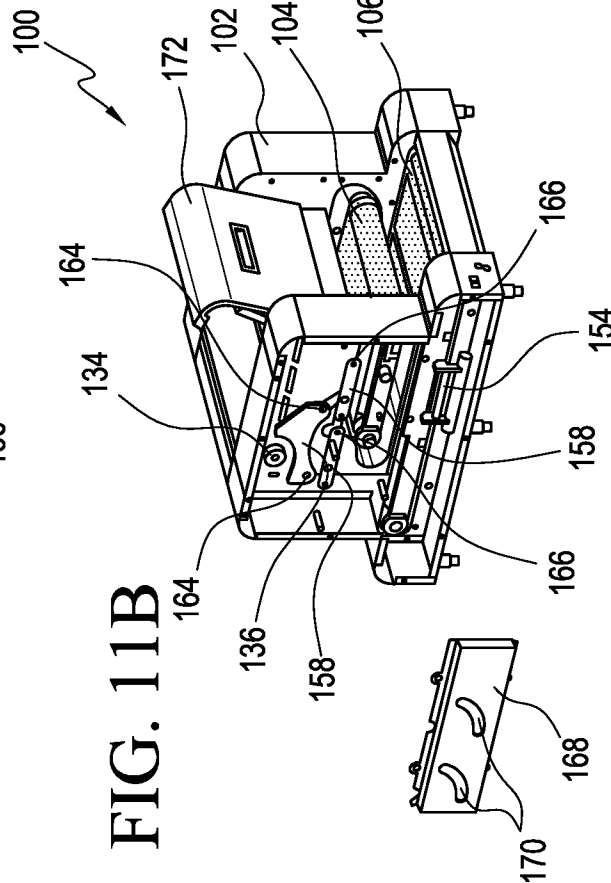


FIG. 11B

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2016/056166

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A47J 37/04; A21B 1/42; A21B 1/44; A21B 1/46; A21B 1/48; A47J 37/06; A47J 37/08 (2016.01) CPC - A47J 37/044; A21B 1/42; A21B 1/44; A21B 1/46; A21B 1/48; A47J 37/04; A47J 37/045 (2016.11) According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC - A21B 1/42; A21B 1/44; A21B 1/46; A21B 1/48; A47J 37/04; A47J 37/06; A47J 37/08 CPC - A21B 1/42; A21B 1/44; A21B 1/46; A21B 1/48; A47J 37/04; A47J 37/044; A47J 37/045; A47J 37/06; A47J 37/0611; A47J 37/08; A47J 37/0857 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC - 99/386; 99/389; 99/390; 99/391; 99/392; 99/407; 99/423; 99/443C; 219/388 (keyword delimited) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatBase, Google Patents, Google, Google Scholar, YouTube Search terms used: grilling, upper, lower, conveyors, cooking, food, entrance, heated, platens		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03/092407 A1 (HLAVATY) 13 November 2003 (13.11.2003) entire document	1, 2, 4-7, 10, 11
Y		3, 8, 9, 12, 16-21
Y	US 2001/0001462 A1 (CHANDLER et al) 24 May 2001 (24.05.2001) entire document	3, 16-21
Y	US 5,044,264 A (FORNEY) 03 September 1991 (03.09.1991) entire document	8, 9
Y	US 2009/0038455 A1 (STRONG et al) 12 February 2009 (12.02.2009) entire document	12
Y	US 2012/0121782 A1 (VELTROP et al) 17 May 2012 (17.05.2012) entire document	21
A	US 3,646,880 A (NORRIS) 07 March 1972 (07.03.1972) entire document	1-21
A	US 5,588,354 A (STUCK et al) 31 December 1996 (31.12.1996) entire document	1-21
A	US 2006/0237422 A1 (SANDS et al) 26 October 2006 (26.10.2006) entire document	1-21
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 26 November 2016		Date of mailing of the international search report 23 DEC 2016
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300		Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774