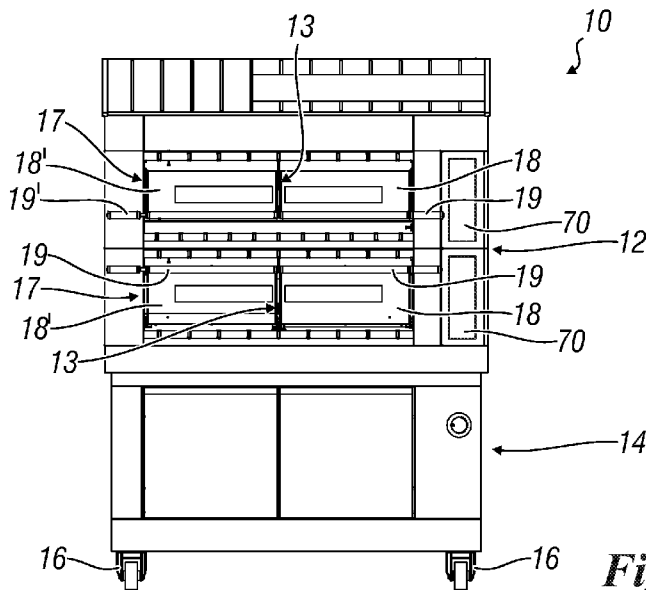




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(54) Title: MULTIFUNCTIONAL ELECTRIC OVEN



(57) Abstract: A multifunctional electric oven (10) for cooking dishes, comprising an oven-body (12) and a base (14) possibly provided with wheels (16), the oven-body (12) comprising one or more over-lappable modules (17) each of which defines a cooking chamber (35) provided with an oven-mouth (18) closed by means of an openable door (13) and comprising a cooking plane (20) or slab and a vault or ceiling (31) provided with heating resistors (29), with the cooking plane (20) being made of refractory material and divided into plane or module-plane portions (22), each module (17) comprising a pair of opposite probes (36) placed between the cooking plane (20) or slab and the ceiling or vault (31), a temperature sensor-unit (24) for each plane or module-plane portion (22), control and distribution means of the heat flow inside the oven, with said oven comprising a control unit with control logic for a management of each plane or module-plane portion (22) independently of each other.



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**MULTIFUNCTIONAL ELECTRIC OVEN**

The present invention relates to a multifunctional electric oven.

More particularly, the present invention relates to a  
5 professional type multifunctional electric oven to be used  
in catering premises and the like for the cooking of  
leavened food products such as, for example, pizza, bread,  
pastry products and the like.

Even more particularly, the present invention relates to a  
10 multifunctional electric oven of a static type, that is,  
which does not have moving parts for the cooking operations  
of the above-mentioned products.

As is known, with particular reference to electric ovens  
for food use, the means for heating the oven are located on  
15 the cooking plane of the cooking chamber, below or within  
the cooking plane or slab and on the ceiling or vault of  
the cooking chamber opposite to the cooking plane.

Typically, the cooking plane is made of completely or  
partially refractory material (i.e. without the non-  
20 refractory plane) which allows a correct cooking  
temperature to be maintained and the heat to be diffused in  
the most uniform way possible for the correct and optimal  
cooking of the products.

Traditionally, and even up to the present, in order to  
25 guarantee a homogeneity in the diffusion of heat, the  
heating means (which are constituted by electrical  
resistors) are positioned inside the refractory plane that  
constitutes the slab; for example, the heating means are  
housed in cavities formed in the thickness of the cooking  
30 plane (or slab), along a horizontal plane and parallel to  
each other, or they can also be below said cavities.

Taking into account the fact that the cooking planes are  
subject to frequent wear (approximately three years, or six  
months in case of greater use) and that, therefore, they  
35 are subject to periodic replacement, in order to reduce

costs, electric ovens have been developed that have a modular cooking plane that allows an easy and quick replacement of individual modules in case of wear or damage.

5 However, even these types of oven, although improved with respect to the maintenance of the cooking plane, have some drawbacks related to the fact that some areas of the cooking plane are subject to a faster wear than others, in light of the fact that the cook will tend to place the  
10 dishes in certain areas much more often than others (for convenience or because these areas are more heated or for other reasons), and those areas, therefore, will be more overloaded than others.

Overloaded areas (i.e. those which are more greatly used)  
15 or unloaded areas (i.e. those which are less used) cause a deterioration in the quality of cooking, given that cooking in these areas poses a strong risk of being insufficient (in overloaded areas) or entails burns on the food (in unloaded areas).

20 Traditionally, for example, considering the case of cooking a pizza, for an optimal baking of the same it is necessary to raise the temperature of the oven and, at the beginning, the cooking plane is "red hot" and the operator generally attenuates this with external elements such as grids/trays,  
25 if necessary, in order to prevent the first pizzas from burning (the same drawback occurs after a work break) and, subsequently, the operator starts cooking with relatively low power parameters given a load of a few pizzas at the beginning of the evening to then increase the power of the  
30 oven with the increase in the number of pizzas cooked, and does this in order to avoid the increase in the load resulting in the loss of temperature of the oven floor, leading potentially even to the maximum adjustment or to the insertion of a booster (i.e. an extra power for work  
35 peaks); otherwise, with the decrease in the load the

operator must decrease the power to avoid burning the pizzas and if they are planning a break, generally, will insert an "EcoStandBy" function (that is, a minimization of power for work breaks). The operator, in each of the 5 cooking operations they carry out, manages the total cooking time by frequently opening the oven door to check both the upper and lower part of the pizza using a paddle, to bake it for the optimal time and this time is variable depending on the filling of the disc of dough and depending 10 on the temperature of the cooking plane at the time of baking, with said temperature determined by the power adjustments and the previous cooking sequence; the operator, in addition to the above factors, also regulates a valve for the evacuation of cooking fumes according to 15 the cooking needs and, for certain types of products (for example, baked goods) also regulates the introduction of steam into the cooking chamber using a special steamer.

Considering the above, for a correct exploitation of the baking areas of the oven, aimed at avoiding the problems 20 described above, it is necessary to rely on the skills and abilities of the operator and this entails drawbacks related to the fact that an inexperienced operator cannot use the oven correctly as it would risk the good quality of the product being baked.

25 The object of the present invention is to overcome the drawbacks described above.

More specifically, the object of the present invention is to provide a multifunctional electric oven that makes it possible to optimally exploit all areas of the oven cooking 30 plane, allowing high quality cooking for all types of baked dishes.

Even more particularly, the object of the present invention is to provide an "intelligent" type oven that allows adaptation of its cooking parameters both to the 35 characteristics of the product to be cooked and to the

temperature conditions of the cooking plane at the time of baking the product.

A further object of the present invention is to provide an electric oven that allows the simultaneous cooking of  
5 products of a different type in an optimal way.

A further object of the present invention is to provide a multifunctional electric oven whose use involves a minimum of effort by both experienced and inexperienced operators, which involves a minimum of exposure to cooking fumes, and  
10 which guarantees minimum energy consumption with a consequent reduction of the related costs.

A further object of the present invention is to provide users with a multifunctional electric oven adapted to ensure high resistance and reliability over time and  
15 furthermore, such as can be easily and economically produced.

These and other objects are achieved by the invention having the features according to claim 1.

According to the invention a multifunctional electric oven  
20 is provided for cooking leavened dishes of the type including pizza, bread, pastry products and the like comprising an oven-body and a base possibly provided with wheels or equivalent movement means, the oven-body being of modular type and comprising one or more overlappable  
25 modules each of which defines a cooking chamber provided with an oven-mouth closed by means of an openable door, the cooking chamber of each module comprising a cooking plane or slab and a vault or ceiling provided with heating resistors, with the cooking plane being made of refractory  
30 material and divided into plane or module-plane portions, the oven characterized in that each module comprises a pair of opposite probes placed in an area between the cooking plane or slab and the ceiling or vault and arranged about halfway down the extension of said cooking chamber on the  
35 right and left part of said chamber, a temperature sensor-

unit for each plane or module-plane portion, control and distribution means of the heat flow inside the oven, with said oven comprising a control unit with control logic for a management of each plane or module-plane portion  
5 independently of each other.

Advantageous embodiments of the invention arise from the dependent claims.

The constructive and functional features of the multifunctional electric oven of the present invention can  
10 be better clarified from the following detailed description, in which reference is made to the attached drawings which represent a preferred and non-limiting embodiment, in which:

Figure 1 schematically illustrates a frontal view of the  
15 multifunctional electric oven of the present invention;

Figure 2 schematically illustrates a top view of the electric oven of the invention;

Figure 3 schematically shows a front view of a portion of the oven of the invention and, in particular, a front view  
20 of a cooking chamber thereof;

Figure 4 schematically shows a sectional view according to a plane F-F of Figure 2;

Figure 5 schematically shows a sectional view according to a plane B-B of Figure 3;

25 Figure 6 schematically shows a sectional view according to a plane A-A of Figure 3;

Figure 7 schematically shows a detail of a portion of the slab or cooking plane of the oven of the invention;

Figure 8 shows a sectional view according to a plane E-E of  
30 Figure 2;

Figure 9 schematically illustrates a user interface of an oven screen or display.

With reference to the aforementioned figures, the multifunctional oven of the present invention, indicated as  
35 a whole with 10, comprises an oven-body 12 and a base 14

possibly provided with wheels 16 or equivalent functional movement means for a movement and positioning of the oven in the premises where it is to be located and used, the oven-body 12 being modular and comprising one or more  
5 (superimposable) modules 17 each of which defines a cooking chamber provided with an oven-mouth 11 closed by means of an openable door 13 comprising two doors defined, respectively, by a right door 18 and by a left door 18' with each of said doors being provided with a handle and,  
10 respectively, a right handle 19 and a left handle 19' which, as is described in more detail below, can be standalone or joined together.

The oven-body 12 (more specifically a single module 17 of said oven-body 12) comprises a cooking plane 20 or slab,  
15 side walls 21 and a vault or ceiling 31 (the upper wall opposite the cooking surface) preferably made of metal sheet and provided with insulation and a bottom wall defining the cooking chamber and an openable door made as described above and adapted to close the oven-mouth of said  
20 cooking chamber of the single module.

The cooking plane 20 is made of refractory material (without non-refractory plane) and is divided into plane portions or module-planes 22 each, preferably, having the size of a pizza (in the preferred embodiment of the figures  
25 four plane portions or module-planes are shown, but it is understood that there are at least two plane or module-plane portions).

Each plane or module-plane portion 22 is provided with heating resistors 29 (not described in detail as known)  
30 arranged both corresponding to the cooking plane or slab and to the vault or ceiling of the cooking chamber, said heating resistors being independent of each other and having dimensions almost corresponding to those of the single plane or module-plane portion 22.

35 Each cooking plane or module-plane portion 22 comprises a

contact-type sensor-unit 24 which, as schematically shown in the detail of Figure 7, is housed below the plane or module-plane portion 22 and, more particularly, below a thickness "K" of the plane or module-plane portion defining an "inert part" occupied by a recess element 25 which defines and closes a housing compartment 27 for said sensor-unit, said recess element 25 having a thickness corresponding to the thickness "K".

The sensor-unit 24 comprises a sensor 23 whose end or tip 23' engages with a lower front of the recess element 25 of the single cooking plane or module-plane portion 22, a conical spring 30 and a highly conductive metal disc 32 anchored to the sensor at the end portion 23' thereof in contact with the lower front of the recess element 25 and held in place by means of the aforementioned spring 30; said sensor-unit, regardless of the deformations of the cooking chamber linked to the temperatures, always accurately detects the temperature of the cooking plane or module-plane portion and detects it on the aforementioned recessed element 25 which, as described, is defined on the cooking plane (on the single plane portion) with a height dimension "K" (tendentially and preferably between 4 and 8 mm) suitable for maintaining a thickness (or inert part) suitable for not compromising the mechanical strength characteristics of the refractory material of the cooking plane and for allowing a correct and precise temperature of the cooking surface of said cooking plane.

The described sensor unit is resistant to the high temperatures reached by the oven (up to about 600°C) and, in particular, to the temperatures reached at the housing area of said sensor unit.

Inside the cooking chamber 35 of the single module 17 there is a pair of opposite probes 36 placed in the air (i.e. in an area of the chamber between the slab and the ceiling) and arranged about halfway into the downwards extension of

said cooking chamber 35 (as shown in figures 5 and 8) and on the right and left side of said chamber; this is in order to allow optimal control of the air temperature in the cooking chamber and to detect any temperature drops that may occur when the dish to be cooked is baked.

As described above, the oven-mouth 11 of each module 17 is closed by means of an openable door 13 comprising a right door 18 and a left door 18' and this allows definition of a right cooking chamber and a left cooking chamber with each of said chambers comprising one or more cooking plane or module-plane portions 22; such a configuration defines cooking areas (right and left) that work independently of each other (that is, as if there were individual ovens for each area) and, when opening a single door (right door 18 or left door 18') to carry out the baking or the removal, this does not alter or disturb the cooking of the dish that is arranged in the cooking area for which the respective door remains closed and, also, such a configuration achieves environmental sustainability by virtue of the fact that a reduction of the heat coming out of the cooking chamber results in a lower thermal and electrical dispersion.

In order to alter the convective movements of the heat flow in the cooking chamber ceiling as little as possible during the baking/removal operations, the cooking chamber comprises fixed transverse deflectors 40 of the strip type (Figure 6) and horizontal deflectors 42 which are arranged in the part facing the oven-mouth 11 closed by the doors 18/18'; this results in the creation of labyrinths that slow down the movement to the natural convective flow of heat and allow the operator to give rise to the baking/removal operations with a minimum thermal dispersion.

As described, the right door 18 and the left door 18' are provided, respectively, with a right handle 19 and a left

handle 19' that allow the opening of the individual doors downwards or upwards (depending on the mode of constraint of said doors with respect to the single module 17 of the oven-body 12) and, furthermore, said right handle 19 and  
5 left handle 19' can be joined together for simultaneous opening of the right and left doors.

With reference to Figure 4, a sectional view of the right handle 19 and left handle 19' and of the attachment mechanism between the two is shown.

10 In particular, at one of the end portions of one of the right or left handles there is a knob 50 which can slide according to a horizontal direction "Y" so as to implement a forward/backward translational movement of a pin 52 arranged internally to one of the two handles and which is  
15 adapted to engage/disengage with the other handle to restrain/release the two handles; in this way the operator can decide whether to open a single right or left door independently or whether to open the two doors of the single module 17 simultaneously.

20 In addition, on the bottom of the cooking chamber of each module 17 and on the side opposite to the oven-mouth 13, there is at least one metallic and mirror-polished panel 60 inclined in the direction of the cooking plane and functioning to allow the operator to see the back of the  
25 cooking dish (typically not visible) and, in this way, to avoid continuous and repeated opening of the doors 18/18'; the panels 60 are preferably made of refractory stainless steel, and this is in order to minimize the red colour change at high temperatures and to allow  
30 cleaning/reconditioning with common detergents/solvents.

According to an alternative embodiment, the cooking chamber of each module 17 comprises radiant plates made of refractory material arranged below the heating resistors of the ceiling in order to vary the balance of the type of  
35 heat that suffuses the dish during cooking making it "more

delicate"; in fact, by means of said radiant plates, the intensity of the infrared radiation that directly suffuses the dish decreases, supporting a greater heat input by convection (this is particularly suitable for some types of mozzarella or other garnish/dough ingredients of a more delicate type).

The oven of the invention is provided with a control logic for the adaptive operation of the oven itself which is managed by means of a control unit (not shown) housed in an oven control unit which allows viewing the areas of the oven which have been less used in a given period of time, and this is in order to provide indications on where it is more advisable to place a new dish to be cooked, so as to optimally exploit the potential of the oven, while avoiding overloaded areas and unloaded areas which entail unavoidable cooking defects (in fact, by way of example, a pizza baked in an unloaded area risks becoming burnt, while in the case of a pizza baked in an overloaded area it may lead to obtaining a dish that is not well cooked).

By means of the adaptive control logic, the oven control unit regulates the operation of the oven itself with the possibility of providing the operator, by means of a screen or display 70 of the single module 17, with indications for switching off or switching on specific groups of resistors (corresponding to a specific portion of the plane or module-plane portions 22) according to the detection of the sensor groups 24, to modify the cooking parameters according to the dish baked, to adjust and define the timing of the dishes cooking in the different areas, to consider the possibility or need to increase the temperature (addition of an energy turbo or booster) in the event of work peaks and the like; this is done by means of adjustment means or sliders 72 of the display 70.

The control unit comprises a database or memory in which are stored the different parameters that characterize the

different types of dishes that can be cooked in the oven (which can be implemented and updated); for example, in the case of cooking pizza, the oven through the control unit will request parameters of the type of the weight of the dough, size of the pizza, type of flour used, degree of hydration of the dough, expected final consistency (more or less crispy), desired degree of browning, type of cooking required (pre-cooking, regeneration, heating) and the like (the operator has access to these data/parameters by means of a functional bar 74 (or toolbar) of the display 70).

In view of these parameters, the oven control logic will adjust the oven by setting it to defined temperature values of the cooking chamber, defining a percentage of power of the heating elements of the ceiling of the cooking chamber and a temperature of the cooking plane of each plane or module-plane portion of said cooking plane, indicating the optimal cooking time, indicating the optimal position of the evacuation valve for the cooking fumes.

In this way, the control logic will perform a temperature rise cycle according to the cycle that it will have to perform for the cooking of a specific product, bringing the temperature value to a pre-defined value (or set point) ideal to avoid overheating of the cooking plane responsible for burning the first dishes during cooking (for example, pizzas) and will indicate, by means of a display on module 17, the area in which it is recommended to cook the dish (which is generally the hottest area), the operator will go to bake the dish and on the aforementioned display will operate a timer corresponding to the baking and positioning area of the dish and, consequently, the control logic, depending on the distance from the default value (or set point) provided for the type of cooking, will determine the optimal cooking time (more specifically, if the temperature is higher than the preset value (or set point), the cooking time will decrease, while in the opposite case the time

will increase).

During the cooking phase, the sensor unit 24 detects the temperature drop curve and, depending on the type of variation, will alert the control unit which, by means of  
5 the control logic will automatically adapt the percentage of power delivered by the lower resistors so as to adapt it to the detected load (increasing it in the case of decrease or decreasing it in the case of increase).

Once the defined time has been reached, the operator, by  
10 means of the display of module 17, will be alerted about the completion of the cooking and, consequently, the operator will be able to proceed with the removal from the oven; however, the operator will still be able to customize the cooking in particular cases such as, for example, a  
15 cold dough or a dough that is too leavened (for example, they will be able to customize the browning, the cooking temperature, the total cooking time).

Likewise, the control logic implemented in the oven of the invention is also able to detect any work pauses deduced  
20 from the failure to operate the timer and, consequently, will act on the system by automatically bringing the plane area (or the entire oven) into the Eco-standby state in which the alert rest state at optimal values of the oven parameters allows immediate restarting of cooking for the  
25 dishes without risking burning under the dish, but drastically decreasing the levels of electrical energy used in such pause periods.

For some types of foods such as bakery/pastry products that tend to be "more delicate", the control logic will make the  
30 oven work in a slightly different way, with the cooking plane that will however detect the temperatures of the various areas, but the percentage delivered by the heating resistors of the slab will not vary but will remain fixed throughout the cooking at the value set for the specific  
35 cycle designed for that product during cooking; in

addition, the operator can adjust the delicacy of the crust (varying the amount of steam introduced into the cooking chamber by the special steamer), the crunchiness (simultaneously automatically varying the temperatures, the cooking time and the time for which the discharge valve of the cooking fumes remains open).

As can be seen from the above, the advantages obtained by the electric oven of the invention are clear.

The multifunctional electric oven of the present invention, by virtue of the structural and operating characteristics described, advantageously allows having areas dedicated to the cooking of individual products with each area of the oven behaving like an independent oven, and this advantageously allows the cooking of different products within the same cooking chamber.

A further advantage of the present invention is that the adaptive control logic of the oven of the invention makes it possible to obtain an "intelligent" oven capable of simplifying the cooking cycle of the dishes as described in detail above and of being easily used by both experienced and inexperienced operators with minimal fatigue, a minimum exposure to cooking fumes (given the fact that a continuous opening of the closing doors of the oven-mouth is not necessary for inspection purposes).

A further advantage of the oven of the invention is represented by the fact that the adaptive control logic of the oven defines a sort of "automatic pilot" that assists the operator in the management of the oven and the cooking with an improvement and optimization of the performance of the oven, the quality of cooking of the dishes and with consequent energy saving and the related costs saving.

A further advantage of the oven of the present invention is that by virtue of the construction mode and the adaptive control logic, there are no cooking chambers specifically dedicated to a type of product to be cooked (i.e. chambers

with specific resistance or particular cooking surfaces and always dedicated to a specific type of dish), but there are cooking chambers unrelated to the type of dish to be cooked, but which adapt according to the dish.

5 Furthermore, it is advantageous that the electric oven of the invention, thanks to the fact that the door for closing the oven-mouth is defined by two independently openable doors, makes it possible to optimally manage the workloads since the operator, depending on whether the oven is fully  
10 loaded or half loaded, will open only one of the doors (or both if necessary) and this allows a high degree of flexibility in the use of the oven.

It is further advantageous that the oven sensor-unit of the invention allows perfect detection of the temperature of  
15 the cooking plane relative to the individual plane or module-plane portions differently from the sensors of traditional ovens that detect the air temperature in the area of the cooking plane; in fact, the sensors in contact with the refractory plane guarantee a high accuracy in the  
20 reading of the actual temperature of the single area of the cooking plane and, therefore, effectively "feel" the heat removed, for example, from the pizza to the refractory while cooking and this is different, as already observed previously, from the traditional devices that detect the  
25 air temperature laterally below the refractory and that detect a maximum data and not a precise value (which is necessary in order to have an automatic reaction of the oven without leaving the cooking to the sole discretion of the operator.

30 Although the invention has been described above with particular reference to an embodiment given merely by way of a non-limiting example, numerous modifications and variations will be apparent to a person skilled in the art in the light of the above description. Therefore, the  
35 present invention intends to embrace all the modifications

and variations which fall within the scope of the following claims.

## CLAIMS

1. A multifunctional electric oven (10) for cooking leavened dishes of the type pizza, bread, pastry products and the like comprising an oven-body (12) and a base (14) possibly provided with wheels (16) or equivalent movement means, the oven-body (12) being of modular type and comprising one or more overlappable modules (17) each of which defines a cooking chamber (35) provided with an oven-mouth (11) closed by means of an openable door (13), the cooking chamber (35) of each module comprising a cooking plane 20 or slab and a vault or ceiling (31) provided with heating resistors (29), with the cooking plane (20) being made of refractory material and divided into plane or module-plane portions (22), the oven characterized in that each module (17) comprises a pair of opposite probes (36) placed in an area between the cooking plane (20) or slab and the ceiling or vault (31) and arranged about halfway down the extension of said cooking chamber (35) on the right and left part of said chamber, a temperature sensor-unit (24) for each plane or module-plane portion (22), control and distribution means of the heat flow inside the oven, with said oven comprising a control unit with control logic for a management of each plane or module-plane portion (22) independently of each other.
2. The electric oven according to claim 1, characterized in that the sensor unit (24) of each plane or module-plane portion (22) is housed below a thickness "K" of the plane or module-plane portion (20) occupied by a recess element (25) which defines and closes a housing compartment (27) for said sensor-unit, the recess element (25) having a dimension in thickness corresponding to the thickness "K".
3. The electric oven according to claim 2, characterized in that the sensor-unit (24) comprises a sensor (23) whose end or tip (23') engages with a lower front of the recess element (25) of the single plane or module-plane portion

(22), a conical spring (30) and a highly conductive metal disc (32) anchored to the sensor (23) at the end portion (23') in contact with the lower front of the recess element (25) and held in position by means of the aforementioned  
5 spring (30).

4. The electric oven according to claim 1, characterized in that the heating resistors (29) are independent of each other in size corresponding to those of the single plane or module-plane portion (22).

10 5. The electric oven according to claim 1, characterized in that the means for controlling and distributing the heat flow inside each cooking chamber (35) of each module (17) comprises fixed transverse deflectors (40) of the strip type and horizontal deflectors (42) are arranged in the  
15 part facing towards the oven-mouth (11).

6. The electric oven according to the preceding claims, characterized in that the door (13) closing the oven-mouth (11) of each module (17) comprises a right door (18) and a left door (18') provided, respectively, with a right handle  
20 (19) and a left handle (19'), said doors (18, 18') being independently openable or integratable with each other.

7. The electric oven according to claim 6, characterized in that at one of the end portions of one of the right (19) (or left (19')) handles a knob (50) is arranged which is  
25 operable in sliding according to a horizontal direction "Y" to implement a forward/reverse translation movement of a pin (52) arranged inside the right (19) (or left (19')) handle and adapted to engage/disengage with the left (19') (or right (19)) handle to constrain/release therebetween  
30 said two handles for a simultaneous or single opening of the right (18) and left (18') doors.

8. The electric oven according to the preceding claims, characterized in that at the bottom of the cooking chamber (35) of each module (17) and opposite the oven-mouth (13)  
35 there is at least one metallic and mirror-polished panel

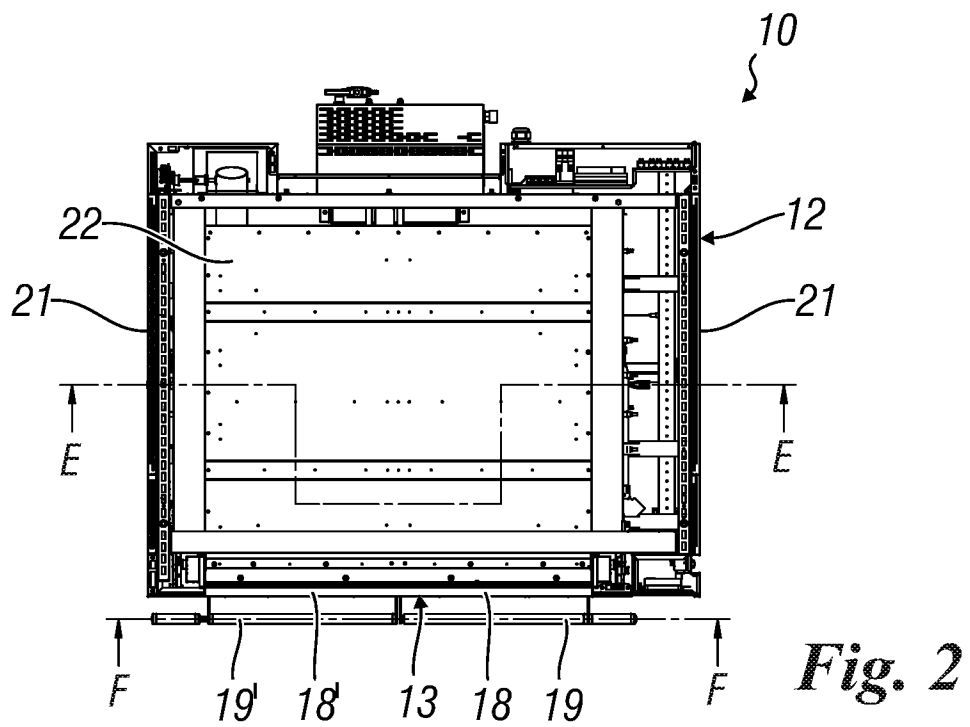
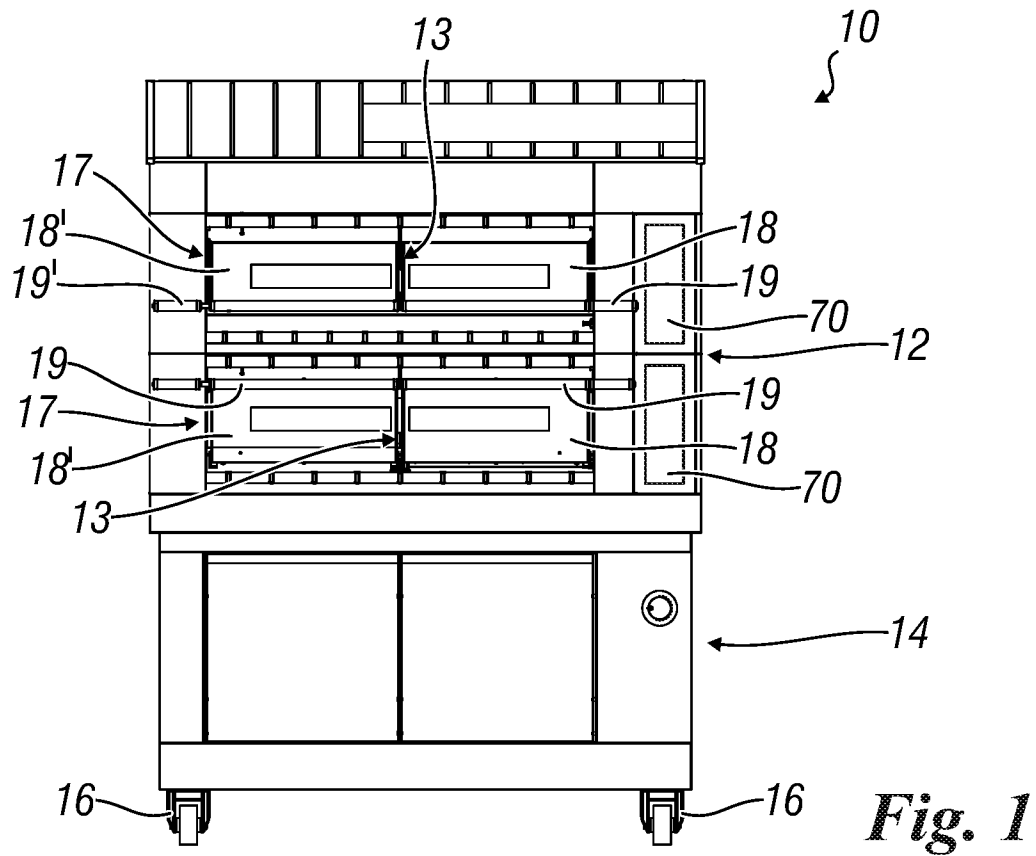
(60) inclined in the direction of the cooking plane (20) functional to allow an operator to see the back of the dish being cooked.

9. The electric oven according to claim 8, characterized  
5 in that the at least one panel (60) is made in refractory stainless steel.

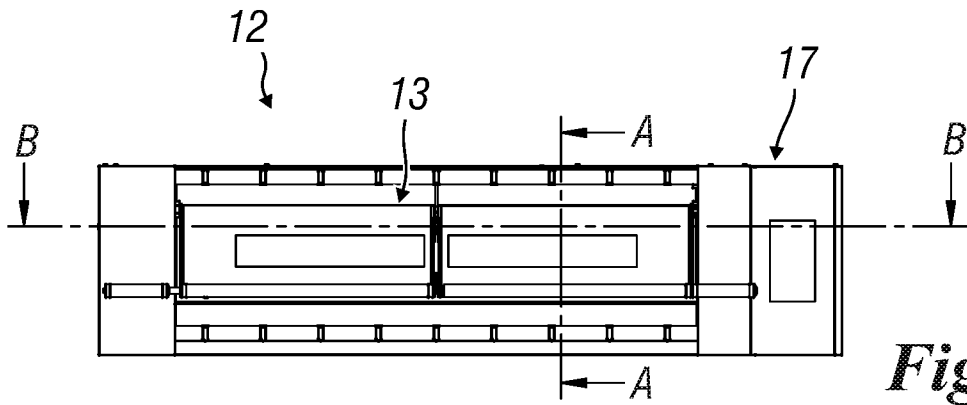
10. The electric oven according to the preceding claims, characterized in that it comprises a screen (70) provided with a graphical user interface for a display of the single  
10 plane or module-plane portions (22) in their conditions of use/temperature for an automatic indication, by means of the adaptive control logic, of the switching off or switching on of specific groups of resistors (29) corresponding to a specific plane or module-plane portion  
15 (22) as a function of the detection of the sensors-units (24), of the modification of cooking parameters as a function of specific baked dishes, of the adjustment and definition of the permanence times of the baked dishes in the different plane or module-plane portions (22), of the  
20 indication of the possibility or need for an increase in temperature in case of work peaks and the like, the screen interface (70) comprising adjustment or slider means (72) and a functional bar or toolbar (74) adapted to the management of the oven by the operator.

25

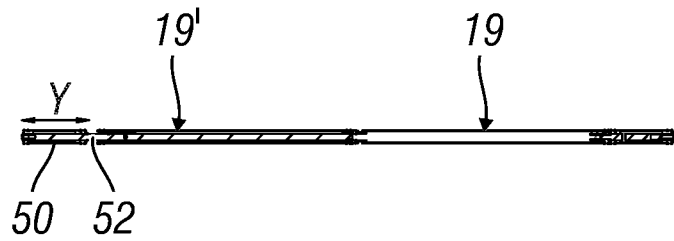
1/4



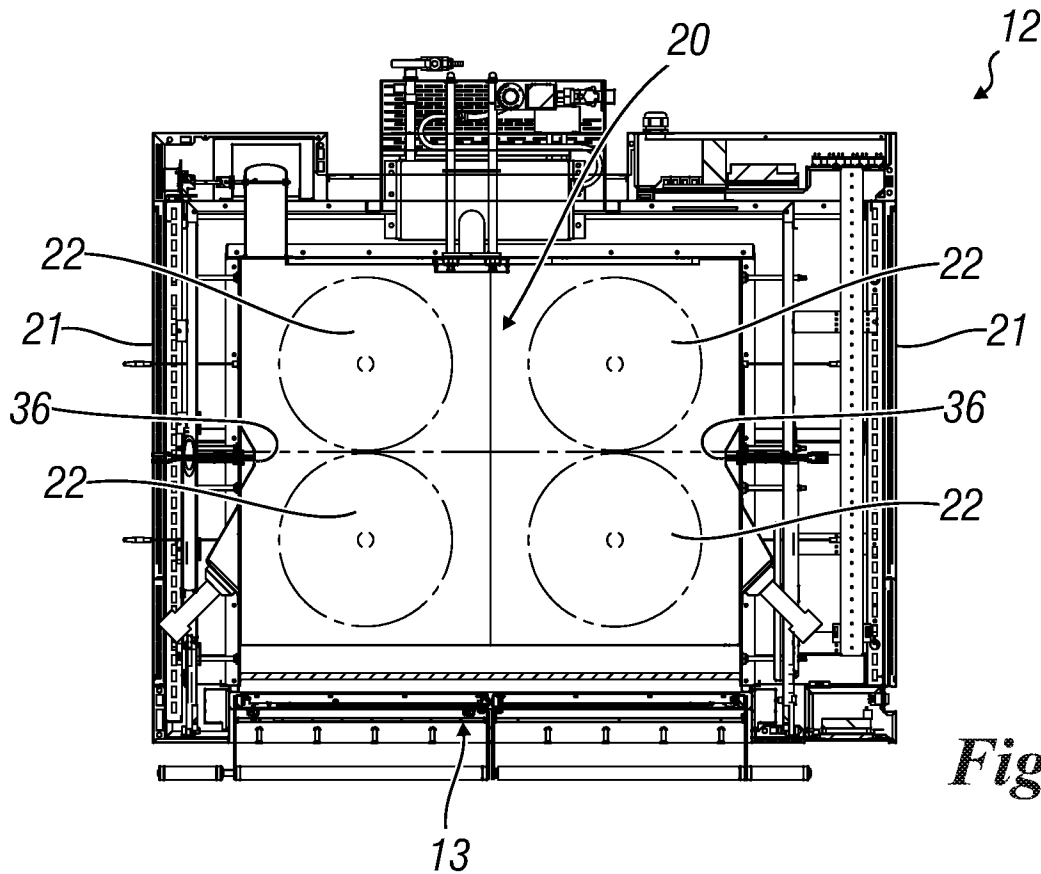
2/4



*Fig. 3*

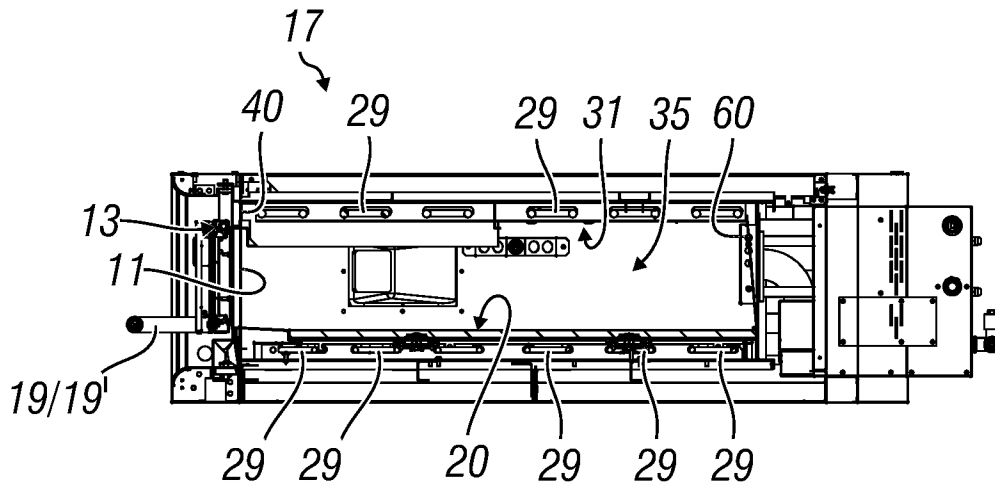


*Fig. 4*

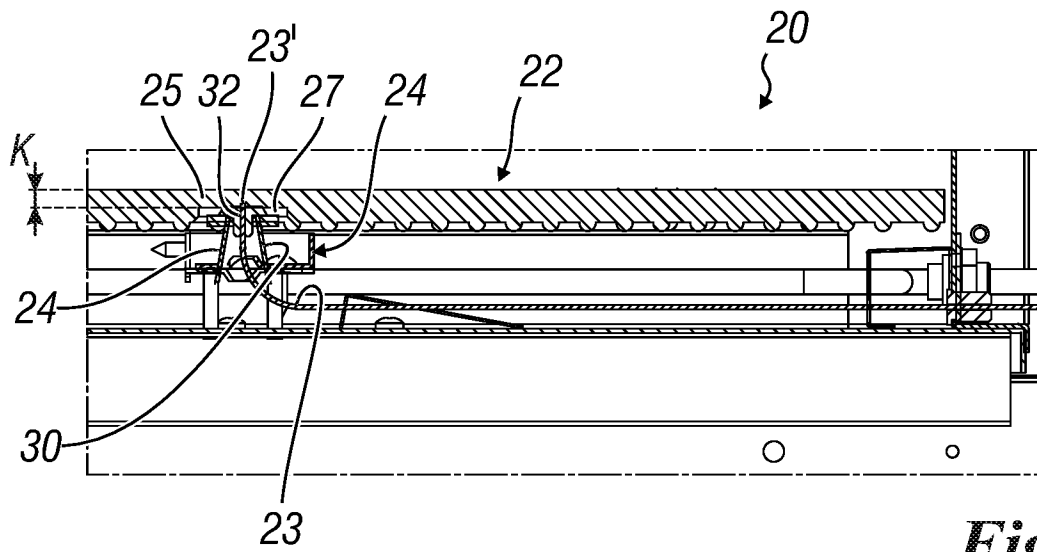


*Fig. 5*

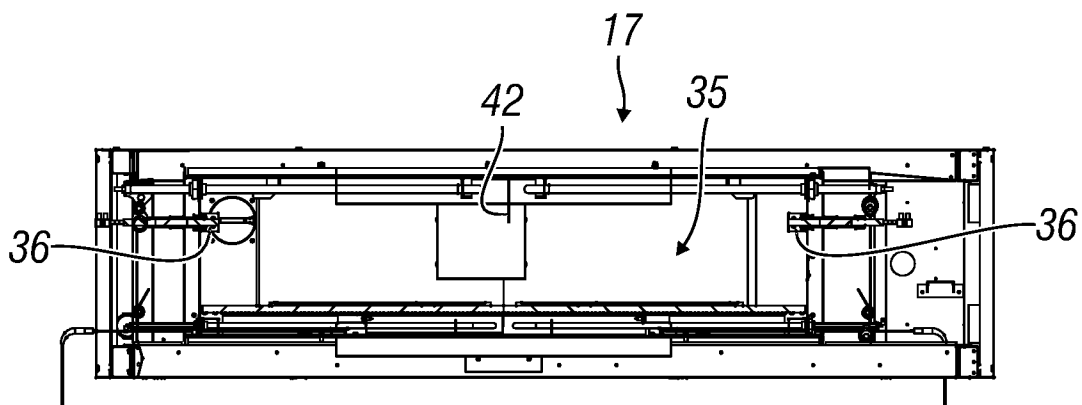
3/4



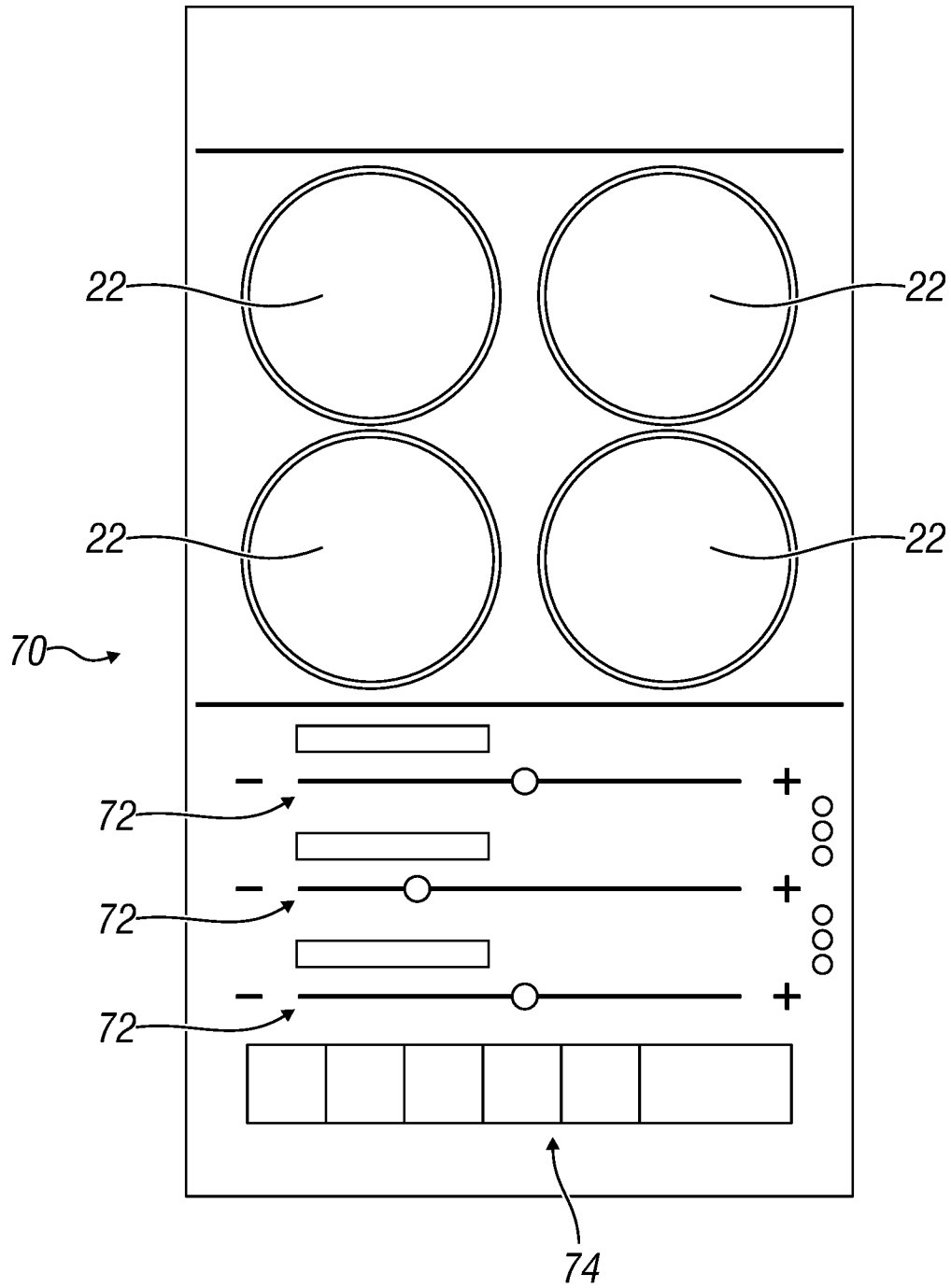
*Fig. 6*



*Fig. 7*



*Fig. 8*



*Fig. 9*

**INTERNATIONAL SEARCH REPORT**

International application No  
**PCT/IB2022/058004**

**A. CLASSIFICATION OF SUBJECT MATTER**  
**INV. A21B1/14 A21B1/40**  
**ADD.**

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)  
**A21B**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
**EPO-Internal, WPI Data**

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
<b>Y</b>	<b>US 5 605 092 A (RICCIO RENATO [US])</b> <b>25 February 1997 (1997-02-25)</b>	<b>1, 2, 4-7,</b> <b>10</b>
<b>A</b>	<b>column 4, line 56 - column 5, line 11;</b> <b>figures 1, 4</b>	<b>3, 8, 9</b>
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<b>Y</b>	<b>JP 2020 108350 A (UENO SHOTEN KK)</b> <b>16 July 2020 (2020-07-16)</b>	<b>1, 2, 4-7,</b> <b>10</b>
	<b>paragraphs [0024], [0029], [0031];</b> <b>figures 2-4</b>	
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<b>A</b>	<b>US 6 745 758 B1 (MINIDIS JAMES [US])</b> <b>8 June 2004 (2004-06-08)</b>	<b>1</b>
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<b>A</b>	<b>EP 2 333 420 A1 (INDESIT CO SPA [IT])</b> <b>15 June 2011 (2011-06-15)</b>	<b>1</b>
	<b>the whole document</b>	
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Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&amp;" document member of the same patent family</p>
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Date of the actual completion of the international search <b>3 November 2022</b>	Date of mailing of the international search report <b>22/11/2022</b>
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  <b>Rodriguez, Alexander</b>
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2022/058004

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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A	US 9 420 800 B1 (FROELICHER STEPHEN BERNARD [US] ET AL) 23 August 2016 (2016-08-23) the whole document -----	1
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International application No

**PCT/IB2022/058004**

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