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(54) **DEVICE FOR HEATING FOODSTUFF WITH HOT AIR**

VORRICHTNG ZUM ERHITZEN VON LEBENSMITTELN MIT HEISSLUFT

DISPOSITIF POUR CHAUFFER DES ALIMENTS AVEC DE L'AIR CHAUD

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Description

TECHNICAL FIELD

[0001] The present invention relates to an oven for heating foodstuff, in particular french fries, by means of hot air circulating in a substantially closed circle, wherein circulation of the air is forced, preferably by a fan or a blower. It in particular relates to an oven which is suited for heating individual portions or a small number of portions within a very short amount of time.

BACKGROUND OF THE INVENTION

[0002] Classically, french fries are prepared using a bath of hot oil, which leads on the one hand to a crispy surface of the french fries and which and the other hand reduces the moisture within the french fries to the desirable amount. The french fries may be provided as raw potato sticks, but may also be provided as precooked potato sticks.

[0003] Such cooking of french fries has a number of drawbacks, one of which being that the heating of the bath of hot oil requires substantial energy and time and in particular if not used regularly, the storage of such a bath of oil is problematic. Furthermore, such a bath of hot oil gives rise to fumes, which have to be eliminated by means of expensive ventilation etc. Additionally, such a bath of hot oil has to be exchanged regularly, so only if used intensely and regularly, keeping of such a bath is economic and at the same time leads to high-quality french fries.

[0004] Therefore, there is a number of products on the market, eliminating the need for a bath of hot oil. On the one hand there is precooked and pre-fried french fries, which can be heated in conventional ovens. However, due to the moisture in the french fries which cannot escape in a conventional oven, and due to close contact between individual potato sticks, the quality of such heated french fries is generally quite low in terms of crispiness and moisture.

[0005] Several devices for heating french fries trying to eliminate the above-mentioned problems have been proposed. For example there is US 5,690,018 disclosing an oven using heat radiation. US 5,445,073 discloses an oven in which the french fries are heated by a stream of hot air which is guided through the french fries from the bottom and at least partially lifts and moves the french fries during the heating process. Also WO 97/37575 discloses an oven in which the stream of hot air moves the french fries, but in this case the movement is additionally supported by a vibration of the container in which the french fries are stored. Another device is known from US 4865 864A.

[0006] Problematic in the case of all these ovens according to the state-of-the-art is the fact that if the french fries are not moved, normally due to the contact between individual potato sticks the heating is not efficient enough and leads to unheated areas, and that if the french fries are moved there is a high risk of damaging at least some of the french fries. So there is a need for a device for heating individual portions or small numbers of portions of french fries or more generally foodstuff comprising individual small units leading to an efficient and very quick overall heating of the french fries without destroying the french fries, and providing optimum taste qualities like crispiness, moisture, etc..

SUMMARY OF THE INVENTION

[0007] The objective problem underlying the present invention is therefore to provide an improved device for heating foodstuff, in particular french fries or some other foodstuff being formed of a limited number of individual pieces or parts. So apart from french fries also spring rolls, potato croquettes and the like shall be heatable by such device. In more detail, the present invention relates to the improvement of an oven for heating foodstuff, in particular french fries, by means of hot air circulating in a substantially closed circle, wherein circulation of the air is forced, preferably by a fan or a blower.

[0008] The present invention solves the above problem with an oven according to claim 1, and in that the foodstuff is contained in at least one receptacle at least one or two of the walls of which is at least partially penetrable to the circulating hot air, in that the receptacle is at least partially enclosed towards its penetrable wall(s) by walls of a container, wherein there is a spacing between the respective walls of the receptacle and the walls of the container, and in that hot air is entering the receptacle and/or the container substantially from an upper side. Furthermore, in the region into which the hot air is entering the receptacle and/or the container, the side wall of the container is inclined with respect to a horizontal plane by a first angle α and a corresponding penetrable side wall of the receptacle is inclined with respect to said horizontal plane by a second angle β, wherein the first angle α is smaller than 90° and larger than the second angle β.

[0009] The object of the present invention is therefore a device according to claim 1.

[0010] The key feature of the invention is therefore the fact that hot air is entering the region in which the foodstuff is to be heated from an upper side, impinges onto the tilted side wall of the container, the tilt angle of which is smaller than 90°, and is thus deviated into the receptacle through the penetrable tilted side wall of the receptacle correspondingly being guided through the foodstuff kept in the receptacle. Due to the fact that the tilt angles α and β are different from each other, and due to the fact that α is larger than β, there is provided a region between the receptacle and the container which opens up towards the bottom of the container and/or the receptacle. Therefore a very efficient and homogeneous distribution of the flow of hot air not only in the interspace between the walls of the receptacle and the container but also within the

receptacle can be achieved. It proves to be advantageous to provide a planar tilted wall of the container as well as of the receptacle. When mentioning horizontal orientation, the horizontal plane is defined if the device is put in normal operation onto some horizontal table or the like.

[0011] Correspondingly, if the term vertical is used for orientation it is vertical to this horizontal plane. The air may enter the interior of the container either directly into the space between the tilted side wall of the receptacle and the tilted side wall of the container, but it is also possible that at least partially the hot air enters the container by first passing through a part of the tilted side wall of the receptacle and subsequently flowing into the space between the tilted side wall of the receptacle and the tilted side wall of the container. Preferentially, an (imagined) intersection line between the tilted side wall of the receptacle and the tilted side wall of the container is aligned substantially horizontally. Typically, the receptacle as well as the container is of elongate shape, i.e. lateral side walls on the upper side of the receptacle are longer than the tilted sides and a side opposite to the tilted side. The hot air entering the receptacle and/or the container first enters in the region of the space between the two tilted walls, passes through the receptacle and the foodstuff contained therein, and then exits towards the upper side of the receptacle back into a heating section of the oven. So in case of an elongate receptacle, the hot air enters from the top on one side in a substantially vertical direction then turns around, passes the foodstuff, and is diverted upside again to exit the receptacle in a substantially vertical direction. A closed circle of the air can thus be provided, and smelly fumes can be avoided.

[0012] Thus, in a first preferred embodiment of the present invention, the oven according to the invention is characterised in that hot air is entering the receptacle and/or the container substantially from a vertical direction perpendicular to said horizontal plane, and preferentially that after having entered and passed through the foodstuff the air exits the receptacle and/or the container again towards the upper side, preferentially in a vertical direction.

[0013] According to another preferred embodiment of the present invention, the device is characterised in that said first angle α is about twice as large as said second angle β. Typically, the first angle α is smaller than 80°, preferentially smaller than 75°, even more preferentially in a range between 70 and 60°. The second angle β can be chosen to be smaller than 50 °, preferentially smaller than 45°, even more preferentially in a range between 40 and 30°.

[0014] Another preferred embodiment of the present invention is characterised in that the receptacle has an opening towards its upper side, and in that preferentially all the side walls as well as the bottom wall are penetrable to the hot air. If these side walls are well spaced from the walls of the container, a very efficient flow and distribution of hot air is allowed, thus leading to a very efficient and homogeneous heating process. Particularly good results can be achieved if furthermore the receptacle has walls made of a grid or mesh, preferentially made of metal, wherein preferentially there is a horizontal bottom grid, a vertical backside grid and two vertical side grids aligned substantially parallel to each other, as well as a tilted front grid. Alternatively, the walls can be made of perforated material like perforated metal plates.

[0015] If, as preferred, at least parts of the hot air entering the region first pass a gap between the tilted wall of the receptacle and the tilted wall of the container, the receptacle furthermore comprises a horizontal grid portion adjacent to the tilted front grid substantially in the plane of the opening towards the upper side of the receptacle. This horizontal grid portion is then first penetrated prior to entering the region between the two tilted walls.

[0016] Since the foodstuff normally lies more densely towards the bottom side of the receptacle, particularly homogeneous and effective ventilation of this region is very important. To make sure that this effectively takes place, the bottom wall of the container is preferentially spaced from the bottom grid of the receptacle by e.g. 1 centimetre. To keep this distance well-defined, it is therefore advantageous to provide the receptacle furthermore with a nose for keeping its bottom grid in a defined spacing from the bottom wall of the container. This nose or protrusion is preferentially made of the same material as the side walls of the receptacle, i.e. may be an extension made of metal grid or the like.

[0017] According to another preferred embodiment of the present invention the container comprises a horizontal bottom wall, a vertical backside wall and two vertical side walls aligned substantially parallel to each other, as well as a tilted front wall, all of which are not penetrable to the hot air and which are preferentially made of coated or uncoated metal, but also synthetic material like heat-resistant plastic or the like is possible. In this case, it may be advantageous to design the receptacle such that it fits into the container such that hot air entering the container and/or the receptacle at least partially passes a vertical grid portion which is part of the receptacle, which is preferentially aligned adjacent to the tilted side grid of the receptacle and is aligned substantially vertically.

[0018] For particularly easy operation it is possible, according to another preferred embodiment, to provide a slidable insert, into which the receptacle is inserted, and which can be shifted into the oven and thus into the stream of hot air of the oven. So in a typical mode of operation, the slidable insert into which the container is removably incorporated is drawn out of the oven, the receptacle filled with foodstuff is inserted into the container from the top and thus into this part of the insert, and the whole insert is subsequently shifted back into the main body of the oven, thus moving it into the circulating hot air. For easy cleaning of the container (normally small bits and parts of the french fries as well as oil and water drop down through the permeable side walls of the re-

ceptacle during the heating process) the container can be taken out of the insert and cleaned separately.

[0019] According to another preferred embodiment of the present invention, heating of the air takes place in a heating cavity located upstream of the fan. Heating elements like heating coils may be provided in this heating cavity, either directly or in particular compartments such that transfer of heat only takes place along walls. Preferentially, the unit for heating as well as actuating the air is located above the compartments, in which the receptacle and the container are located.

[0020] Preferentially, substantially immediately upstream of the section for heating the hot air and/or substantially immediately upstream of the receptacle and/or the container there is provided filtering means for the air. These filtering means may be perforated or mesh-like structures made of metal or synthetic material, preferably additionally retaining condensed water present in the circulating hot air. The filtering means can be a semi-permeable membrane permeable to air and steam but impermeable to condensed water. Possible is for example a GoreTex® membrane.

[0021] The receptacle may be designed to have a volume in the range of 1 - 2 litres. Preferably the volume for taking up pre-fried or precooked convenience food amounts to about 1.7 litres. Generally speaking, the receptacle is designed to take up one portion or several portions of the foodstuff, wherein typically one portion of pre-fried French fries amounts to normally less than about 400 g and may e.g. be in the range of 80 - 150 g. For other convenience food (e.g. rösti, spring rolls) also portions of up to 700 g may be heated in such a receptacle, whereby longer heating times may have to be put off with. Such a receptacle for one.portion can be heated up ready to eat in a time-span in the range of or less than one minute.

[0022] A method for heating foodstuff by means of hot air in a substantially closed circle, preferably using an oven as described above is not part of the invention. The method is preferentially characterised in that the circulating hot air is heated to a temperature in the range of 180-250° C, preferentially heating a portion of french fries within a time-span in the range of one minute. Normally, during the heating process the foodstuff is not substantially moving within the receptacle, thus avoiding (partial) destruction of the foodstuff. Particularly easy operation is made possible if the heating process is initiated after having read a barcode e.g. provided on the package of the foodstuff to be heated, preferentially indicating particular heating conditions adapted to the foodstuff contained in the package.

[0023] Further embodiments of the present invention are outlined in the dependent claims.

SHORT DESCRIPTION OF THE FIGURES

[0024] In the accompanying drawings preferred embodiments of the invention are shown in which:

figure 1 shows a schematic cut through an oven according to a preferred embodiment of the invention;

figure 2 shows detailed perspective views of individual elements of an oven according to a preferred embodiment of the invention, wherein a) shows the basket for the foodstuff, b) the container for taking up the basket, c) the sliding insert for moving the foodstuff into the oven, e) the housing part as well as the upper part of the oven without covering elements; and

figure 3 shows a schematic cut through an oven according to a preferred embodiment of the invention indicating the circulating flow of air.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0025] Referring to the drawings, which are for the purpose of illustrating the present preferred embodiments of the invention and not for the purpose of limiting the same, figure 1 shows a schematic cut through an oven 1 according to a first preferred embodiment of the present invention. The direction of the cut is parallel to the front side of the oven 1.

[0026] The oven 1 comprises an upper part, in which the heating cavity 8 as well as the means for the propulsion of the stream of air is located. Propulsion of the air is achieved by a fan 20, which is located in a housing 7. The fan 20 is energised by a motor 6. Such a motor normally has a power in the range of 195 Watt leading to an effective circulation of air of about 200m^3/h at a static pressure of 500 Pa. In conjunction with the regulated air temperature at the exit of the blower of in the range of 195 to 205 °C this leads to heating of the food within about 2 minutes. If the machine is to be designed in other dimensions for example for taking up more portions, the power as well as the circulation have to be scaled up accordingly. The axis of the motor is arranged parallel to the front side of the oven.

[0027] In the lower part of the oven there is located a container 4, which comprises a tilted front wall 4a on the fan side of the oven, a bottom wall 4b, two lateral side walls 4c parallel to the front side of the oven, and one backside wall 4d. The bottom wall 4b is arranged horizontally, and the tilted wall 4a encloses an angle α with the horizontal plane which is different from 90°. In this particular case the angle α is 66°. On the top edges of the tilted front wall 4a, the lateral side walls 4c and the backside wall 4d there is provided salient horizontal borders 4e, allowing to fix or hold the container 4 within an insert. The walls of the container are made of a heat resistant material, like for example metal, coated metal, heat resistant polymeric materials, etc. In this particular embodiment, INOX was chosen as the material for the

walls of the container 4.

[0028] Within the container 4, there is located a basket 2, into which the foodstuff is to be put for heating. The basket 2 comprises a tilted front wall 2a on the fan side of the oven, a bottom wall 2b, two lateral side walls 2c parallel to the front side of the oven, and one backside wall 2d. The bottom wall 2b is arranged horizontally, and the tilted wall 2a encloses an angle β with the horizontal plane which is different from 90° and in any case smaller than the above-mentioned angle α of the container 4. In this particular case the angle β is 35 °. The walls of the basket 2 are all permeable to air, and are made of a grid of metal wires (INOX) with a thickness of 0.8 mm, and with a spacing of 8 x 8 mm.

[0029] Due to the different tilt angles of the wall 4a of the container and of the grid 2a of the basket 2 there is a region or empty space 12 which becomes wider towards the bottom of the container. The air entering this region 12 from the top gets well distributed around the basket 2 due to this shape of the empty space 12. The basket 2 furthermore comprises a nose 26, which makes sure that the basket 2, if inserted into the container 4 does not touch the bottom of the container, i.e. that there remains an empty space 13 between the two bottom walls 2b and 4b. This empty space 13 furthermore improves homogeneous and efficient circulation of the air around the basket and homogeneous entry into the basket and through the foodstuff located in the basket.

[0030] Arrows indicate the dimensions chosen for individual parts of the oven 1, so the length a of the heating cavity 8 is 205 mm, the height b of the heating cavity is 145 mm, the width d of the channel for entry of air into the heating cavity 8 is 130 millimetre, the height e of the housing for the fan is 265 mm, the width f of this housing is 106 mm, and the width g of the room for the motor is 130mm.

[0031] The two tilted walls 2a and 4a are not arranged adjacent to each other, but there remains a spacing in the top region. In this spacing there is provided a horizontal grid portion 3 of the basket 2, such that if hot air is entering from the top in this region, it passes this horizontal grid portion.

[0032] In figure 2 perspective views of individual parts of the oven are given. Figure 2a shows the basket 2. It can be seen, that there is provided a handle 14, made of a bent thick metal wire, and which, if the basket 2 is inserted into the container 4 and into the insert 16 in the oven 1 sticks out of the oven. It allows easy handling of the basket for filling it with foodstuff and inserting and removing the basket into and from the oven. It may be slightly bent downwards to facilitate handling, and extends approximately 15 to 20 cm away from the edge of the basket 2. The basket has a depth of 90 mm, and if for the angle β a value of 35° is chosen, the bottom part of the basket has a length of 60 mm. The basket furthermore has a height of 140mm and a length at its top edge of 160 mm. The horizontal grid portion 3 has a length of approximately 35mm.

[0033] Figure 2b) shows the container 4 if removed from the insert 16. In this view it can be seen that it comprises a horizontal border 4e along the top edge, with one recess for the handle 14 of the basket.

[0034] Figure 2c) shows the insert 16, which comprises a front wall of or front plate 18 as well as two lateral track rails 17 as means for easy shifting of the insert into and out of the oven 1. It furthermore comprises an opening 19 on the top, adapted to take up the container 4 such that its border 4e comes to lie on top of the edge portion of the insert 16 thus supporting the container 4 in the insert 16.

[0035] The lateral side walls 4c of the container are spaced from each other by 92mm (depth), the height of the container is 155mm and its length on the bottom side is 230 mm. The opening on the top has a size of 298 x 92 mm. The angle α is chosen to be 66°. The border 4e has a width of approximately 10-15 mm.

[0036] Figure 2 d) shows a view of the lower housing of the oven and as well as of the top parts of it. In the lower part there is provided a basically rectangular box into which the insert 16 fits and can be shifted into and out of by means of movable rails 15. On the top part one can see that the heating cavity on the left side is provided with an opening 9 for entry of the air having passed the foodstuff region into the heating cavity 8. On the right side of the top portion of the oven 1 there is provided the housing 7 for the fan 20, as well as the motor 6. The housing 7 of the motor is adapted to take in the air from the heating cavity 8 and to blow it into the lower part via an exit 11.

[0037] Figure 3 shows the principal air flows in an oven according to another preferred embodiment. In the heating cavity 8 the hot air gets heated by means of heating elements 21 along which or through which the hot air is flowing. The surface of these heating elements may have temperatures of about 500° C, while the heating elements 21 are regulated to give rise to a temperature of the air in the range of 200°C. This choice was found to lead to an optimal heating of the foodstuff, but also for user safety reasons higher temperatures should be avoided. There is provided two temperature sensors 27 for this regulation, one safety sensor 27 basically in the centre of the cavity 8, and one 27 for the actual regulation of the heating elements 21 is located in the exit region of the fan or blower 20. In particular the heating element 21 immediately downstream of the receptacle (region of arrow 23 in Figure 3) is adjusted to have a high surface temperature in the range of 500° C such as to ensure burning (pyrolysis) of grease components present in the circulating hot air and to keep them away from the blower 20. This heating element correspondingly partially acts as a filter. The heating elements 21 can be provided on the entrance side as well as on the exit side of the heating cavity 8 or both. Downstream of the heating cavity 8 there is located the fan 20, which blows the hot air 22 through a filter 25. The length k of this opening for the filter 25 is approximately 70 mm. The hot air enters the region of

the foodstuff 28 on the right side of the basket 2 and/or of the container 4 and partially flows around the basket 2 entering it through all the permeable walls 2a-2d from all sides. It subsequently exits as colder air 23 the region of the foodstuff vertically in another direction, first passes a second filter 24 and then enters the heating cavity 8. The length h of the second filter 24 is 127 mm.

[0038] The filters 25 and 24 can be metal wire meshes, wherein the metal wires (INOX) have a thickness of 0.5 mm and are spaced from each other by 1.5 mm. Alternatively, one or both of these filters can be substituted or supplemented by filters additionally eliminating condensed water from the circulating hot air. This is for example possible by filters with semi-permeable membranes made of polytetrafluoroethylene, like e.g. available under the trade name GoreTex®.

LIST OF REFERENCE NUMERALS

[0039]

1	oven
2	basket
2a	tilted front grid of 2
2b	bottom grid of 2
2c	side grid of 2
2d	backside grid of 2
3	horizontal grid portion on 2
4	container
4a	tilted front wall of 4
4b	bottom wall of 4
4c	side wall of 4
4d	backside wall of 4
4e	border of 4
5	frame of 1
6	motor
7	housing for fan
8	heating cavity
9	entry into 8
10	exit from 8, entry into 7
11	exit from 7
12	empty space between 2a and 4a
13	empty space between 2b and 4b
14	handle of 2
15	rail for insert
16	insert
17	Track rails on insert
18	front plate of insert
19	opening in 16 for 4
20	fan
21	heating elements
22	hot air entering food area
23	"cool" air exiting food area
24	metal grid
25	metal grid
26	nose on 2
27	temperature sensor
28	foodstuff, French fries
α	inclination angle of 4a
β	inclination angle of 2a

Claims

1. Oven (1) for heating foodstuff (28), in particular french fries (28), by means of hot air (22, 23) circulating in a substantially closed circle, wherein circulation of the air (22, 23) is forced, preferably by a fan or a blower (20),
characterised in that
the foodstuff (28) is contained in at least one receptacle (2) at least one or two of the walls (2a-2d) of which are penetrable to at least parts of the circulating hot air (22, 23),
that the receptacle (2) is at least partially enclosed towards its penetrable walls (2a-2d) by walls (4a-4d) of a container (4), wherein there is a spacing between at least one of the respective walls (2a-2d) of the receptacle and at least one of the walls (4a-4d) of the container (4),
that hot air (22) is entering the receptacle (2) and/or the container (4) preferably substantially from an upper side,
and that
in the region (12) into which the hot air (22) is entering the receptacle (2) and/or the container (4), a side wall (4a) of the container (4) is inclined with respect to a horizontal plane by a first angle (α) and a corresponding penetrable side wall (2a) of the receptacle (2) is inclined with respect to said horizontal plane by a second angle (β), wherein the first angle (α) is smaller than 90° and larger than the second angle (β).

2. Oven (1) according to claim 1, **characterised in that** hot air (22) is entering the receptacle (2) and/or the container (4) substantially from a vertical direction perpendicular to said horizontal plane.

3. Oven (1) according to any of the preceding claims, **characterised in that** said first angle (α) is about twice as large as said second angle (β).

4. Oven (1) according to any of the preceding claims, **characterised in that** the first angle (α) is smaller than 80°, preferentially smaller than 75°, even more preferentially in a range between 70 and 60°.

5. Oven (1) according to any of the preceding claims, **characterised in that** the second angle (β) is smaller than 50 °, preferentially smaller than 45°, even more preferentially in a range between 40 and 30°.

6. Oven (1) according to any of the preceding claims, **characterised in that** the receptacle (2) has an opening towards its upper side, and **in that** prefer-

entially all the side walls (2a, 2c, 2d) as well as the bottom wall (2b) are penetrable to the hot air.

7. Oven (1) according to any of the preceding claims, **characterised in that** the receptacle (2) has walls (2a-2d) made of a grid or mesh, preferentially made of metal, wherein preferentially there is a horizontal bottom grid (2b), a vertical backside grid (2d) and two vertical side grids (2c) aligned substantially parallel to each other, as well as a tilted front grid (2a).

8. Oven (1) according to claim 7, **characterised in that** the receptacle (2) furthermore comprises a horizontal grid portion (3) adjacent to the tilted front grid (2a) substantially in the plane of the opening towards the upper side of the receptacle (2).

9. Oven (1) according to 1 of the claims 7 or 8, **characterised in that** the receptacle (2) furthermore comprises a nose (26) for keeping its bottom grid (2b) in a defined spacing from the bottom wall (4b) of the container (4), wherein preferentially the distance between the bottom grid (2b) and the bottom wall (4b) of the container (4) is more than 10 mm.

10. Oven (1) according to any of the preceding claims, **characterised in that** the container (4) comprises a horizontal bottom wall (4b), a vertical backside wall (4d) and two vertical side walls (4c) aligned substantially parallel to each other, as well as a tilted front wall (4a), all of which are not penetrable to the hot air and which are preferentially made of coated or uncoated metal.

11. Oven (1) according to one of the claims 7-9 as well as claim 10, **characterised in that** the receptacle (2) fits into the container (4) such that hot air (22) entering the container (4) and/or the receptacle (2) at least partially passes a horizontal grid portion (3) which is part of the receptacle (2), which is preferentially aligned adjacent to the tilted side grid (2a) of the receptacle (2).

12. Oven (1) according to any of the preceding claims, **characterised in that** there is a slidable insert (16) into which the receptacle (4) and/or the container (2) is/are inserted, and which can be shifted into the oven (1) and thus into the stream of hot air of the oven (1).

13. Oven (1) according to any of the preceding claims, **characterised in that** heating of the air takes place in a heating cavity (8) located upstream of the fan (20).

14. Oven (1) according to any of the preceding claims, **characterised in that** hot air is entering the receptacle (2) and/or the container (4) from an upper side, preferentially in a substantially vertical direction, **in that** after having passed through the foodstuff (28) and thus having heated the foodstuff (28) is guided upwards and exits the receptacle (2) and/or the container (4) on its upper side, preferentially in a substantially vertical direction, and **in that** heating as well as the driving of the circulation (20) takes place in a portion of the oven located above the receptacle (2) and/or the container (4).

15. Oven (1) according to any of the preceding claims, **characterised in that** substantially immediately upstream of the section for heating the hot air (8) and/or substantially immediately upstream of the receptacle (2) and/or the container (4) there is provided filtering means (24, 25) for the air (22, 23), wherein preferentially said filtering means are mesh-like structures made of metal or synthetic material, preferably additionally retaining condensed water present in the circulating hot air.

16. Oven (1) according to claim 15, **characterised in that** the filtering means (24, 25) can be fixed by means of magnets, and/or the filtering means (24, 25) are provided with indication means for indicating required changing, preferably in the form of a colour change of pressure loss sensor.

17. Oven (1) according to one of claims 15 or 16, **characterised in that** the filtering means are a semipermeable membrane permeable to air and steam but not to condensed water.

18. Oven (1) according to any of the preceding claims, **characterised in that** the receptacle (2) is designed to take up one portion of french fries to be heated within a timespan of in the range or less than one minute.

19. Oven (1) according to any of the preceding claims, **characterised in that** it is further provided with heating means based on microwave and/or on steamers.

20. Oven (1) according to any of the preceding claims, **characterised in that** it is provided with means for moving the foodstuff (28) in the receptacle (2) while the heating takes place, wherein preferably such means involve high-frequency or ultrasonic vibration.

21. Oven (1) according to any of the preceding claims, **characterised in that** automatic temperature control means (27) are provided to ensure a desired temperature profile during a heating cycle and/or for ensuring security requirements.

22. Oven (1) according to any of the preceding claims, **characterised in that** it is provided with identifica-

tion means to prevent a user from inserting prohibited foodstuff into the machine and/or for automatic control of the heating cycle (temperature profile, a length etc.) based on the quantity and the type of the foodstuff.

23. Oven (1) according to any of the preceding claims, **characterised in that** means of absorbing excess fats and odours are provided, such as active elements like charcoal, positioned at any convenient position in the air circulation path within the oven.

24. Oven (1) according to any of the preceding claims, **characterised in that** all or parts of the receptacle (2) and/or the container (4) are made of or aligned with a disposable element in order to reduce and/or eliminate the need for cleaning.

25. Oven (1) according to any of the preceding claims, **characterised in that** the circulating airflow is pulsed through the use of some dynamic element within the airflow system, wherein such dynamic element is preferably a flap valve and/or rotating element containing both open and close to portion to successively prevent and allow the flow of air.

26. Oven (1) according to any of the preceding claims, **characterised in that** swirl generators are provided in the air path in order to increase turbulence and heating effect of the foodstuff, wherein preferably the swirl generators are given by static vanes positioned at the location (22) were hot air is entering the food area.

27. Oven (1) according to any of the preceding claims, **characterised in that** means are provided to prevent users from opening the machine during a heating cycle.

28. Oven (1) according to any of the preceding claims, **characterised in that** means are provided for introducing additional flavourings to influence the taste of the foodstuff during the heating cycle.

29. Oven (1) according to any of the preceding claims, **characterised in that** the receptacle (2) comprises multiple cavities enabling the heating of multiple foodstuff types without cross-contamination of one type to another.

Patentansprüche

1. Ofen (1) zum Erhitzen von Lebensmitteln (28), insbesondere Pommes (28), mittels Heißluft (22, 23), die in einem im Wesentlichen geschlossenen Kreislauf zirkuliert, wobei die Zirkulation der Luft (22, 23) vorzugsweise durch einen Ventilator oder ein Gebläse (20) forciert ist,
dadurch gekennzeichnet,
dass die Lebensmittel (28) in mindestens einer Aufnahme (2) enthalten sind, wobei mindestens eine oder zwei der Wände (2a-2d) für mindestens Teile der zirkulierenden Heißluft (22, 23) durchdringbar sind,
dass die Aufnahme (2) zumindest teilweise gegen ihre durchdringbaren Wände (2a-2d) durch Wände (4a-4d) eines Behälters (4) umschlossen ist, wobei ein Abstand zwischen mindestens einer der Wand (2a-2d) der Aufnahme und mindestens einer Wand (4a-4d) des Behälters (4) besteht,
dass Heißluft (22) in die Aufnahme (2) und/oder den Behälter (4) vorzugsweise im Wesentlichen von einer Oberseite her eindringt,
und **dass**
in dem Bereich (12), in dem die Heißluft (22) in die Aufnahme (2) und/oder den Behälter (4) eintritt, eine Seitenwand (4a) des Behälters (4) in Bezug zu einer horizontalen Ebene um einen ersten Winkel (α) geneigt ist, und eine entsprechende durchdringbare Seitenwand (2a) der Aufnahme (2) in Bezug zu der horizontale Ebene um einen zweiten Winkel (β) geneigt ist, wobei der erste Winkel (α) kleiner als 90° und größer als der zweite Winkel (β) ist.

2. Ofen (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** Heißluft (22) in die Aufnahme (2) und/oder den Behälter (4) im Wesentlichen von einer vertikalen Richtung senkrecht zu der horizontalen Ebene eintritt.

3. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der erste Winkel (α) etwa doppelt so groß ist wie der zweite Winkel (β).

4. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der erste Winkel (α) kleiner ist als 80°, vorzugsweise kleiner als 75°, vorzugsweise in einem Bereich zwischen 70 und 60° liegt.

5. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der zweite Winkel (β) kleiner ist als 50°, vorzugsweise kleiner als 45°, vorzugsweise in einem Bereich zwischen 40 und 30°.

6. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Aufnahme (2) eine Öffnung zu ihrer Oberseite hin hat, und dass vorzugsweise alle Seitenwände (2a, 2c, 2d) sowie die Bodenwand (2b) für Heißluft durchdringbar sind.

7. Ofen (1) nach einem der vorhergehenden Ansprü-

che, **dadurch gekennzeichnet, dass** die Aufnahme (2) Wände (2a-2d) hat, die aus Gitter oder Netz bestehen, vorzugsweise aus Metall, wobei vorzugsweise ein horizontales Bodengitter (2b), ein vertikales Rückseitengitter (2d) und zwei vertikale Seitengitter (2c) im Wesentlichen parallel zueinander ausgerichtet sowie ein schräges Frontgitter (2a) vorhanden sind.

8. Ofen (1) nach Anspruch 7, **dadurch gekennzeichnet, dass** die Aufnahme (2) ferner einen horizontalen Gitterabschnitt (3) neben dem geneigten Frontgitter (2a) im Wesentlichen in der Ebene der Öffnung zu der Oberseite der Aufnahme (2) hin aufweist.

9. Ofen (1) nach einem der Ansprüche 7 oder 8, **dadurch gekennzeichnet, dass** die Aufnahme (2) ferner eine Nase (26) aufweist, um ihr Bodengitter (2b) in einer definierten Entfernung von der Bodenwand (4b) des Behälters (4) zu halten, wobei die Entfernung zwischen dem Bodengitter (2b) und der Bodenwand (4b) des Behälters (4) vorzugsweise größer ist als 10 mm.

10. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Behälter (4) eine horizontale Bodenwand (4b), eine Rückseitenwand (4d) und zwei vertikale Seitenwände (4c) aufweist, die im Wesentlichen zueinander parallel ausgerichtet sind, sowie eine geneigte Vorderwand (4a), von welchen alle nicht für Heißluft durchdringbar sind und die vorzugsweise aus beschichtetem oder unbeschichtetem Metall bestehen.

11. Ofen (1) nach einem der Ansprüche 7 bis 9 sowie Anspruch 10, **dadurch gekennzeichnet, dass** die Aufnahme (2) derart in den Behälter (4) passt, dass Heißluft (22), die in den Behälter (4) und/oder die Aufnahme (2) eindringt, zumindest teilweise durch einen horizontalen Gitterabschnitt (3) durchgeht, der zu der Aufnahme (2) gehört, der vorzugsweise neben dem geneigten Seitengitter (2a) der Aufnahme (2) ausgerichtet ist.

12. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** er einen schiebbaren Einsatz (16) aufweist, in den die Aufnahme (2) und/oder der Behälter (4) eingefügt wird/werden, und der in den Ofen (1) und daher in die Heißluftströmung des Ofens (1) geschoben werden kann.

13. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Erhitzen der Luft in einem Heizhohlraum (8) stromaufwärts des Ventilators (20) erfolgt.

14. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** Heißluft in die Aufnahme (2) und/oder den Behälter (4) von einer oberen Seite her eintritt, vorzugsweise in eine im Wesentlichen vertikale Richtung, dass sie, nachdem sie durch das Lebensmittel (28) durchgegangen ist und daher das Lebensmittel (28) erhitzt hat, aufwärts geführt wird und die Aufnahme (2) und/oder den Behälter (4) auf seiner Oberseite verlässt, vorzugsweise in eine im Wesentlichen vertikale Richtung, und dass das Erhitzen sowie das Antreiben der Zirkulation (20) in einem Abschnitt des Ofens stattfinden, der sich über der Aufnahme (2) und/oder dem Behälter (4) befindet.

15. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** im Wesentlichen unmittelbar stromaufwärts des Abschnitts zum Erhitzen der Heißluft (8) und/oder im Wesentlichen unmittelbar stromaufwärts von der Aufnahme (2) und/oder dem Behälter (4) ein Filtermittel (24, 25) für die Luft (22, 23) bereitgestellt ist, wobei das Filtermittel vorzugsweise eine netzartige Struktur ist, die aus Metall oder Kunststoff hergestellt ist, die vorzugsweise zusätzlich Kondenswasser zurückhält, das in der zirkulierenden Heißluft gegenwärtig ist.

16. Ofen (1) nach Anspruch 15, **dadurch gekennzeichnet, dass** das Filtermittel (24, 25) mittels Magneten befestigt werden kann, und/oder dass das Filtermittel (24, 25) mit Anzeigemittel zum Anzeigen des erforderlichen Austauschens versehen ist, vorzugsweise in Form eines Farbwechsels des Druckverlustsensors.

17. Ofen (1) nach einem der Ansprüche 15 oder 16, **dadurch gekennzeichnet, dass** das Filtermittel eine halbdurchlässige Membran ist, die für Luft und Dampf aber nicht für Kondenswasser durchlässig ist.

18. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Aufnahme (2) konzipiert ist, um eine Portion Pommes aufzunehmen, die innerhalb einer Zeitspanne in dem Bereich von oder weniger als einer Minute zu erhitzen ist.

19. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** er ferner mit Heizmitteln versehen ist, die auf Mikrowelle und/oder Dampferzeugern beruhen.

20. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** er mit Mitteln zum Bewegen der Lebensmittel (28) in der Aufnahme (2) während des Durchführens des Erhitzens versehen ist, wobei diese Mittel vorzugsweise Hochfrequenz- oder Ultraschallvibration involvieren.

21. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** ein automatisches Temperaturkontrollmittel (27) bereitgestellt ist, um ein wünschenswertes Temperaturprofil während eines Heizzyklus und/oder zum Sicherstellen von Sicherheitsanforderungen bereitzustellen.

22. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** er mit Identifikationsmitteln versehen ist, um zu vermeiden, dass ein Benutzer verbotene Lebensmittel in die Maschine einfügt, und/oder zur automatischen Kontrolle des Heizzyklus (Temperaturprofil, eine Länge usw.) basierend auf der Menge und dem Typ des Lebensmittels.

23. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** Mittel zum Absorbieren von überschüssigem Fett und Gerüchen bereitgestellt sind, wie zum Beispiel aktive Elemente wie Aktivkohle, die in einer geeigneten Position in dem Luftzirkulationsweg innerhalb des Ofens positioniert sind.

24. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die ganze Aufnahme (2) oder ein Teil der Aufnahme (2) und/oder des Behälters (4) bestehen aus oder gefluchtet sind mit einem Wegwerfelement, um den Bedarf an Reinigen zu verringern und/oder zu eliminieren.

25. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der zirkulierende Luftstrom durch den Einsatz eines dynamischen Elements innerhalb des Luftstromsystems gepulst wird, wobei ein solches dynamisches Element vorzugsweise ein Klappenventil und/oder ein Drehelement ist, das sowohl einen offenen als auch einen geschlossenen Abschnitt aufweist, um nacheinander das Fließen von Luft zu erlauben und zu verhindern.

26. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** Wirbelstromgeneratoren in dem Luftweg bereitgestellt sind, um die Turbulenz und die Heizwirkung der Lebensmittel zu steigern, wobei die Wirbelstromgeneratoren vorzugsweise aus statischen Schaufeln bestehen, die an der Stelle (22) positioniert sind, wo die Heißluft in die Lebensmittelzone eintritt.

27. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** Mittel bereitgestellt sind, um den Benutzer daran zu hindern, die Maschine während eines Heizzyklus zu öffnen.

28. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** Mittel bereitgestellt sind, um zusätzliche Geschmacksstoffe einzuführen, um den Geschmack der Lebensmittel während des Heizzyklus zu beeinflussen.

29. Ofen (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Aufnahme (2) mehrere Hohlräume aufweist, die das Erhitzen mehrerer Lebensmitteltypen ohne gegenseitige Kontamination von einem Typ zum anderen ermöglichen.

Revendications

1. Four (1) pour le chauffage d'aliments (28), en particulier des pommes de terre frites (28), au moyen d'air chaud (22, 23) circulant en circuit substantiellement fermé, dans lequel la circulation de l'air (22, 23) est forcée, de préférence par un ventilateur ou une soufflante (20), **caractérisé en ce que** les aliments (28) sont contenus dans au moins un réceptacle (2) dont au moins une ou deux des parois (2a - 2d) peuvent être pénétrées par au moins des parties de l'air chaud en circulation (22, 23), que le réceptacle (2) est au moins partiellement enclos, du côté de ses parois pénétrables (2a - 2d) par des parois (4a - 4d) d'un conteneur (4), et il se trouve un espace entre au moins l'une des parois respectives (2a - 2d) du réceptacle et au moins l'une des parois (4a - 4d) du conteneur (4), que l'air chaud (22) entre de préférence dans le réceptacle (2) et / ou le conteneur (4) substantiellement par un côté supérieur, et que, dans la région (12) dans laquelle l'air chaud (22) entre dans le réceptacle (2) et / ou le conteneur (4), une paroi latérale (4a) du conteneur (4) est inclinée par rapport à un plan horizontal d'un premier angle (α) et une paroi latérale pénétrable correspondante (2a) du réceptacle (2) est inclinée par rapport audit plan horizontal d'un deuxième angle (β), le premier angle (α) étant inférieur à 90° et supérieur au deuxième angle (β).

2. Four (1) suivant la revendication 1, **caractérisé en ce que** l'air chaud (22) entre substantiellement dans le réceptacle (2) et / ou le conteneur (4) selon une direction verticale perpendiculaire audit plan horizontal.

3. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le premier angle (α) est environ double du deuxième angle (β).

4. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le premier angle (α) est de préférence de moins de 80°, de préférence de 75°, plus préférablement même de l'ordre de 70 à 60°.

5. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le deuxième angle (β) est de moins de 50°, de préférence de moins de 45°, plus préférablement même de l'ordre de 40 à 30°.

6. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le réceptacle (2) possède une ouverture vers son côté supérieur, et que de préférence toutes les parois latérales (2a, 2c, 2d) ainsi que la paroi inférieure (2b) sont pénétrables par l'air chaud.

7. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le réceptacle (2) possède des parois (2a - 2d) constituées d'une grille ou d'un tamis, de préférence en métal, et il se trouve de préférence une grille inférieure horizontale (2b), une grille verticale arrière (2d) et deux grilles verticales latérales (2c) alignées de manière à être substantiellement parallèle entre elles, ainsi qu'une grille frontale inclinée (2a).

8. Four (1) suivant la revendication 7, **caractérisé en ce que** le réceptacle (2) comprend en outre une partie de grille horizontale (3) adjacente à la grille frontale inclinée (2a), substantiellement dans le plan de l'ouverture vers le côté supérieur du réceptacle (2).

9. Four (1) suivant l'une quelconque des revendications 7 ou 8, **caractérisé en ce que** le réceptacle (2) comprend en outre un nez (26) destiné à maintenir sa grille inférieure (2b) à une distance définie de la paroi inférieure (4b) du conteneur (4), la distance entre la grille inférieure (2b) et la paroi inférieure (4b) du conteneur (4) étant de plus de 10 mm.

10. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le conteneur (4) comprend une paroi inférieure horizontale (4b), une paroi verticale arrière (4d) et deux parois verticales latérales (4c), alignées de manière à être substantiellement parallèles entre elles, ainsi qu'une paroi frontale inclinée (4a), dont aucune n'est pénétrable par l'air chaud et qui sont de préférence faites de métal revêtu ou non revêtu.

11. Four (1) suivant l'une quelconque des revendications 7 à 9 ainsi que la revendication 10, **caractérisé en ce que** le réceptacle (2) s'adapte dans le conteneur (4) de telle manière que l'air chaud (22) qui entre dans le conteneur (4) et / ou le réceptacle (2) passe au moins en partie dans une partie de grille horizontale (3) qui fait partie du réceptacle (2), et qui est de préférence alignée de manière à être adjacente à la grille latérale inclinée (2a) du réceptacle (2).

12. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce qu'**il se trouve un insert coulissant (16) dans lequel le réceptacle (4) et / ou le conteneur (2) est / sont inséré(s), et qui peut être déplacé dans le four (1) et dès lors dans le courant d'air chaud du four (1).

13. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le chauffage de l'air a lieu dans une cavité de chauffage (8) placée en amont du ventilateur (20).

14. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** l'air chaud entre dans le réceptacle (2) et / ou le conteneur (4) depuis un côté supérieur, de préférence dans une direction substantiellement verticale, qu'après avoir traversé les aliments (28) et avoir ainsi chauffé les aliments (28), est guidé vers le haut et sort du réceptacle (2) et / ou du conteneur (4) à sa partie supérieure, de préférence dans une direction substantiellement verticale, et que tant le chauffage que la commande de la circulation (20) ont lieu dans une partie du four située au-dessus du réceptacle (2) et / ou du conteneur (4).

15. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce qu'**immédiatement en amont de la section de chauffage de l'air chaud (8) et / ou substantiellement en amont du réceptacle (2) et / ou du conteneur (4) sont prévus des moyens de filtration (24, 25) pour l'air (22, 23), et de préférence lesdits moyens de filtration sont des structures de type maillé, en métal ou en matière synthétique, et qui de préférence retiennent en outre l'eau condensée présente dans l'air chaud en circulation.

16. Four (1) suivant la revendication 15, **caractérisé en ce que** les moyens de filtration (24, 25) peuvent être fixés au moyen d'aimants, et / ou que les moyens de filtration (24, 25) sont pourvus de moyens d'indication de nécessité de remplacement, de préférence sous la forme d'un changement de couleur du capteur de perte de charge.

17. Four (1) suivant l'une quelconque des revendications 15 ou 16 , **caractérisé en ce que en ce que** les moyens de filtration sont une membrane semi-perméable, perméable à l'air et à la vapeur, mais non pas à l'eau condensée.

18. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le réceptacle (2) est conçu pour recevoir une portion de pommes de terre frites à chauffer dans un délai de l'ordre de moins d'une minute.

19. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce qu'**il est outre pourvu de moyens de chauffage basés sur des micro-ondes et / ou des fours à vapeur.

20. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en qu'**il est pourvu de moyens de déplacement des aliments (28) dans le réceptacle (2) pendant le chauffage, avec de préférence ces moyens impliquant des vibrations à haute fréquence ou ultrasoniques.

21. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** des moyens de commande automatique de température (27) sont prévus pour assurer un profil de température souhaité pendant un cycle de chauffage et / ou pour assurer des impératifs de sécurité.

22. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce qu'**il est pourvu de moyens d'identification pour empêcher un utilisateur d'introduire un aliment interdit dans la machine et / ou pour un contrôle automatique du cycle de chauffage (profil de température, longueur etc.) sur base de la quantité et du type des aliments.

23. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce qu'**il est prévu des moyens d'absorption d'un excès de graisse et d'odeurs, comme des éléments actifs tels que le charbon de bois, placés à toute position appropriée sur le trajet de circulation de l'air dans le four.

24. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** la totalité ou des parties du réceptacle (2) et / ou du conteneur (4) sont réalisées en tant que ou alignées sur un élément jetable afin de réduire et / ou d'éliminer la nécessité d'un nettoyage.

25. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le flux d'air en circulation est pulsé par l'intermédiaire d'un élément dynamique dans le système d'écoulement d'air, ledit élément dynamique étant de préférence une soupape à clapet et / ou un élément rotatif comportant une position ouverte et fermée afin d'empêcher et de permettre successivement l'afflux d'air.

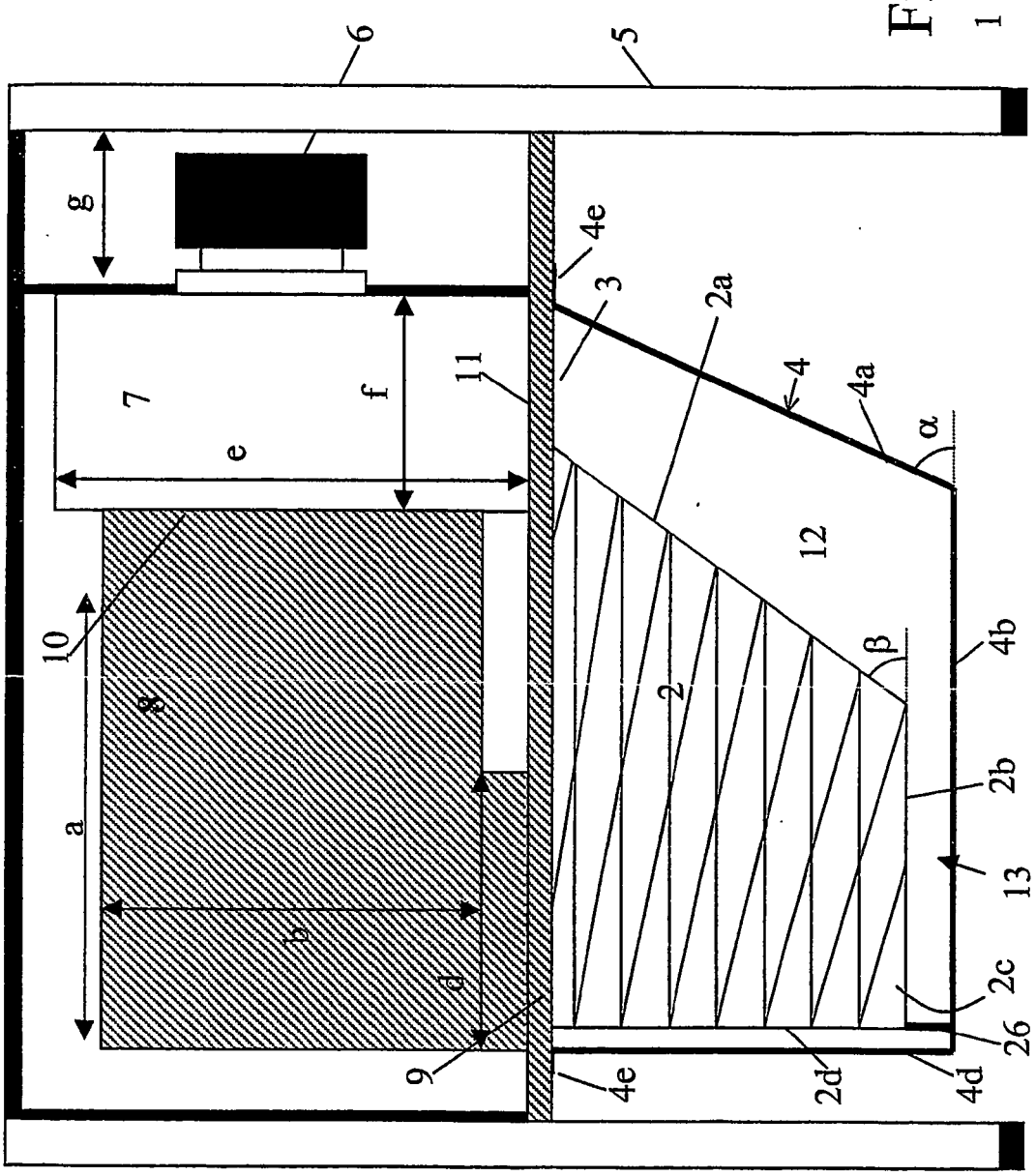
26. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** des générateurs de turbulences sont prévus sur le trajet de l'air afin d'intensifier la turbulence et l'effet de chauffage des aliments, les générateurs de turbulence étant de préférence fournis par des ailettes statiques positionnées à l'emplacement (22) où l'air chaud entre dans la zone des aliments.

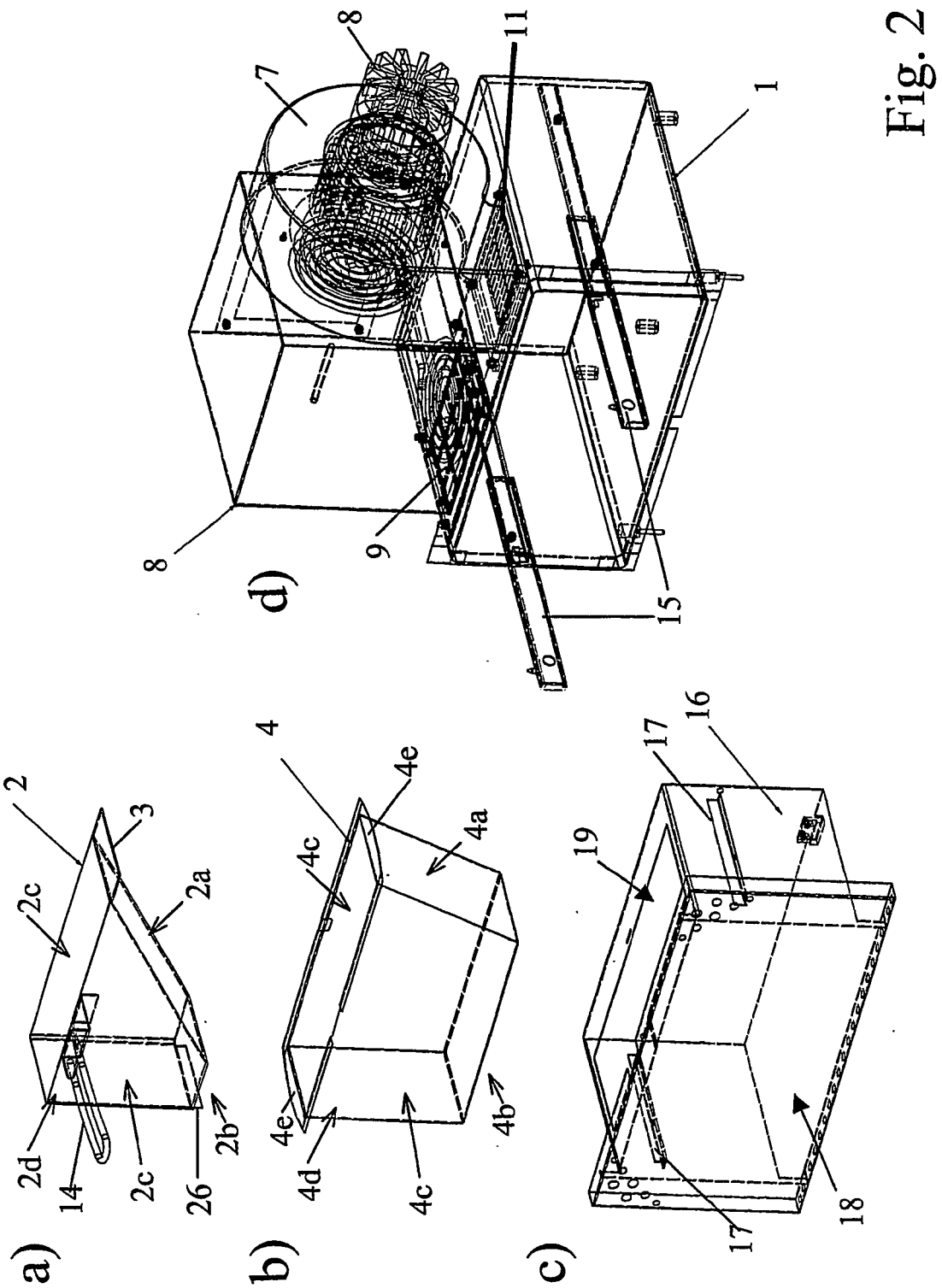
27. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** des moyens sont prévus pour empêcher des utilisateurs d'ouvrir la machine pendant un cycle de chauffage.

28. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** des moyens sont prévus pour introduire des arômes additionnels destinés à influencer le goût des aliments pendant le cycle de chauffage.

29. Four (1) suivant l'une quelconque des revendications qui précèdent, **caractérisé en ce que** le réceptacle (2) comprend de multiples cavités permettant le chauffage de multiples types d'aliments sans contamination croisée d'un type à l'autre.

Fig. 1




a)
2
3
2c
2a
2d
14
2c
26
2b
b)
4
4e
4c
4a
4e
4d
4c
4b
c)
17
16
19
17
18
d)
8
11
7
1
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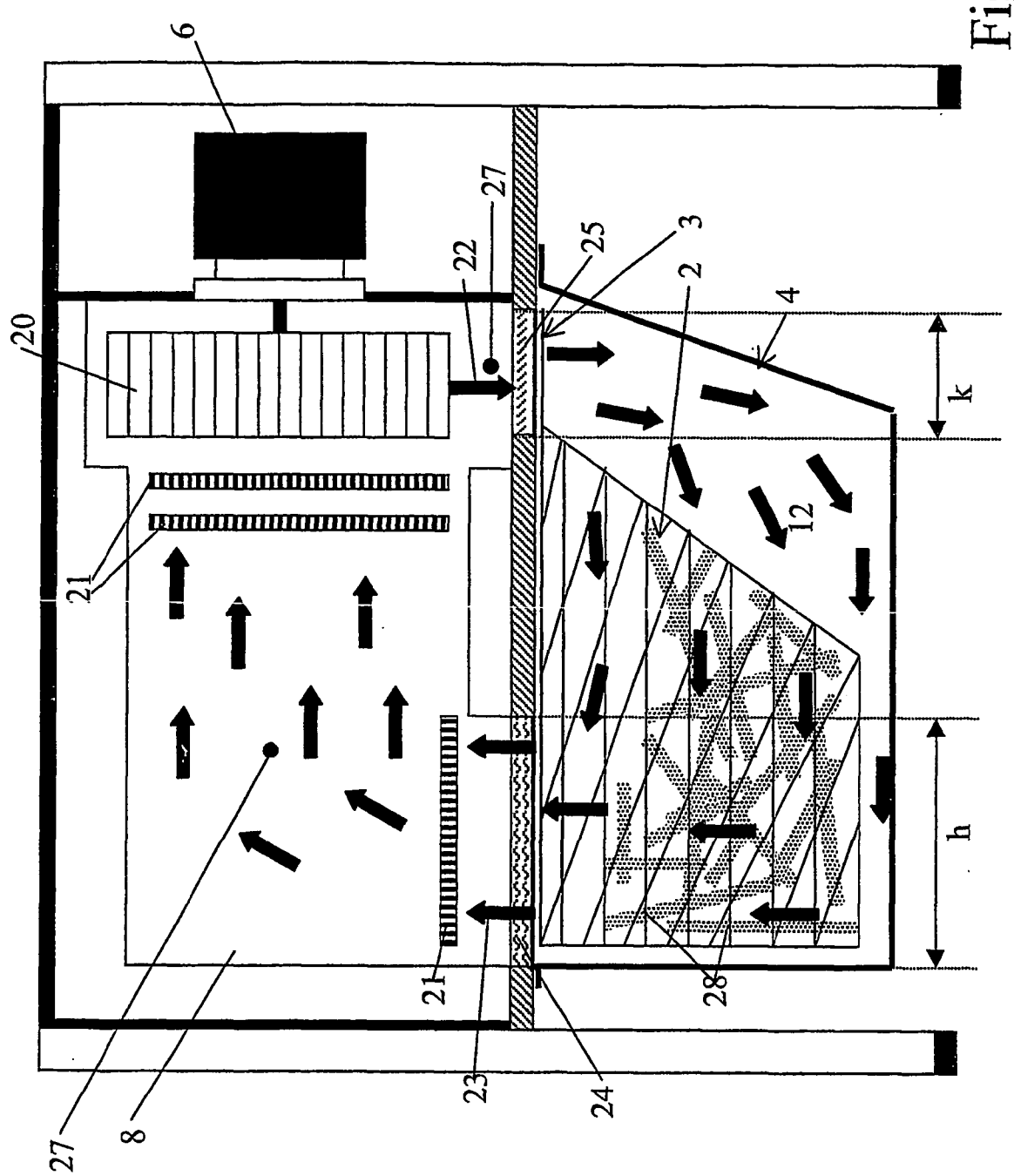
15

Fig. 2

Fig. 3



REFERENCES CITED IN THE DESCRIPTION

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- US 5445073 A **[0005]**
- WO 9737575 A **[0005]**
- US 4865864 A **[0005]**