(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 842 695 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
30.06.2021 Bulletin 2021/26

(51) Int Cl.:
F24C 15/32 *(2006.01)*

(21) Application number: **20210342.0**

(22) Date of filing: **27.11.2020**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
KH MA MD TN

(30) Priority: **24.12.2019 TR 201921333**

(71) Applicant: **Arçelik Anonim Sirketi**
34445 Istanbul (TR)

(72) Inventors:
- **AYDINER, Okan**
  34950 ISTANBUL (TR)
- **TURGUT, Servet**
  34950 ISTANBUL (TR)
- **ONAL, Mustafa**
  34950 ISTANBUL (TR)
- **DEMIRTAS, Ismail**
  34445 ISTANBUL (TR)
- **BICER, Emrah**
  34950 ISTANBUL (TR)

(54) **A COOKING DEVICE**

(57) The present invention relates to a cooking device (1) comprising a body (2); a cooking chamber (3) provided in the body (2) and wherein the foodstuffs to be cooked are placed; a casing (4) in the form of a box with the front side open which has a plurality of side walls (5) and a rear wall (6) enclosing the cooking chamber (3); one or more than one fan (7) which are provided in the front section of the casing (4) facing the cooking chamber (3) and which moves the air; one or more than one heater (8) which heats the air; and one or more than one suction hole (9) which is provided on the rear wall (6) and which enables the air which is moved by the fan (7) and directed towards the cooking chamber (3) to be sucked.

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Description

[0001] The present invention relates to a cooking device wherein the cooking process is performed homogeneously and effectively.

[0002] Today cooking devices are used for preparing foodstuffs by means of processes such as heating, cooking, etc. The oven is one of the most frequently used devices to prepare foodstuffs. Cooking devices wherein the cooking is performed by means of convection comprise at least one heater and at least one fan. The heater and the fan are generally positioned between the casing of the cooking device and the rear walls of the cooking chamber. The air heated by the heater is moved by the fan and transferred into the cooking chamber through a plurality of holes provided on the rear wall. By means of the heat transfer between the foodstuff placed into the cooking chamber and the air delivered into the cooking chamber, the foodstuff is enabled to be cooked. However, the temperature of the air in the cooking chamber is higher at regions in the close vicinity of the heater and lower at regions away from the heater. Furthermore, the temperature of the air in the cooking chamber at the front region which contacts the outer environment and wherein the door is provided is lower than other regions. In order to ensure a homogeneous air distribution in the cooking chamber, blowing holes through which the air moved by the fan at the rear wall is blown into the cooking chamber and suction holes through which the air transferred into the cooking chamber is sucked are provided. In the state of the art embodiments, the suction holes are generally positioned at the center of the rear wall so as to be positioned in front of the fan and the blowing holes are positioned on both sides of the hole group formed by the suction holes. By means of the blowing holes provided on both sides of the fan, the air is delivered through the blowing holes towards the side walls at a certain angle not perpendicularly. Thus, since the thermal energy of the air is transferred to the side walls instead of the foodstuff to be cooked in the cooking chamber, the cooking duration of the foodstuff and the amount of energy consumed increase. Furthermore, the hot air blown through the blowing holes is sucked back through the suction holes by merging with the suction line before reaching the front section of the cooking chamber where the heat loss is at maximum. Since the distance covered and time spent by the hot air in the cooking chamber is very short, the hot air is sucked back before transferring the thermal energy thereof to the foodstuff in the cooking chamber, and the amount of energy used for the cooking process increases due to the nonhomogeneous heat distribution.

[0003] In the state of the art United States Patent No. US4357522, a cooking device is disclosed, comprising guides which enable the air moved by the fan to be directed towards the blowing holes provided on the sides of the rear wall.

[0004] In the state of the art Japanese Patent Application No. JP56074533, a cooking device is disclosed, comprising a rear wall having suction holes at the center thereof and blowing holes provided on prismatic protrusions formed on the sides of the suction holes symmetrically.

[0005] In the state of the art Great Britain Patent Application No. GB2054833, a cooking device is disclosed, comprising a rear wall having suction holes at the center thereof and blowing holes which are provided on protrusions formed on the sides of the suction holes symmetrically.

[0006] The aim of the present invention is the realization of a cooking device wherein a homogeneous air distribution in the cooking chamber is ensured and an effective cooking process is provided.

[0007] The cooking device realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a body; a cooking chamber which is disposed in the body and wherein the foodstuffs to be cooked are placed; and a casing which is a box with an open front side, comprising a plurality of side walls and a rear wall surrounding the cooking chamber. One or more than one fan is provided at the front section of the casing rear wall facing the cooking chamber. The air is moved by means of the fan. One or more than one heater enabling the air to be heated is provided at the front section of the casing rear wall facing the cooking chamber. One or more than one suction hole is provided on the rear wall, enabling the air in the cooking chamber to be sucked by the fan.

[0008] The cooking device of the present invention comprises a base which has suction holes thereon and an inclined surface provided at the front section thereof facing the fan, and which is formed as a dome by depressing the rear wall towards the gap wherein the fan is positioned. Thus, the air is prevented from hitting onto a perpendicular wall and the suction holes are enabled to be arranged on different planes from the wall of the base towards the center thereof in three dimensions in a stepped manner, instead of being on the same plane. Consequently, the air blowing speed, the air suction area and thus, the air suction efficiency are increased.

[0009] In an embodiment of the present invention, the cooking device comprises a circular depression which is formed by depressing the base so as to be positioned between the rear wall and the base and which surrounds the suction holes. Thus, the air is enabled to be directed towards the blowing region after being sucked.

[0010] In another embodiment of the present invention, the depression is provided in the form of a V by shaping the rear wall.

[0011] In another embodiment of the present invention, the base is a convex surface provided on the rear wall.

[0012] In another embodiment of the present invention, the rear wall is inclined into the cooking chamber.

[0013] In the cooking device of the present invention, by using the rear wall, the homogeneous distribution of the air in the cooking chamber is ensured and an effective cooking process is provided. Thereby, the time and en-

ergy required for cooking the foodstuff placed into the cooking chamber are decreased.

[0014] The cooking device realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the top view of a cooking device.
Figure 2 - is the front view of a cooking device.
Figure 3 - is the top view of the rear wall and the base.
Figure 4 - is the perspective view of the rear wall and the base.

[0015] The elements illustrated in the figures are numbered as follows:

1. Cooking device
2. Body
3. Cooking chamber
4. Casing
5. Side wall
6. Rear wall
7. Fan
8. Heater
9. Suction hole
10. Blowing hole
11. Base
12. Depression

[0016] The cooking device (1) comprises a body (2); a cooking chamber (3) provided in the body (2) and wherein the foodstuffs to be cooked are placed; and a casing (4) in the form of a box with the front side open which has a plurality of side walls (5) and a rear wall (6) enclosing the cooking chamber (3). One or more than one fan (7) which enable the air to be moved and one or more than one heater (8) which enable the air to be heated are provided in the front section of the casing (4) facing the cooking chamber (3). The air moved by the fan (7) is redirected in the cooking chamber (3) by means of the rear wall (6). By means of the rear wall (6), the cooking chamber (3) is separated from the volume which contains the fan (7) and the heater (8). Furthermore, one or more than one suction hole (9) is provided on the rear wall (6), enabling the air which is moved by the fan (7) and directed towards the cooking chamber (3) to be sucked.

[0017] The cooking device (1) of the present invention comprises a base (11) which has suction holes (9) thereon and an inclined surface provided at the section thereof facing the fan (7) and which is formed by depressing the rear wall (6) towards the fan (7).

[0018] In an embodiment of the present invention, the base (11) is provided at the center of the rear wall (6) and is in the form of a dome with the suction holes (9) thereon inclined towards the gap just behind the rear wall (6) where the fan (7) is positioned. Preferably, the center of the base (11) is depressed towards the fan (7). Thus, the air is prevented from hitting onto a perpendicular wall, and the air blowing speed and the air suction area and thus, the air suction efficiency are increased. The suction holes (9) on the base (11) are arranged from the periphery of the base (11) towards the center thereof on different planes parallel to each other not on the same plane. Thus, the suction holes (9) are enabled to be arranged in three dimensions in a stepped manner on the base (11).

[0019] In another embodiment of the present invention, the suction holes (9) are provided on the rear wall (6) so as to be positioned on the base (11) which aligns with the region swept by the fan (7). The suction holes (9) are arranged on the base (11) on the rear wall (6) in various numbers and shapes and with different combinations. By means of the inclined structure of the base (11), the suction holes (9) are arranged on the base (11) in a stepped manner. Thus, the suction are is increased and the air in the cooking chamber (3) is enabled to be sucked effectively.

[0020] In another embodiment of the present invention, in the cooking device (1), during the operation of the heater (8) and the fan (7), the heater (8) heats the air while the fan (7) moves the air heated by the heater (8). The air moved by the fan (7) is blown into the cooking chamber (3) through the blowing holes (10). The air leaving the blowing holes (10) is directed towards the front section of the cooking chamber (3). After transferring the thermal energy thereof to the cold surfaces in the cooking chamber (3), the hot air directed towards the front section of the cooking chamber (3) passes through the suction holes (9) as a result of the suction force created by the fan (7) and is transferred to the volume wherein the fan (7) is positioned in order to be blown again through the blowing holes (10).

[0021] In another embodiment of the present invention, the cooking device (1) comprises a circular depression (12) which is formed by depressing the base (11) so as to be positioned between the rear wall (6) and the base (11), and which surrounds the suction holes (9). By means of the dome-shaped base (11) and said depression (12) surrounding the base (11), the air is enabled to be directed towards the blowing region after being sucked.

[0022] In another embodiment of the present invention, the depression (12) is provided in the form of a V by shaping the rear wall (6).

[0023] In another embodiment of the present invention, the base (11) is a convex surface provided on the rear wall (6).

[0024] In another embodiment of the present invention, the rear wall (6) is inclined into the cooking chamber (3).

[0025] By means of the present invention, a cooking device (1) is realized wherein, by means of the rear wall (6), the cooking chamber (3) is enabled to be heated homogeneously and effectively and the cooking process is performed by transferring the hot air onto the foodstuff which is placed into the cooking chamber (3). Thus, the amount of energy consumed for the cooking process is decreased.

Claims

1. A cooking device (1) comprising a body (2); a cooking chamber (3) provided in the body (2) and wherein the foodstuffs to be cooked are placed; a casing (4) in the form of a box with the front side open which has a plurality of side walls (5) and a rear wall (6) enclosing the cooking chamber (3); one or more than one fan (7) which are provided in the front section of the casing (4) facing the cooking chamber (3) and which moves the air; one or more than one heater (8) which heats the air; and one or more than one suction hole (9) which is provided on the rear wall (6) and which enables the air which is moved by the fan (7) and directed towards the cooking chamber (3) to be sucked **characterized by** a base (11) which has suction holes (9) thereon and an inclined surface provided at the section thereof facing the fan (7) and which is formed by depressing the rear wall (6) towards the fan (7).

2. A cooking device (1) as in Claim 1, **characterized by** the base (11) which is provided at the center of the rear wall (6) and which is in the form of a dome inclined towards the volume where the fan (6) is positioned.

3. A cooking device (1) as in Claim 1 or Claim 2, **characterized by** the base (11) the center of which is depressed towards the fan (7).

4. A cooking device (1) as in any one of the Claim 1 to Claim 3, **characterized by** the suction holes (9) which are arranged from the periphery of the base (11) towards the center thereof on different planes parallel to each other.

5. A cooking device (1) as in any one of Claim 1 to Claim 4, **characterized by** a circular depression (12) which is formed by depressing the base (11) so as to be positioned between the rear wall (6) and the base (11) and which surrounds the suction holes (9).

6. A cooking device (1) as in Claim 5, **characterized by** the depression (12) which is provided in the form of a V by shaping the rear wall (6).

7. A cooking device (1) as in any one of the above claims, **characterized by** the base (11) having a convex surface which is formed on the rear wall (6).

8. A cooking device (1) as in any one of the above claims, **characterized by** the rear wall (6) which is inclined into the cooking chamber (3).

Figure 1

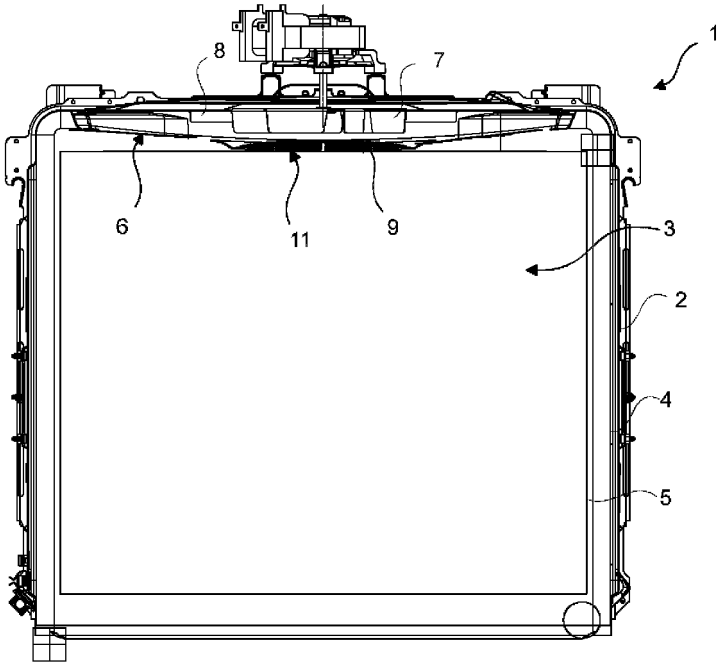


Figure 2

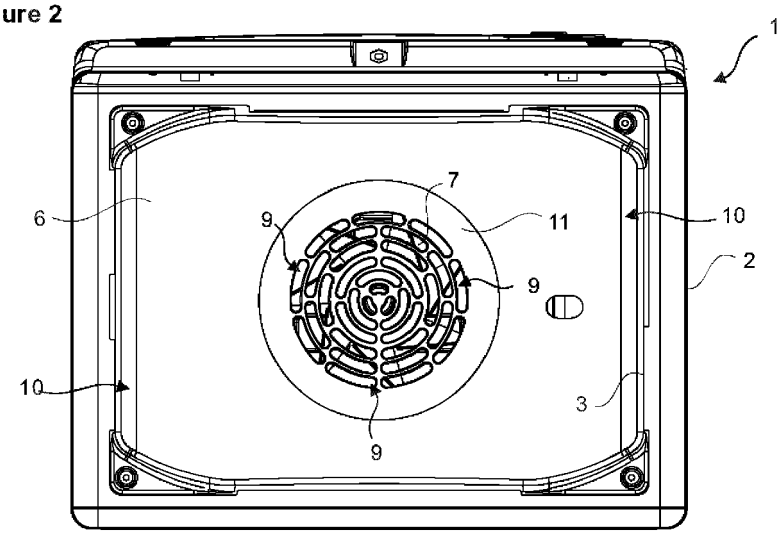


Figure 3

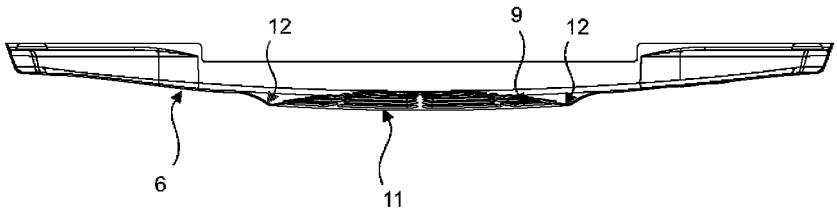
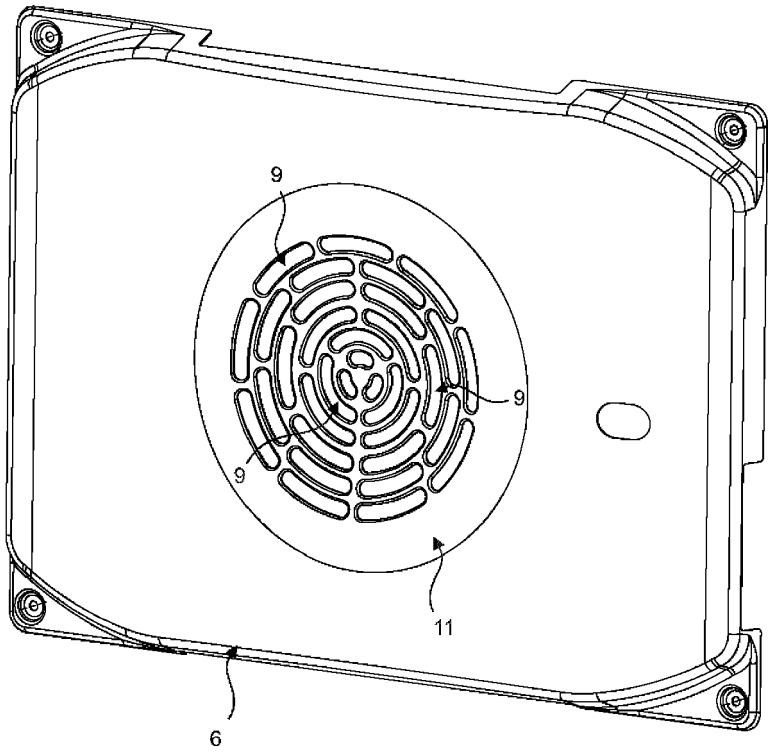


Figure 4



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EUROPEAN SEARCH REPORT

Application Number
EP 20 21 0342

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 10 2011 001352 A1 (PALUX AG [DE]) 30 August 2012 (2012-08-30) * paragraphs [0034] - [0039]; claim 11; figures 1-4 *	1-8	INV. F24C15/32
X	EP 2 013 542 A1 (ARCELIK AS [TR]) 14 January 2009 (2009-01-14) * claim 1; figure 5 *	1-8	

TECHNICAL FIELDS SEARCHED (IPC)

F24C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	20 April 2021	Meyers, Jerry

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

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20-04-2021

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		WO 2007125123 A1	08-11-2007

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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- JP 56074533 B **[0004]**
- GB 2054833 A **[0005]**