Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
The cooking device, as shown in FIGS. 1 to 3, comprises a cabinet 2 defining the external appearance of the cooking device, a cooking chamber 4 provided in the cabinet 2 for heating food so that the food can be cooked, a door 5 installed on the cabinet 2 for opening and closing the cooking chamber 4, and an electric component chamber 6 located in the upper portion of the cooking chamber 4 in the cabinet 2 and provided with electric components installed therein.

The cooking chamber 4 is heated by an electric heater 4a installed on the internal upper, lower and rear surfaces of the cooking chamber 4.

A convection chamber 10 for uniformly dispersing heat into the electric component chamber 6 is installed in the electric component chamber 6.

The convection chamber 10 comprises a convection fan 12 rotatably installed on the internal rear surface of the cooking chamber 4, a convection motor 14 installed on the external rear surface of the cooking chamber 4 and connected to the convection fan 12, and a convection cover 16 provided in front of the convection fan 12 for allowing air in the cooking chamber 4 to be sucked into the center of the convection fan 12 and to be discharged in the centrifugal direction.

The convection fan 12 is located in the electric component chamber 6.

The convection fan 12 is driven and rotates the convection fan 12, and the air in the cooking chamber 4 is dispersed by the blowing force of the convection fan 12.

When the cooking device is operated, the electric heater 4a is driven and increases the temperature of the cooking chamber 4. Further, the convection motor 14 is driven and rotates the convection fan 12, and the air in the cooking chamber 4 is dispersed by the blowing force of the convection fan 12.

FIG. 1 is a partially exploded perspective view of a general cooking device;
FIG. 2 is a perspective view of a conventional convection chamber of a cooking device;
FIG. 3 is a longitudinal sectional view of the conventional convection chamber;
FIG. 4 is a partially exploded perspective view of a
cooking device in accordance with the present invention;
FIG. 5 is a longitudinal sectional view of a convection chamber of the cooking device in accordance with the present invention; and
FIG. 6 is a disassembled perspective view of the convection chamber of the cooking device in accordance with the present invention.

[0026] Now, a preferred embodiment of the present invention will be described in detail with reference to the annexed drawings.
[0027] FIG. 4 is a partially exploded perspective view of a cooking device in accordance with the present invention, FIG. 5 is a longitudinal sectional view of a convection chamber of the cooking device in accordance with the present invention, and FIG. 6 is a disassembled perspective view of the convection chamber of the cooking device in accordance with the present invention.

[0028] As shown in FIGS. 4 to 6, the cooking device in accordance with the present invention comprises a cabinet 50 defining the external appearance of the cooking device, a cooking chamber 52 provided in the cabinet 50 for heating food so that the food can be cooked, an electric component chamber 54 provided in the cabinet 50 such that the electric component chamber 54 is located above the cooking chamber 52, a door 56 installed on the front surface of the cabinet 50, and a convection chamber 56 for uniformly dispersing air in the cooking chamber 52.

[0029] An electric heater 52a for increasing the temperature of the cooking chamber 52 is installed on the internal upper, lower and rear surfaces of the cooking chamber 52.

[0030] A blower 55 for sucking external air into the electric component chamber 54 so that the electric component chamber 54 is cooled by the air and then discharging the air to the outside of the cabinet 50 is provided in the electric component chamber 54.

[0031] The lower end of the door 56 is hinged to the cabinet 50 so that the door 56 is rotated centering on the hinged lower end thereof to open and close the cooking chamber 52.

[0032] Now, the structure of the door 56 will be described in detail. The door 56 comprises a plurality of glass plate members 56a-56d spaced from each other by a designated interval so that the door 56 has a cooling channel communicated with the electric component chamber 54 and the air in the door 56 is cooled by the blowing force of the blower 55. Here, the glass plate members 56a-56d includes first to fourth glass plate members, which are disposed in order from the outer portion to the inner portion.

[0033] The cooling channel of the door 56 includes a suction channel 56e for allowing external cool air to be sucked to the electric component chamber 54 through the door 56, and a discharge channel 56f for allowing the air discharged from the electric component chamber 54 to be partially discharged to the outside through the door 56.

[0034] The suction channel 56e of the door 56 allows the air to be sucked from the suction channel 56e to the electric component chamber 54 through a space located between the upper surface of the door 56 and the cabinet 50. Preferably, a channel of the air sucked from the suction channel 56e of the door 56 to the electric component chamber 54 is located at the side of a channel of the air discharged from the electric component chamber 54 so that the air sucked to the electric component chamber 54 does not interfere with the air discharged from the electric component chamber 54.

[0035] The convection chamber 60 comprises a convection fan 62 rotatably installed in the cooking chamber 52, a convection motor 64 for rotating the convection fan 62, and a convection cover 66 provided in front of the convection fan 62 and having a channel for collecting air in the cooking chamber 52, sucking the air to the convection fan 62, and then discharging the air from the convection fan 62 to the cooking chamber 52.

[0036] The convection fan 62 is a centrifugal fan, which sucks air in the centripetal direction and discharges the air in the centrifugal direction.

[0037] The convection fan 62 is rotatably installed on the internal rear surface of the cooking chamber 52, and is rotatably connected integrally with a rotary shaft 64a of the convection motor 64. Preferably, in order to ensure a uniform temperature in the cooking chamber 52, the convection fan 62 is located at the central portion of the internal rear surface of the cooking chamber 52. Further, in order to allow the air discharged from the convection fan 62 to be heated directly by the electric heater 52a, the electric heater 52a is installed on the internal rear surface of the cooking chamber 52 is located around the convection fan 62.

[0038] The convection motor 64 is located in the rear of the cooking chamber 52 in the cabinet 50 so that the convection motor 64 is connected to the convection fan 62 by the rotary shaft 64a.

[0039] A radiating fan 63 is rotatably connected integrally with the rotary shaft 64a of the convection motor 64. The radiating fan 63 sucks external air from the outside of the cabinet 50 to cool the convection motor 64, and then discharges the air to the outside of the cabinet 50.

[0040] The convection cover 66 comprises a first cover 65 provided with suction holes 65a for sucking the air in the cooking chamber 52, and a second cover 67 forming a space 66′ with the first cover 65 and provided with a suction hole 67a for sucking the air to the center of the convection fan 62 and discharge holes 67b for discharging the air from the convection fan 62 to the cooking chamber 52.

[0041] The suction holes 65a of the first cover 65 are located at the edge portion thereof and the central portion thereof corresponding to the center of the convection fan.
The air in the cooking chamber 52 is uniformly sucked to the space 66' between the first cover 65 and the second cover 67.

The suction hole 67a of the second cover 67 is located at the central portion thereof so that the air in the space 66' between the first cover 65 and the second cover 67 is sucked to the center of the convection fan 62. Preferably, the discharge holes 67b of the second cover 67 are located at the edge portion thereof, because the convection fan 62 blows air in the centrifugal direction.

Hereinafter, the function of the above cooking device in accordance with the present invention will be described.

When the cooking device of the present invention is operated, the electric heater 52a is driven, and the air in the cooking chamber 52 is heated by the electric heater 52a. Further, the convection fan 62 is rotated by the convection motor 64, and the air in the cooking chamber 52 is uniformly dispersed by the convection chamber 60.

Now, a process for dispersing the air in the cooking chamber 52 by the convection chamber 60 will be described in detail.

The air in the cooking chamber 52 is collected in the space 66' between the first cover 65 and the second cover 67 through the suction holes 65a of the first cover 65. The air collected in the space 66' between the first cover 65 and the second cover 67 is sucked to the center of the convection fan 62 through the suction hole 67a of the second cover 67. The air sucked to the center of the convection fan 62 is discharged from the convection fan 62 in the centrifugal direction, and the air discharged from the convection fan 62 passes through the electric heater 52a installed on the internal rear surface of the cooking chamber 52 and is sucked again to the cooking chamber 52 through the discharge holes 67b.

Since the suction holes 65a of the first cover 65 are formed throughout all regions of the first cover 65, the air in the cooking chamber 52 is uniformly sucked through all regions of the first cover 65, thereby being uniformly heated.

When the air in the cooking chamber 52 is heated to a high temperature as described above, food placed in the cooking chamber 52 is cooked or waste in the cooking chamber 52 is decomposed by the heat.

As apparent from the above description, the present invention provides a convection chamber of a cooking device, which comprises a convection fan rotatably installed in a cooking chamber, a convection motor for rotating the convection fan, and a convection cover provided in front of the convection fan and having a channel for collecting air in the cooking chamber, sucking the air to the convection fan, and discharging the air from the convection fan to the cooking chamber, thereby allowing the air in the cooking chamber to be uniformly sucked to the convection fan so that the air in the cooking chamber can be uniformly heated.

Claims

1. A cooking device with a convection chamber, said convection chamber comprising:

   a convection fan (62) rotatably installed in a cooking chamber (52);
   a convection motor (64) for rotating the convection fan (62); and
   a convection cover (66) provided in front of the convection fan (62) and having a channel for collecting air in the cooking chamber (52), sucking the air to the convection fan (62), and discharging the air from the convection fan (62) to the cooking chamber (52), said convection cover (66) comprising a first cover (65) provided with suction holes (65a) for sucking the air from the cooking chamber (52), and a second cover (67) forming a space (66') with the first cover (65), and provided with a suction hole (67a) for sucking the air from the space (66'), characterized in that the convection fan (62) is a centrifugal fan spaced apart from the suction hole (67a) of the second cover (67) such that the centrifugal fan (62) sucks air from the suction hole (67a) of the second cover (67) in the centripetal direction towards a center of the centrifugal fan (62) and discharges air on the centrifugal direction.

2. The convection chamber as set forth in claim 1, wherein an electric heater (52a) for increasing the temperature of the air in the cooking chamber (52) is located around the convection fan (62).

3. The cooking device as set forth in claim 1, wherein:

   a plurality of the suction holes (65a) are formed through the first cover (65); and
   the suction hole (67a) is located at the central portion of the second cover (67), and a plurality of discharge holes (67b) are located at the edge portion of the second cover (67).

4. The cooking device as set forth in claim 1, wherein some of the suction holes (65a) are located at the central portion of the first cover (65).

5. The cooking device as set forth in claim 1, wherein the first and second covers (65 and 67) are integrally formed.
6. The cooking device as set forth in claim 1, wherein the first cover (65) is detachably attached to the second cover (67).

7. The cooking device of claim 1, further comprising:

- a blower (55) for sucking external air into an electric component chamber (54) such that the electric component chamber (54) is cooled; and
- a door (56) for opening and closing the cooling chamber;

wherein the door (56) is provided with a discharge channel (56f) for allowing air discharged from the electric component chamber (54) to be discharged to the outside.

8. The cooking device of claim 1, further comprising:

- a radiating fan (63) rotatably connected integrally with the rotary shaft (64a) of the convention motor (64) for sucking external air from the outside to cool the convention motor (64).

Patentansprüche

1. Garvorrichtung mit einer Konvektionskammer, wobei die Konvektionskammer aufweist:

   - einen Konvektionsventilator (62), der drehbar in einer Garkammer (52) eingebaut ist;
   - einen Konvektionsmotor (64) zum Drehen des Konvektionsventilators (62);
   - eine Konvektionsabdeckplatte (66), die vor dem Konvektionsventilator (62) vorgesehen ist und einen Kanal zum Sammeln der Luft in der Garkammer (52), Saugen der Luft zum Konvektionsventilator (62) und Ausstoßen der Luft aus dem Konvektionsventilator (62) in die Garkammer (52) aufweist, wobei die Konvektionsabdeckplatte (66) eine erste Abdeckplatte (65) zum Saugen der Luft aus der Garkammer (52), die mit Ansauglöchern (65a) zum Ansaugen der Luft aus der Garkammer (52) versehen ist, und eine zweite Abdeckplatte (67) aufweist, die einen Raum (66') mit der ersten Abdeckplatte (65) bildet und mit einem Ansaugloch (67a) zum Ansaugen der Luft aus dem Raum (66') versehen ist,


2. Konvektionskammer nach Anspruch 1, wobei ein Elektroheizer (52a) zur Erhöhung der Temperatur der Luft in der Garkammer (52) um den Konvektionsventilator (62) angeordnet ist.

3. Garvorrichtung nach Anspruch 1, wobei:

   - mehrere der Ansauglöcher (65a) durch die erste Abdeckplatte ausgebildet sind; und
   - das Ansaugloch (67a) an der mittleren Abdichtung der zweiten Abdeckplatte (67) angeordnet ist, und mehrere Auslaßlöcher (67b) am Kantenabschnitt der zweiten Abdeckplatte (67) angeordnet sind.

4. Garvorrichtung nach Anspruch 1, wobei einige der Ansauglöcher (65a) an der mittleren Abdichtung der ersten Abdeckplatte (65) angeordnet sind.

5. Garvorrichtung nach Anspruch 1, wobei die ersten und zweiten Abdeckplatten (65 und 67) integral ausgeführt sind.

6. Garvorrichtung nach Anspruch 1, wobei die erste Abdeckplatte (65) abnehmbar an der zweiten Abdeckplatte (67) angebracht ist.

7. Garvorrichtung nach Anspruch 1, die ferner aufweist:

   - ein Gebläse (55) zum Ansaugen von Außenluft in eine Kammer für Elektrokomponenten (54), so daß die Kammer für Elektrokomponenten (54) gekühlt wird; und
   - eine Tür (56) zum Öffnen und Schließen der Kühlkammer;

wobei die Tür (56) mit einem Auslaßkanal (56f) versehen ist, um es zu ermöglichen, daß aus der Kammer für Elektrokomponenten (54) ausgestoßene Luft nach außen ausgestoßen wird.

8. Garvorrichtung nach Anspruch 1, die ferner aufweist:

   - einen abstrahlenden Ventilator (63), der drehbar und integral mit der Drehwelle (64a) des Konvektionsmotors (64) zum Ansaugen von Außenluft von Außen verbunden ist, um den Konvektionsmotor (64) zu kühlen.

Revendications

1. Dispositif de cuisson avec une chambre de convection, ladite chambre de convection comprenant :

   - un ventilateur de convection (62) installé de ma-
nière à pouvoir tourner dans une chambre de cuisson (52) ;
un moteur de convection (64) pour faire tourner le ventilateur de convection (62) ; et
un couvercle de convection (66) fourni devant le ventilateur de convection (62) et ayant un can-
nal pour collecter l’air dans la chambre de cuis-
son (52), aspirer l’air vers le ventilateur de con-
vection (62), et évacuer l’air du ventilateur de con-
vection (62) dans la chambre de cuisson (52), ledit couvercle de convection (66) compre-
nant un premier couvercle (65) pourvu de trous d’aspiration (65a) pour aspirer l’air de la cham-
bre de cuisson (52), et un deuxième couvercle (67) formant un espace (66’), avec le premier
couvercle (65), et pourvu d’un trou d’aspiration (67a) pour aspirer l’air de l’espace (66’),

caractérisé en ce que le ventilateur de convection (62) est un ventilateur centrifuge espacé du trou
d’aspiration (67a) du deuxième couvercle (67) de sorte que le ventilateur centrifuge (62) aspire l’air du
trou d’aspiration (67a) du deuxième couvercle (67) dans la direction centripète vers un centre du venti-
lateur centrifuge (62) et évacue l’air dans la direction centrifuge.

2. Chambre de convection selon la revendication 1,
daussi dans laquelle un réchauffeur électrique (52a) pour
augmenter la température de l’air dans la chambre
de cuisson (52) est situé autour du ventilateur de con-
vection (62).

3. Dispositif de cuisson selon la revendication 1, dans
lequel :
une pluralité de trous d’aspiration (65a) sont for-
més à travers le premier couvercle ; et
le trou d’aspiration (67a) est situé à la partie cen-
trale du deuxième couvercle (67), et
une pluralité de trous d’évacuation (67b) sont
situis à la partie de bord du deuxième couvercle (67).

4. Dispositif de cuisson selon la revendication 1, dans
lequel certains des trous d’aspiration (65a) sont si-
tués à la partie centrale du premier couvercle (65).

5. Dispositif de cuisson selon la revendication 1, dans
lequel les premier et deuxième couvercles (65 et 67)
sont formés de manière intégrale.

6. Dispositif de cuisson selon la revendication 1, dans
lequel le premier couvercle (65) est attaché de ma-
nière détachable au deuxième couvercle (67).

7. Dispositif de cuisson selon la revendication 1, com-
prenant en outre :

8. Dispositif de cuisson selon la revendication 1, comprenant en outre :

une soufflerie (55) pour aspirer de l’air externe
daussi dans une chambre de composants électriques (54) pour refroidir la chambre de composants électriques (54) ; et
d’une porte (56) pour ouvrir et fermer la chambre de refroidissement ;
daussi dans lequel la porte (56) est pourvue d’un canal
d’évacuation (56f) pour permettre l’évacuation à l’exté-
térieur de l’air évacué de la chambre de composants électriques (54).

9. Dispositif de cuisson selon la revendication 1, com-
prenant en outre :

un ventilateur rayonnant (63) connecté de ma-
nière à pouvoir tourner intégralement avec l’ar-
bré rotatif (64a) du moteur de convection (64)
pour aspirer de l’air externe de l’extérieur pour
refroidir le moteur de convection (64).
Fig. 1 (related art)
Fig. 2 (related art)
Fig. 3 (related art)
REFERENCES CITED IN THE DESCRIPTION

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