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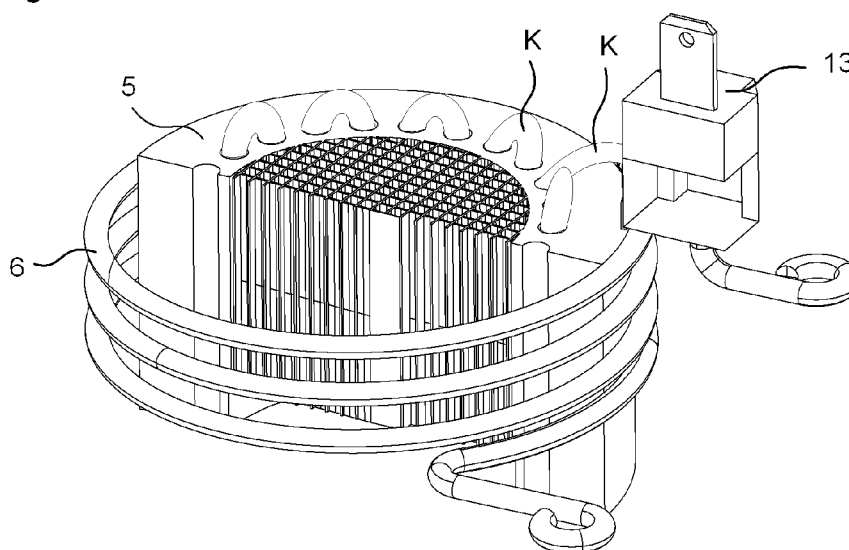
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(54) Title: AN OVEN COMPRISING A FILTER

Figure 7



(57) Abstract: The oven (1) comprises a cabinet (2) wherein the cooking process is performed, a fan which provides the warm air to be circulated inside the cabinet (2), a funnel (4) which is preferably disposed to the upper portion of the cabinet (2) and which enables the air circulating inside the cabinet (2) to be evacuated out of the cabinet (2), and a cylindrical filter (5) which is mounted into the funnel (4) and which provides the air received from the cabinet (2) to be evacuated out of the cabinet (2) by being cleaned.



Description**AN OVEN COMPRISING A FILTER**

- [0001] The present invention relates to an oven comprising a filter in the air discharge conduit.
- [0002] In ovens, in order that homogeneous heat can be provided inside the cabinet wherein foods to be cooked are disposed, air heated by the heater is taken into the cabinet by means of a fan. After this air passes through the cooking chamber, it is evacuated through a funnel which is preferably disposed onto the cabinet and wherein a filter is situated. The aim of the filter is to prevent the oil particles from the cooked food mixing with the air from exiting the cabinet. Therefore, generally heating wires are situated inside the filter, and they heat the air passing through the filter and thus, the oil particles inside the air are provided to be burnt. Since these filters are overheated, they are produced from ceramic material which is resistant against high temperatures. However, since ceramic is fragile and no holes can be bored thereon, it makes the fixing of the filter into the funnel difficult. In the state of the art, ceramic filters are mounted into the funnel by means of a carrier produced from sheet metal material.
- [0003] In the state of the art Great Britain Patent Application No GB2244509, a fastening element, used for disposing the gauze filter into the ventilating exhauster, is explained. The fastening element comprises a metal frame, into which the filter is seated, and an expanded head portion and a circular retainer portion, which provide the metal frame to be mounted to the housing of the oven, on the metal frame and on the housing.
- [0004] The aim of the present invention is the realization of an oven which has a filter that can be easily mounted to the funnel.
- [0005] The oven realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a cabinet, a funnel which absorbs the air in the cabinet to the outer environment, and a cylindrical filter which is disposed into the funnel.
- [0006] The oven, furthermore, comprises a fixing means which provides the filter to be mounted into the funnel.
- [0007] The fixing means is provided by winding a metal rod in a spiral form ; and

the filter is mounted therein and the fixing means is hung in the funnel.

- [0008] In an embodiment of the present invention, the fixing means has two arms located at the beginning and at the end of the spiral. The arms have one horizontal extension each, which extends from the spiral outwards. The fixing means is mounted into the funnel by means of the horizontal extensions.
- [0009] In an embodiment of the present invention, the horizontal extensions extend towards the same direction and provide the fixing means to be fixed to the panel from one side.
- [0010] In an embodiment of the present invention, the arms comprise a vertical extension which is provided by curving one arm towards the other arm and which is located between the spiral winding and the horizontal extension, and which provides the horizontal extensions to stand on the same horizontal plane.
- [0011] In an embodiment of the present invention, the fixing means has one eye each at the ends of the horizontal extensions in order that the horizontal extensions can be fastened to the panel by being screwed. The eye shape is provided by curling the horizontal extensions around themselves.
- [0012] In an embodiment of the present invention, the filter comprises heating wires, cables which transmit electricity to the wires, channels, through which the cables pass and which are located on the walls of the filter, and a terminal which is mounted to the upper portion of the filter such that it will not hinder the mounting of the fixing means to the filter. The channels and the terminal provide the cables not to contact the fixing means.
- [0013] By means of the present invention, the material and labor costs for the assembly of the filter are reduced.
- [0014] The oven realized in order to attain the aim of the present invention is illustrated in the attached figures, where:
- [0015] Figure 1 – is the perspective view of an oven.
- [0016] Figure 2 – is the sideways schematic view of the oven.
- [0017] Figure 3 – is the detailed perspective view of a funnel, a filter and a panel.
- [0018] Figure 4 – is the view of cross-section AA of the panel in Figure 3.
- [0019] Figure 5 – is the perspective view of a fixing means.

[0020] Figure 6 – is the perspective view of a filter.

[0021] Figure 7 – is the perspective view of a filter mounted to a fixing means.

[0022] The elements illustrated in the figures are numbered as follows:

1. Oven
2. Cabinet
3. Panel
4. Funnel
5. Filter
6. Fixing means
7. ,107. Arm
8. ,108. Horizontal extension
9. Vertical extension
10. ,110. Eye
11. Wire
12. Channel
13. Terminal

[0023] The oven (1) comprises a cabinet (2) wherein the cooking process is performed, a fan which provides the warm air to be circulated inside the cabinet (2), a panel (3) which is preferably located at the upper portion of the cabinet (2), a funnel (4) which is disposed onto the panel (3) and which enables the air circulating inside the cabinet (2) to be evacuated out of the cabinet (2), and a cylindrical filter (5) which is mounted into the funnel (4) and which provides the air received from the cabinet (2) to be evacuated out of the cabinet (2) by being cleaned.

[0024] The oven (1), furthermore, comprises a fixing means (6)

- which is provided by winding a rod spirally for at least one round such that its diameter will be almost equal to the diameter of the filter (5),
- to the middle of which the filter (5) is disposed such that it will encircle the filter (5), and
- which enables the filter (5) to be mounted to the funnel (4) by being fixed to the walls of the funnel (4).

[0025] The fixing means (6) comprises two arms (7, 107) which are located at the beginning and at the end of the spiral winding, and which has two

horizontal extensions (8, 108) that extend towards the outside of the spiral. The fixing means (6) is fixed into the funnel (4) by means of the horizontal extensions (8, 108).

[0026] The fixing means (6) encircles the filter (5) and thus, both carries the filter (5) and hangs the filter (5) in the funnel (4). Thus, the filter (5) can be mounted into the funnel (4) without boring any hole on the filter (5). By means of the fixing means (6) being shaped as a rod, material is saved; and by means of the fixing means (6) encircling the filter (5), the vibration of the filter (5) is absorbed.

[0027] In an embodiment of the present invention, the funnel (4) is provided by blasting the panel (3). The horizontal extensions (8, 108) at the end of the arms (7, 107) provide distance between the filter (5) and the funnel (4) inner walls and thus, the heated filter (5) is almost prevented from heating the funnel (4) and hence the panel (3).

[0028] In an embodiment of the present invention, the arms (7, 107) comprise a vertical extension (9) which is provided by bending at least one (7) of the arms (7, 107) and extending it towards the other arm (107) such that it will provide the horizontal extensions (8, 108) to be on the same horizontal plane. Thus, the horizontal extensions (8, 108) can be fixed to the panel (3) by being aligned with the panel (3), to which the funnel (4) is fixed and which is located at the upper portion of the oven (1).

[0029] In an embodiment of the present invention, the horizontal extensions (8, 108) extend towards the same direction such that they will provide the fixing means (6) to look as if it is fastened from one edge.

[0030] In an embodiment of the present invention, after the filter (5) is mounted into the fixing means (6), the fixing means (6) grasps the filter (5) by snap fitting by being compressed when the horizontal extensions (8, 108) are mounted into the funnel (4) by being moved away from each other. The diameter of the spirally-shaped fixing means (6) is almost equal to the diameter of the filter (5). During the assembly, the horizontal extensions (8, 108) are preferably fixed to the panel (3) by being separated from each other such that they will move the arms (7, 107) away from each other. Thus, the diameter of the fixing means (6), the arms (7, 107) of which

moved away from each other, is reduced, and the fixing means (6) grasps the filter (5) such that the filter (5) will not slip away from the fixing means (6).

[0031] In an embodiment of the present invention, the fixing means (6) comprises an eye (10, 110) which is provided by curling the horizontal extensions (8, 108) around themselves and which is sized such that a screw will pass therethrough. By means of the provided eyes (10, 110), the fixing means (6) gets ready to be mounted to the funnel (4) at no cost without requiring the processes such as crushing and grooving on the fixing means (6).

[0032] In an embodiment of the present invention, the filter (5) comprises

- wires (11) which provide the air passing through the filter (5) to be heated,
- channels (12), through which the cables (K) providing electricity to be transmitted to the wires (11) pass, on its walls, and
- a terminal (13) which is fixed to its upper portion and which provides the connection of the cables (K).

[0033] The air, which is absorbed through the funnel (4), is cleaned by being heated by the wires (11) while passing through the filter (5). The cables (K) are inserted through the channels (12) and connected to the terminal (13) and thus, they do not occupy space around the filter (5) and are not crushed during the assembly by not getting caught by the fixing means (6).

[0034] By means of the fixing means (6) of the present invention, fixing the filter (5) to the funnel (4) by winding the filter (5) spirally, the assembly is provided by using a few materials and by a simple workmanship. By means of the fixing means (6) arms (7, 107) being fixed to the panel (3) by being compressed such that they will move away from each other, the filter (5) is held tightly inside the fixing means (6) without slipping away. By means of the horizontal extensions (8, 108), the heat transfer between the filter (5) and the panel (3) is reduced.

[0035] It is to be understood that the present invention is not limited to the embodiments disclosed above and a person skilled in the art can easily introduce different embodiments. These should be considered within the scope of the protection postulated by the claims of the present invention.

Claims

1. An oven (1) **comprising** a cabinet (2) wherein the cooking process is performed, a fan which provides the warm air to be circulated inside the cabinet (2), a funnel (4) which is preferably disposed to the upper portion of the cabinet (2) and which enables the air circulating inside the cabinet (2) to be evacuated out of the cabinet (2), and a filter (5) which is mounted into the funnel (4) and which provides the air received from the cabinet (2) to be evacuated out of the cabinet (2) by being cleaned, **characterized by** a fixing means (6)
 - which is provided by winding a rod spirally for at least one round such that its diameter will be almost equal to the diameter of the filter (5),
 - to the middle of which the filter (5) is disposed such that it will encircle the filter (5), and
 - which enables the filter (5) to be mounted to the funnel (4) by being fixed to the walls of the funnel (4).
2. An oven (1) as in Claim 1, **characterized by** the fixing means (6) that comprises two arms (7, 107) which are located at the beginning and at the end of the spiral winding, and which has two horizontal extensions (8, 108) extending towards the outside of the spiral.
3. An oven (1) as in Claim 2, **characterized by** the horizontal extensions (8, 108) which extend towards the same direction such that they will provide as if the fixing means (6) is fastened from one edge.
4. An oven (1) as in Claims 2 and 3, **characterized by** the fixing means (6) which, after the filter (5) is mounted therein, is compressed when the horizontal extensions (8, 108) are mounted into the funnel (4) by being moved away from each other, and which grasps the filter (5) by snap fitting.
5. An oven (1) as in Claims 2 to 4, **characterized by** the fixing means (6) that comprises a vertical extension (9) which is provided by bending at least one (7) of the arms (7, 107) and extending it towards the other arm (107) such that the horizontal extensions (8, 108) will be on the same horizontal plane.
6. An oven (1) as in Claims 2 to 5, **characterized by** the fixing means (6) that comprises an eye (10) which is provided by curling the horizontal extensions (8, 108) around themselves and which is sized such that a screw will pass

therethrough.

7. An oven (1) as in any one of the above Claims, **characterized by** the filter (5) that has
- wires (11) therein which provide the air passing through the filter (5) to be heated,
 - channels (12), through which the cables (K) providing electricity to be transmitted to the wires (11) pass, on its walls, and
 - a terminal (13) which is fixed to its upper portion and which provides the connection of the cables (K).

Figure 1

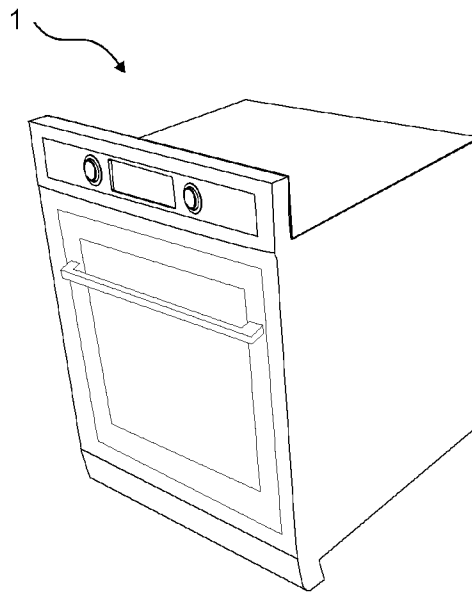


Figure 2

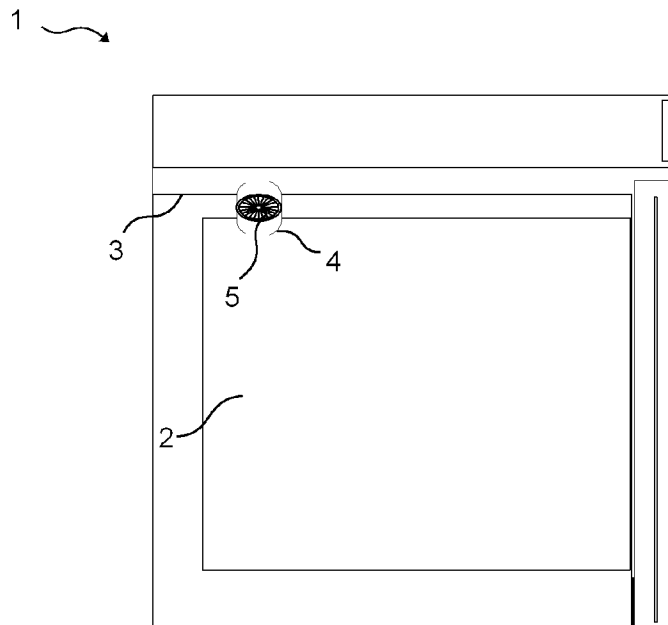


Figure 3

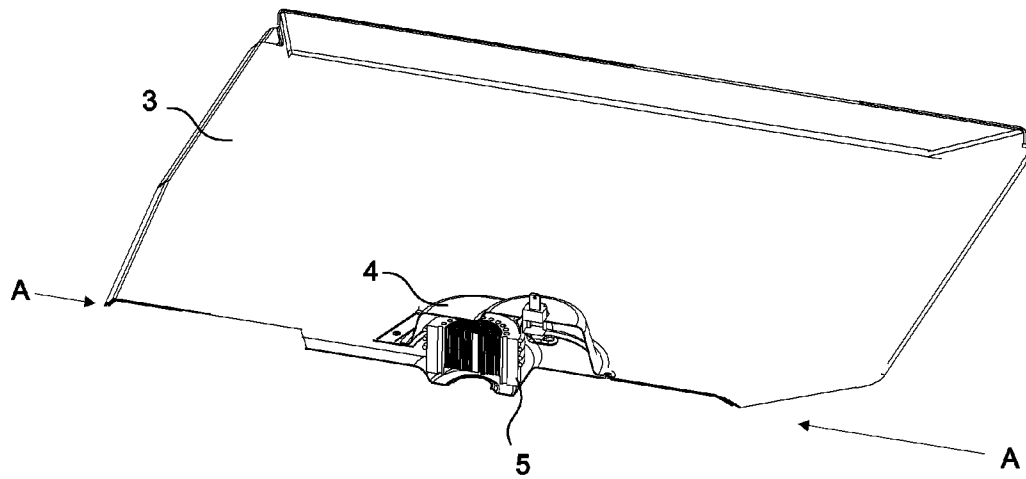


Figure 4

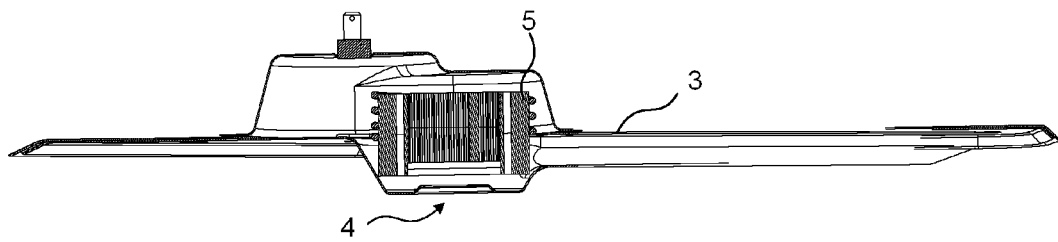


Figure 5

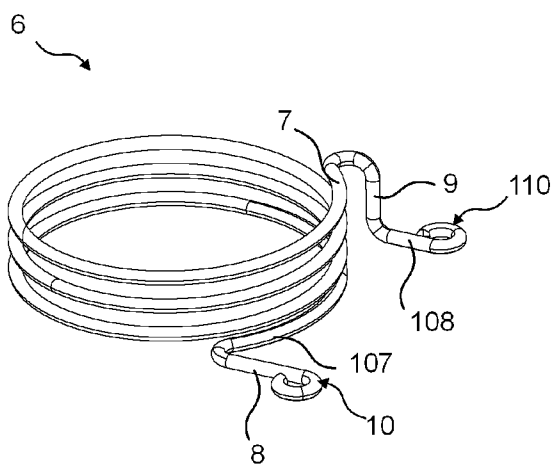


Figure 6

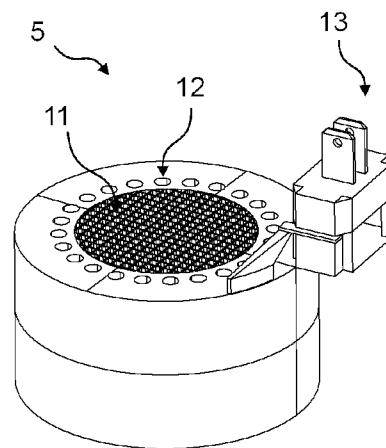
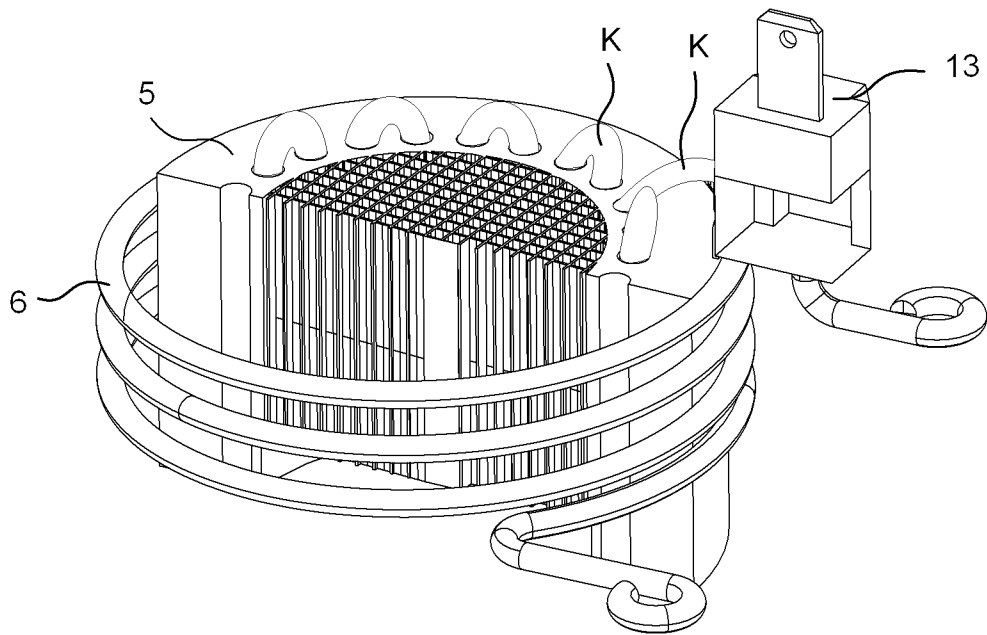


Figure 7



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/067233

A. CLASSIFICATION OF SUBJECT MATTER
INV. F24C15/20
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F24C

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR 2 705 766 A1 (SCHOLTES ETS EUGEN [FR]) 2 December 1994 (1994-12-02) figure 2	1-7
Y	US 2 794 475 A (PACHMAYR FRANK A) 4 June 1957 (1957-06-04) figures 1-3 column 2, lines 27-31	1,5,6
Y	DE 196 14 106 A1 (DAIMLER BENZ AEROSPACE AIRBUS [DE] DAIMLER CHRYSLER AEROSPACE [DE]) 16 October 1997 (1997-10-16) figures 2,3 column 4, lines 44-45	1-4
Y	WO 2005/047775 A1 (IRCA SPA [IT]; VIRZI ANDREA [IT]; CAPRARO DUILIO [IT]) 26 May 2005 (2005-05-26) figures 1,3	7

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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"&" document member of the same patent family

Date of the actual completion of the international search

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14/06/2010

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2009/067233

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2705766	A1	02-12-1994	NONE	
US 2794475	A	04-06-1957	NONE	
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