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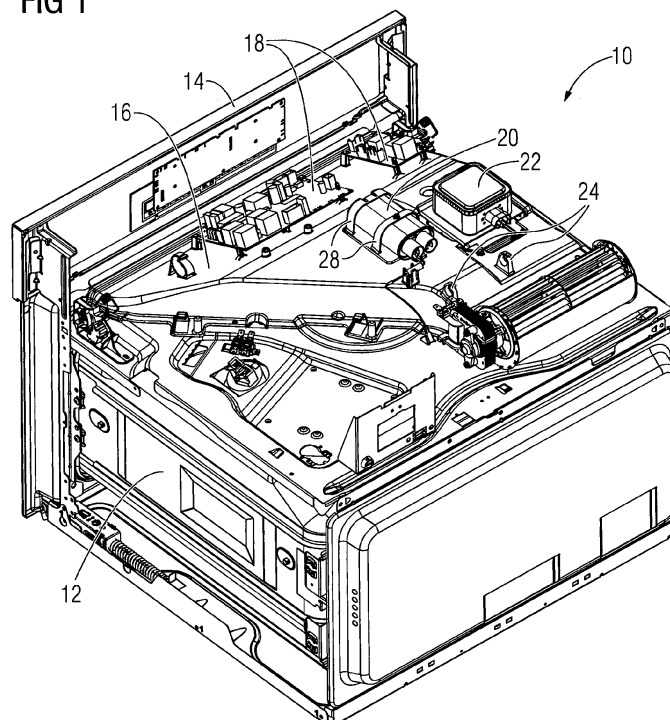
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(54) Cooking oven with a cooling channel

(57) The present invention relates to a cooking oven (10) with a cooling channel (16) arranged upon or besides an oven cavity (12). The cooling channel (16) is made of plastics and attached or attachable at a top wall or a side wall of the oven cavity (12). The cooking oven (10) comprises electric, electronic and/or mechanical elements (18, 20) arranged or arrangeable upon or beside the cool-

ing channel (16). At least a part of plastic components (18, 22) and/or plastic peripheral parts (24, 28) of the electric, electronic and/or mechanical elements (18, 20) are integrated parts of the cooling channel (16). Further, the present invention relates to a corresponding cooling channel for a cooking oven.

FIG 1



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Description

[0001] The present invention relates to a cooking oven with a cooling channel. Further, the present invention relates to a cooling channel for a cooking oven.

[0002] The cooling channel in a cooking oven is typically arranged above the oven cavity. Further, electric and/or electronic components are arranged on the cooling channel. Usually, the cooling channel is made of metal. The costs of the materials for the metallic cooling channel are relative low. However, the operational costs of the tools for the fabrication of the metallic cooling channel are relative high. In contrast, the operational costs of the tools for the fabrication of a cooling channel made of plastics would cause cost within a medium range, while the costs of the materials for the plastic cooling channel would be relative high.

[0003] FIG 2 illustrates a cooking oven 10 with a cooling channel 16 according to the prior art. The cooking oven 10 comprises an oven cavity 12 and a front panel 14. The cooling channel 16 is arranged above the oven cavity 12. The cooling channel 16 is made of metal sheet. Electric and/or electronic components are arranged upon the cooling channel 16. Printed circuit boards 18 and a capacitor 20 are arranged on the top side of the cooling channel 16. The capacitor 20 is fixed by brackets 26. Said brackets 26 are made of metal. Further, a casing 22 for a high voltage power supply is arranged on the top side of the cooling channel 16. Moreover, cable supports 24 for a high voltage line are arranged on the top side of the cooling channel 16. The electric and/or electronic components are formed as separate units. The raw materials and supplies for the cooling channel and peripheral components are relative high. The amount of work for assembling the cooking oven is also relative high.

[0004] It is an object of the present invention to provide a cooking oven with a cooling channel, wherein the overall costs for the cooling channel are minimized.

[0005] The object of the present invention is achieved by the cooking oven according to claim 1.

[0006] The present invention relates to a cooking oven with a cooling channel arranged upon or besides an oven cavity, wherein

- the cooling channel is made of plastics and attached or attachable at a top wall or a side wall of the oven cavity,
- the cooking oven comprises electric, electronic and/or mechanical elements arranged or arrangeable upon or beside the cooling channel, and
- at least a part of plastic components and/or plastic peripheral parts of the electric, electronic and/or mechanical elements are integrated parts of the cooling channel.

[0007] The core of the present invention is the cooling channel made of plastics on the one hand and the arrangement of plastic components and/or plastic peripheral

parts of the electric, electronic and/or mechanical elements as integrated parts of said cooling channel on the other hand. The integrated structure of the cooling channel with additional components allows a simplified assembling of the cooking oven.

[0008] According to a special embodiment of the present invention the cooling channel and at least a part of the plastic components and/or plastic peripheral parts of the electric, electronic and/or mechanical elements form a single-piece part. This contributes for a reduction of the components of the cooking oven.

[0009] For example, at least one printed circuit board is an integrated part of the cooling channel and/or is assembled to the cooling channel with supports that are integral with the cooling channel. Further, the cooling channel and the at least one printed circuit board form a single-piece part.

[0010] In particular, the at least one printed circuit board on the cooling channel comprises at least one conductor path.

[0011] Further, at least one clamping element for the electric, electronic and/or mechanical element may be an integrated part of the cooling channel. Moreover, the cooling channel and the at least one clamping element for the electric, electronic and/or mechanical element may form a single-piece part. For example, the clamping element is provided for fastening a capacitor.

[0012] Preferably, at least one cable support is an integrated part of the cooling channel. In this case, the cooling channel and the at least one cable support may form a single-piece part. In particular, the at least one cable support may be provided for at least one high voltage line.

[0013] The cooling channel may be made of a heat resistant material. Moreover, the cooling channel may be made of a flame retardant material.

[0014] Preferably, the cooling channel is provided for an optimized air flow distribution.

[0015] For example, the cooling channel may include an integrated wire routing.

[0016] At last, the present invention relates to a cooling channel for the cooking oven mentioned above.

[0017] Novel and inventive features of the present invention are set forth in the appended claims.

[0018] The present invention will be described in further detail with reference to the drawing, in which

FIG 1 illustrates a perspective rear view of a cooking oven with a cooling channel according to a preferred embodiment of the present invention, and

FIG 2 illustrates a perspective rear view of a cooking oven with a cooling channel according to the prior art.

[0019] FIG 1 illustrates a perspective rear view of a cooking oven 10 with a cooling channel 16 according to a preferred embodiment of the present invention.

[0020] The cooking oven 10 comprises an oven cavity

12 and a front panel 14. The cooling channel 16 is arranged above the oven cavity 12. The cooling channel 16 is made of plastics.

[0021] Electric and/or electronic components are arranged upon the cooling channel 16. Printed circuit boards 18 are integrated parts of an upper part of the cooling channel 16. For example, the upper part of the cooling channel 16 and the printed circuit boards 18 are formed as a single-piece part.

[0022] A capacitor 20 is arranged on the top side of the cooling channel 16. Clamping elements 28 for the capacitor 20 are integrated parts of the upper part of the cooling channel 16. For example, the upper part of the cooling channel 16 and the clamping elements 28 are formed as a single-piece part.

[0023] A casing 22 for a high voltage power supply is arranged on the upper part of the cooling channel 16. At least a part of said casing 22 for the high voltage power supply is an integrated part of the upper part of the cooling channel 16. For example, the upper part of the cooling channel 16 and the at least one part of the casing 22 are formed as a single-piece part.

[0024] Further, cable supports 24 for a high voltage line are integrated parts of the upper part of the cooling channel 16. For example, the upper part of the cooling channel 16 and the cable supports 24 for the high voltage line are formed as a single-piece part.

[0025] In the inventive cooking oven 10 the cooling channel 16 is made of plastics and several components form peripheral parts of said cooling channel 16. In particular, such components producible of plastics and arrangeable upon or beside the cooling channel 16 are integrated part of the cooling channel 16. Further, the cooling channel 16 and some peripheral parts of said cooling channel 16 may be formed as a single-piece part. The inventive cooking oven 10 with the cooling channel 16 reduces the number of components.

[0026] FIG 2 illustrates a perspective rear view of the cooking oven 10 with the cooling channel 16 according to the prior art. The cooking oven 10 comprises the oven cavity 12 and the front panel 14. The cooling channel 16 is arranged above the oven cavity 12. The cooling channel 16 is made of metal sheet. The electric and/or electronic components are arranged upon the cooling channel 16. The printed circuit boards 18 and a capacitor 20 are arranged on the top side of the cooling channel 16. The capacitor 20 is fixed by brackets 26. Said brackets 26 are made of metal. Further, the casing 22 for the high voltage power supply is arranged on the top side of the cooling channel 16. Moreover, the cable supports 24 for the high voltage line are arranged on the top side of the cooling channel 16. The electric and/or electronic components are formed as separate units.

List of reference numerals

[0027]

10	cooking oven
12	oven cavity
14	front panel
16	cooling channel
18	printed circuit board
20	capacitor
22	casing for high voltage power supply
24	cable support
26	bracket for capacitor
28	clamping element

Claims

1. A cooking oven (10) with a cooling channel (16) arranged upon or besides an oven cavity (12), wherein
 - the cooling channel (16) is made of plastics and attached or attachable at a top wall or a side wall of the oven cavity (12),
 - the cooking oven (10) comprises electric, electronic and/or mechanical elements (18, 20) arranged or arrangeable upon or beside the cooling channel (16), and
 - at least a part of plastic components (18, 22) and/or plastic peripheral parts (24, 28) of the electric, electronic and/or mechanical elements (18, 20) are integrated parts of the cooling channel (16).
2. The cooking oven according to claim 1, **characterized in that** the cooling channel (16) and at least a part of the plastic components (18, 22) and/or plastic peripheral parts (24, 28) of the electric, electronic and/or mechanical elements (18, 20) form a single-piece part.
3. The cooking oven according to claim 1 or 2, **characterized in that** at least one printed circuit board (18) is an integrated part of the cooling channel (16) and/or is assembled to the cooling channel with supports that are integral with the cooling channel.
4. The cooking oven according to claim 3, **characterized in that** the cooling channel (16) and the at least one printed circuit board (18) form a single-piece part.

5. The cooking oven according to claim 3 or 4,
characterized in that
the at least one printed circuit board (18) on the cooling channel (16) comprises at least one conductor path. 5
6. The cooking oven according to any one of the preceding claims,
characterized in that
at least one clamping element (28) for the electric, electronic and/or mechanical element (18, 20) is an integrated part of the cooling channel (16). 10
7. The cooking oven according to claim 6,
characterized in that
the cooling channel (16) and the at least one clamping element (28) for the electric, electronic and/or mechanical element (18, 20) form a single-piece part. 15
20
8. The cooking oven according to claim 6 or 7,
characterized in that
the clamping element (28) is provided for fastening a capacitor (20). 25
9. The cooking oven according to any one of the preceding claims,
characterized in that
at least one cable support (24) is an integrated part of the cooling channel (16). 30
10. The cooking oven according to claim 9,
characterized in that
the cooling channel (16) and the at least one cable support (24) form a single-piece part. 35
11. The cooking oven according to claim 9 or 10,
characterized in that
the at least one cable support (24) is provided for at least one high voltage line. 40
12. The cooking oven according to any one of the preceding claims,
characterized in that
the cooling channel (16) is made of a heat resistant material and/or a flame retardant material. 45
13. The cooking oven according to any one of the preceding claims,
characterized in that
the cooling channel (16) is provided for an optimized air flow distribution. 50
14. The cooking oven according to any one of the preceding claims,
characterized in that
the cooling channel (16) includes an integrated wire routing. 55
15. A cooling channel for a cooking oven,
characterized in that
the cooling channel (16) is provided for a cooking oven according to any one of the claims 1 to 14.

FIG 1

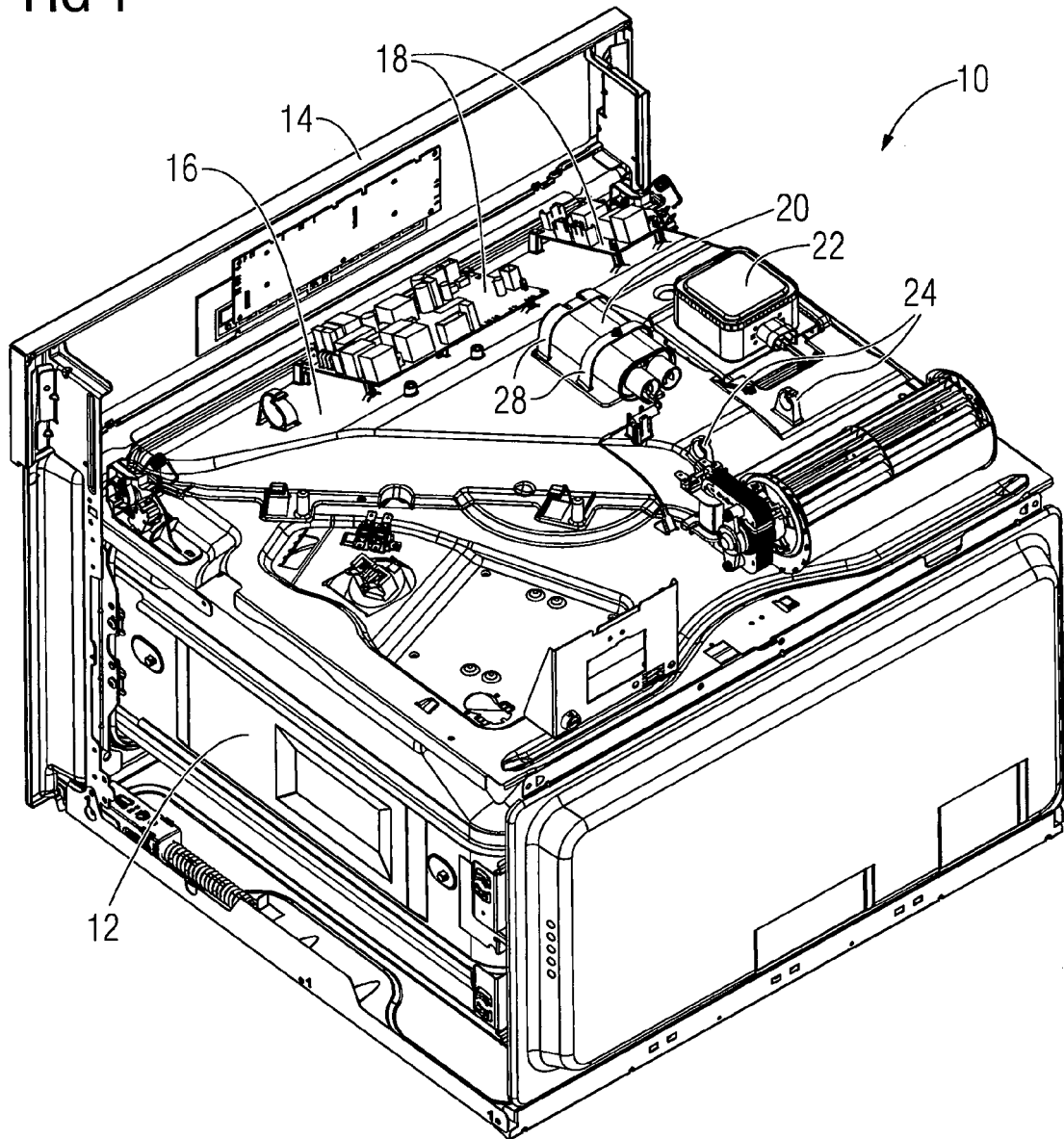
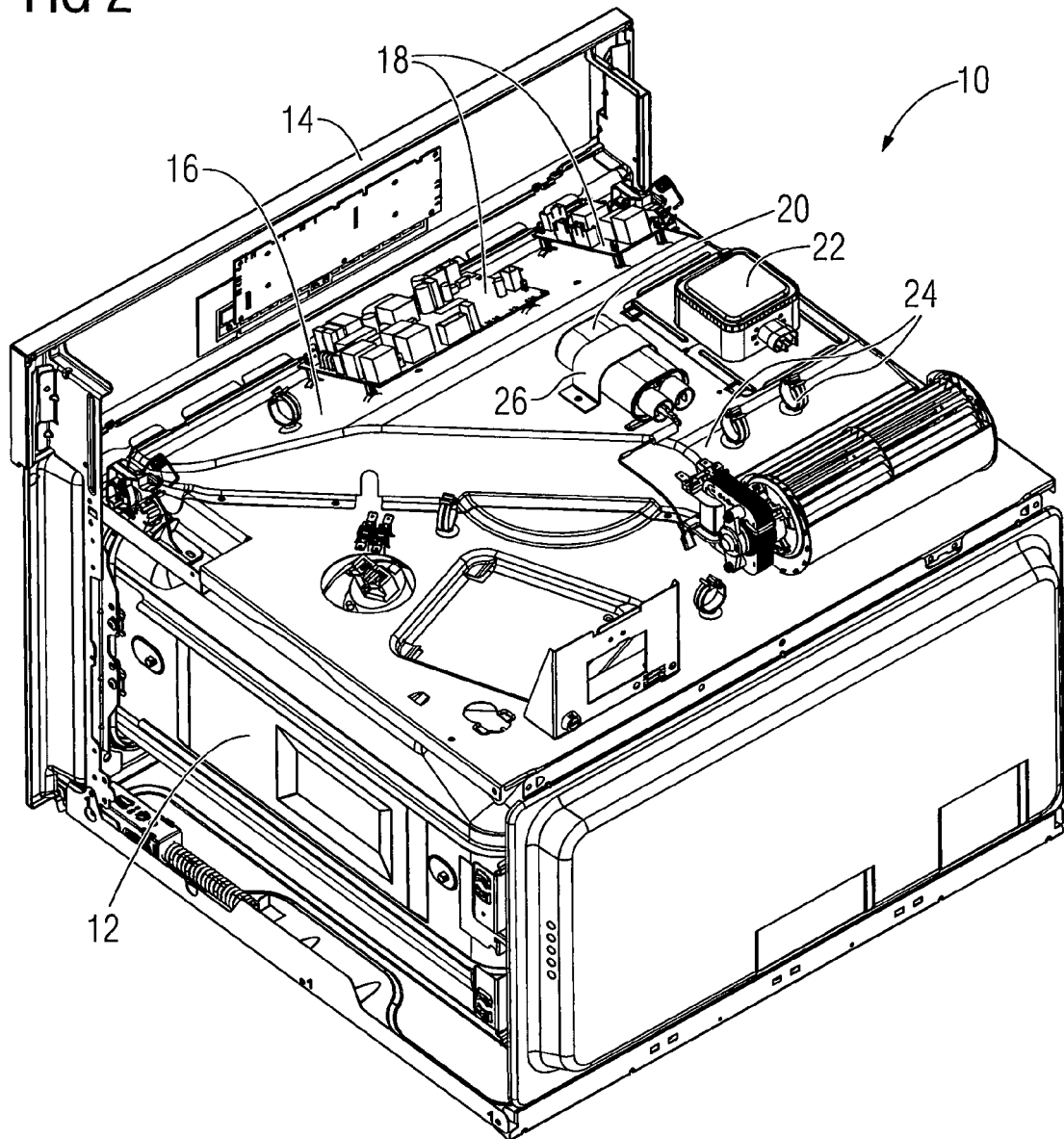


FIG 2





EUROPEAN SEARCH REPORT

Application Number
EP 12 19 3124

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 2010 042892 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 26 April 2012 (2012-04-26) * column 2, lines 37-39,58 - column 3, lines 66-69; figures 1,2 *	1-11, 13-15	INV. F24C15/00
X	EP 2 463 588 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 13 June 2012 (2012-06-13) * paragraph [0025]; figure 3 *	1,12	
X	DE 198 46 862 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 13 April 2000 (2000-04-13) * paragraph [0034]; figure 2 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			F24C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 22 March 2013	Examiner Rodriguez, Alexander
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (F04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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22-03-2013

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EP 2463588 A1	13-06-2012	DE 102010062949 A1 EP 2463588 A1	14-06-2012 13-06-2012
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