



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
01.02.2012 Bulletin 2012/05

(51) Int Cl.:
F24C 15/34 (2006.01)

(21) Application number: **10007897.1**

(22) Date of filing: **29.07.2010**

(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 SE SI SK SM TR
Designated Extension States:
BA ME RS

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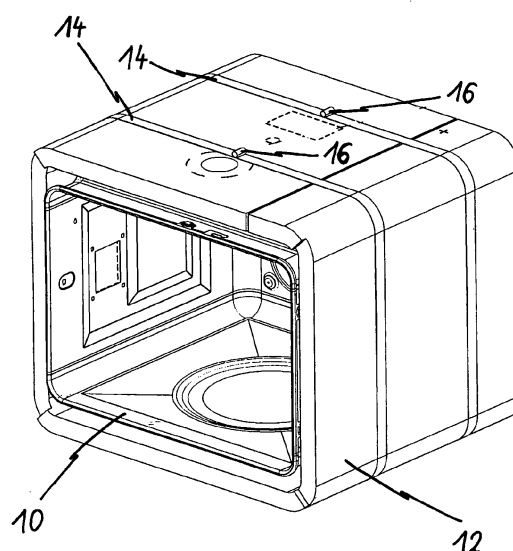
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(54) **A holding device for an insulation layer at an oven cavity of a cooking oven**

(57) The present invention relates to a holding device for at least one insulation layer (12) at an oven cavity (10) of a cooking oven. The holding device is provided for enclosing the insulation layer (12) and side walls, a top wall and a bottom wall of the oven cavity (10). The holding device includes at least one metal tape (14) for enclosing the insulation layer (12) and the side walls, the top wall and the bottom wall of the oven cavity (10). An end portion (20) and a further end portion (22) of the at least one metal tape (14) are connected or connectable, so that the metal tape (14) or a series of connected metal tapes (14) form a ring around the oven cavity (10). At least one excess end of the end portion (20) of the at least one metal tape (14) is recoiled or recoilable, so that the at least one metal tape (14) lies against the insulation layer (12) and the insulation layer (12) lies against the side walls, the top wall and/or the bottom wall of the oven cavity (10). Further, the present invention relates to a method for fastening a holding device for an insulation layer at an oven cavity of a cooking oven.

FIG. 1



Description

[0001] The present invention relates to a holding device for at least one insulation layer at an oven cavity of a cooking oven. Further, the present invention relates to a method for fastening a holding device for at least one insulation layer at an oven cavity of a cooking oven.

[0002] In an oven cavity of a cooking oven high temperatures are generated. In particular, if treatment by pyrolysis is performed, then the temperature in the oven cavity may be about 500°C. However, in the furniture enclosing said oven cavity only a temperature lower than 90°C is allowed. Thus, an efficient thermal insulation between the oven cavity and the furniture is required.

[0003] Usually, the furniture is arranged around the side walls, the top wall and the bottom wall of the oven cavity. Thus, at least the side walls, the top wall and the bottom wall of the oven cavity should be enclosed by the insulation layer. Further, the insulation layer should closely lie against the walls of the oven cavity.

[0004] It is an object of the present invention to provide an improved holding device for an insulation layer at an oven cavity of a cooking oven, wherein said holding device allows a reliable thermal insulation of the oven cavity.

[0005] The object of the present invention is achieved by the holding device for at least one insulation layer at an oven cavity of a cooking oven according to claim 1.

[0006] According to the present invention

- the holding device is provided for enclosing the insulation layer and side walls, a top wall and a bottom wall of the oven cavity,
- the holding device includes at least one metal tape for enclosing the insulation layer and the side walls, the top wall and the bottom wall of the oven cavity,
- an end portion and a further end portion of the at least one metal tape are connected or connectable, so that the metal tape or a series of connected metal tapes form a ring around the oven cavity, and
- at least one excess end of the end portion of the at least one metal tape is recoiled or recoilable, so that the at least one metal tape lies against the insulation layer and the insulation layer lies against the side walls, the top wall and/or the bottom wall of the oven cavity.

[0007] The core of the present invention is the metal tape or the metal tapes enclosing the insulation layer, wherein the excess end of the end portion is recoiled or recoilable. The metal tape allows that the insulation layer lies equally against the side walls, the top wall and the bottom wall of the oven cavity, so that the insulation layer can develop its isolating properties. Further, the metal tape allows an easy installation of the insulation layer. Since the excess ends are recoiled, there are no sharp edges at the end of the metal tape.

[0008] According to a preferred embodiment of the present invention the holding device includes at least two

parallel metal tapes for enclosing the insulation layer and the side walls, the top wall and the bottom wall of the oven cavity. In this case, the holding device covers areas of the side walls, the top wall and the bottom wall of the oven cavity.

[0009] Further, the one end portion may comprise a cone end and the further end portion comprises at least one slot for receiving said cone end. The cone end and the slot are efficient connection elements by low complexity.

[0010] For example, the at least one slot may extend perpendicular to the longitudinal axis of the metal tape.

[0011] Additionally, the one end portion may comprise at least one folded edge extending perpendicular to the longitudinal axis of the metal tape. The folded edge allows a stable connection between the cone end and the slot.

[0012] According to the preferred embodiment of the present invention the one end portion comprises at least one barbed hook arranged at the longitudinal side of the metal tape. The barbed hook contributes to the stable connection between the one end portion and the further end portion.

[0013] In particular, the barbed hook is arranged between the cone end and the at least one folded edge of the one end portion.

[0014] Moreover, the further end portion may comprise at least one folded edge extending perpendicular to the longitudinal axis of the metal tape.

[0015] Further, the at least one excess end of the end portion of the at least one metal tape may be recoiled or recoilable by a screwdriver, wherein said screwdriver is driven by compressed air or by electric power.

[0016] The object of the present invention is further achieved by the method for fastening a holding device for at least one insulation layer at an oven cavity of a cooking oven according to claim 10.

[0017] According to the present invention the method comprising the following steps:

- arranging the insulation layer at outer side walls, an outer top wall and/or an outer bottom wall of the oven cavity,
- arranging at least one metal tape around the insulation layer, so that the metal tape encloses the insulation layer and the side walls, the top wall and the bottom wall of the oven cavity,
- connecting an end portion of the at least one metal tape to a further end portion, so that the metal tape or a series of connected metal tapes form a ring around the oven cavity, and
- recoiling at least one excess end of the end portion of the at least one metal tape, so that the at least one metal tape lies against the insulation layer and the insulation layer lies against the side walls, the top wall and/or the bottom wall of the oven cavity.

[0018] The metal tape and the recoiling of the excess ends allow that the insulation layer lies equally against

the walls of the oven cavity, so that the insulation layer can develop its isolating properties. Further, the method allows an easy installation of the metal tape and insulation layer. The recoiling of the excess ends prevents sharp edges at the end of the metal tape.

[0019] According to a preferred embodiment of the present invention the recoiling of the excess end of the end portion is performed by a screwdriver.

[0020] In particular, the screwdriver is driven by compressed air or by electric power.

[0021] Preferably, the method is provided for the holding device as described above.

[0022] Further, the present invention relates to a cooking oven with an oven cavity, an insulation layer and a holding device for said insulation layer, wherein the holding device is fastened by the method as described above.

[0023] Moreover, the present invention relates to a cooking oven with an oven cavity and an insulation layer, wherein the cooking oven comprises the holding device as described above.

[0024] Novel and inventive features of the present invention are set forth in the appended claims.

[0025] The present invention will be described in further detail with reference to the accompanied drawings, in which

FIG 1 illustrates a perspective view of an oven cavity enclosed by an insulation layer and a holding device according to a preferred embodiment of the present invention,

FIG 2 illustrates a top view of a metal tape for the holding device according to the preferred embodiment of the present invention,

FIG 3 illustrates a detailed top view of a second end portion of the metal tape for the holding device according to the preferred embodiment of the present invention,

FIG 4 illustrates a detailed top view of a second end portion of the metal tape for the holding device according to the preferred embodiment of the present invention,

FIG 5 illustrates a detailed side view of the second end portion of the metal tape for the holding device according to the preferred embodiment of the present invention, and

FIG 6 illustrates a sectional view of the metal tape for the holding device according to the preferred embodiment of the present invention.

[0026] FIG 1 illustrates a perspective view of an oven cavity 10 enclosed by an insulation layer 12 and a holding device according to a preferred embodiment of the present invention.

[0027] The oven cavity 10 includes two side walls, a top wall, a bottom wall and a rear wall. The front side of the oven cavity 10 is open and closable by an oven door. The insulation layer 12 encloses the both side walls, the top wall and the bottom wall of the oven cavity 10.

[0028] The holding device 14 includes two metal tapes 14. Said metal tapes 14 are arranged parallel to each other. The metal tapes 14 enclose the insulation layer 12, so that the insulation layer 12 is pressed against the side walls, the top wall and the bottom wall of the oven cavity 10.

[0029] Each metal tape 14 has a circular structure. Two end portions of each metal tape 14 are connected together, wherein an excess end of said metal tape 14 is furled. Thus, said excess end of the metal tape 14 forms a coil 16.

[0030] The circular metal tape 14 is obtained by connecting the end portions of said metal tape 14. In this example, one end portion of the metal tape 14 is hooked into the other end portion of said metal tape 14. Then, the excess end of the one end portion is recoiled by a screwdriver. For example, said screwdriver may be driven by compressed air or by electric power.

[0031] The holding device with the both metal tapes 14 allows that the insulation layer 12 lies equally against the side walls, the top wall and the bottom wall of the oven cavity 10. Thus, the insulation layer 12 can develop its isolating properties. Further, the holding device allows an easy installation of the insulation layer 12 and the metal tapes 14. There are no sharp edges at the end the metal tapes 14, since the excess ends are recoiled.

[0032] FIG 2 illustrates a top view of the metal tape 14 for the holding device according to the preferred embodiment of the present invention. The metal tape 14 comprises a first end portion 20 and a second end portion 22. Further, the metal tape 14 comprises an elongated channel 36 extending along the longitudinal axis of the metal tape 14. The channel 36 is embossed in a central portion of the metal tape 14.

[0033] The first end portion 20 includes a cone end 24. The first end portion 20 is smaller than the other portions of the metal tape 14. Further, the first end portion 20 includes a folded edge 28 forming an angle of about 160°. Said folded edge 28 extends perpendicular to the longitudinal axis of the metal tape 14. Between the cone end 24 and the folded edge 28 a barbed hook 26 is arranged at one longitudinal side of the first end portion 20. The barbed hook 26 is formed by a cut-out.

[0034] In this example, the metal tape 14 has a length of about 1870 mm and a width of about 20 mm, wherein the first end portion 20 has a width of about 15 mm.

[0035] The second end portion 22 includes two folded edges 32 and 34 bended contrary. The both folded edges 32 and 34 form an angle of about 135° in each case. The folded edges 32 and 34 extend perpendicular to the longitudinal axis of the metal tape 14. Between the folded edges 32 and 34 a slot 30 is arranged in the second end portion 22 of the metal tape 14. Said slot 30 extends

perpendicular to the longitudinal axis of the metal tape 14. In this example, the slot 30 has a length of about 16 mm.

[0036] FIG 3 illustrates a detailed top view of the first end portion 20 of the metal tape 14 for the holding device according to the preferred embodiment of the present invention. In particular, FIG 3 shows in detail the cone end 24, the barbed hook 26 and the folded edge 28 of the first end portion 20.

[0037] FIG 4 illustrates a detailed top view of the second end portion 22 of the metal tape 14 for the holding device according to the preferred embodiment of the present invention. In particular, FIG 4 shows in detail the slot 30 and the folded edges 32 and 34.

[0038] FIG 5 illustrates a detailed side view of the second end portion 22 of the metal tape 14 for the holding device according to the preferred embodiment of the present invention. FIG 5 clarifies that the folded edges 32 and 34 are bended contrary. Thus, the slot 30 between the folded edges 32 and 34 is open related to the longitudinal axis of the metal tape 14.

[0039] The slot 30 is provided for receiving the cone end 24 of the same metal tape 14. Alternatively, the slot 30 may be provided for receiving the cone end 24 of another metal tape 14, so that several metal tapes 14 are connected or connectable together.

[0040] When the cone end 24 has been received by the slot 30, then the barbed hook 26 ensures the connection between the first end portion 20 and the second end portion 22 of the metal tape 14. The excess end of the first end portion 20 is formed between the cone end 24 and the barbed hook 26. Then, the excess end of the first end portion 20 is recoiled by the screwdriver.

[0041] FIG 6 illustrates a sectional view of the metal tape 14 for the holding device according to the preferred embodiment of the present invention. FIG 6 shows the sectional view of the metal tape 14 along the axis A-A in FIG 2. In particular, FIG 6 clarifies the cross-section of the metal tape 14 with the channel 36.

[0042] Although an illustrative embodiment of the present invention has been described herein with reference to the accompanying drawings, it is to be understood that the present invention is not limited to that precise embodiment, and that various other changes and modifications may be affected therein by one skilled in the art without departing from the scope or spirit of the invention. All such changes and modifications are intended to be included within the scope of the invention as defined by the appended claims.

List of reference numerals

[0043]

- 10 oven cavity
12 insulation layer

- 14 metal tape
16 coil
20 first end portion
22 second end portion
24 cone end
26 barbed hook
28 folded edge
30 slot
32 folded edge
34 folded edge
36 channel

Claims

1. A holding device for at least one insulation layer (12) at an oven cavity (10) of a cooking oven, wherein:
 - the holding device is provided for enclosing the insulation layer (12) and side walls, a top wall and a bottom wall of the oven cavity (10),
 - the holding device includes at least one metal tape (14) for enclosing the insulation layer (12) and the side walls, the top wall and the bottom wall of the oven cavity (10),
 - an end portion (20) and a further end portion (22) of the at least one metal tape (14) are connected or connectable, so that the metal tape (14) or a series of connected metal tapes (14) form a ring around the oven cavity (10), and
 - at least one excess end of the end portion (20) of the at least one metal tape (14) is recoiled or recoilable, so that the at least one metal tape (14) lies against the insulation layer (12) and the insulation layer (12) lies against the side walls, the top wall and/or the bottom wall of the oven cavity (10).
2. The holding device according to claim 1, **characterized in, that** the holding device includes at least two parallel metal tapes (14) for enclosing the insulation layer (12) and the side walls, the top wall and the bottom wall of the oven cavity (10).
3. The holding device according to claim 1 or 2, **characterized in, that** the one end portion (20) comprises a cone end (24)

and the further end portion (22) comprises at least one slot (30) for receiving said cone end (24).

4. The holding device according to claim 3,
characterized in, that
the at least one slot (30) extends perpendicular to the longitudinal axis of the metal tape (14). 5
5. The holding device according to any one of the preceding claims,
characterized in, that
the one end portion (20) comprises at least one folded edge (28) extending perpendicular to the longitudinal axis of the metal tape (14). 10
6. The holding device according to any one of the preceding claims,
characterized in, that
the one end portion (20) comprises at least one barbed hook (26) arranged at the longitudinal side of the metal tape (14). 20
7. The holding device according to claim 3, 5 and 6,
characterized in, that
the barbed hook (26) is arranged between the cone end (24) and the at least one folded edge (28) of the one end portion (20). 25
8. The holding device according to any one of the preceding claims,
characterized in, that
the further end portion (22) comprises at least one folded edge (32, 34) extending perpendicular to the longitudinal axis of the metal tape (14). 30
9. The holding device according to any one of the preceding claims,
characterized in, that
the at least one excess end of the end portion (20) of the at least one metal tape (14) is recoiled or recoilable by a screwdriver, wherein said screwdriver is driven by compressed air or by electric power. 35 40
10. A method for fastening a holding device for at least one insulation layer (12) at an oven cavity (10) of a cooking oven comprising the following steps: 45
 - arranging the insulation layer (12) at outer side walls, an outer top wall and/or an outer bottom wall of the oven cavity (10), 50
 - arranging at least one metal tape (14) around the insulation layer (12), so that the metal tape (14) encloses the insulation layer (12) and the side walls, the top wall and the bottom wall of the oven cavity (10), 55
 - connecting an end portion (20) of the at least one metal tape (14) to a further end portion (22), so that the metal tape (14) or a series of con-

nected metal tapes (14) form a ring around the oven cavity (10), and

- recoiling at least one excess end of the end portion (20) of the at least one metal tape (14), so that the at least one metal tape (14) lies against the insulation layer (12) and the insulation layer (12) lies against the side walls, the top wall and/or the bottom wall of the oven cavity (10).

11. The method according to claim 10,
characterized in, that
the recoiling of the excess end of the end portion (20) is performed by a screwdriver.
12. The method according to claim 11,
characterized in, that
the screwdriver is driven by compressed air or by electric power.
13. The method according to any one of the claims 10 to 12,
characterized in, that
the method is provided for a holding device according to any one of the claims 1 to 9.
14. A cooking oven with an oven cavity (10), an insulation layer (12) and a holding device for said insulation layer (12),
characterized in, that
the holding device is fastened by a method according to any one of the claims 10 to 13.
15. A cooking oven with an oven cavity (10) and an insulation layer (12),
characterized in, that
the cooking oven comprises a holding device according to any one of the claims 1 to 9.

FIG. 1

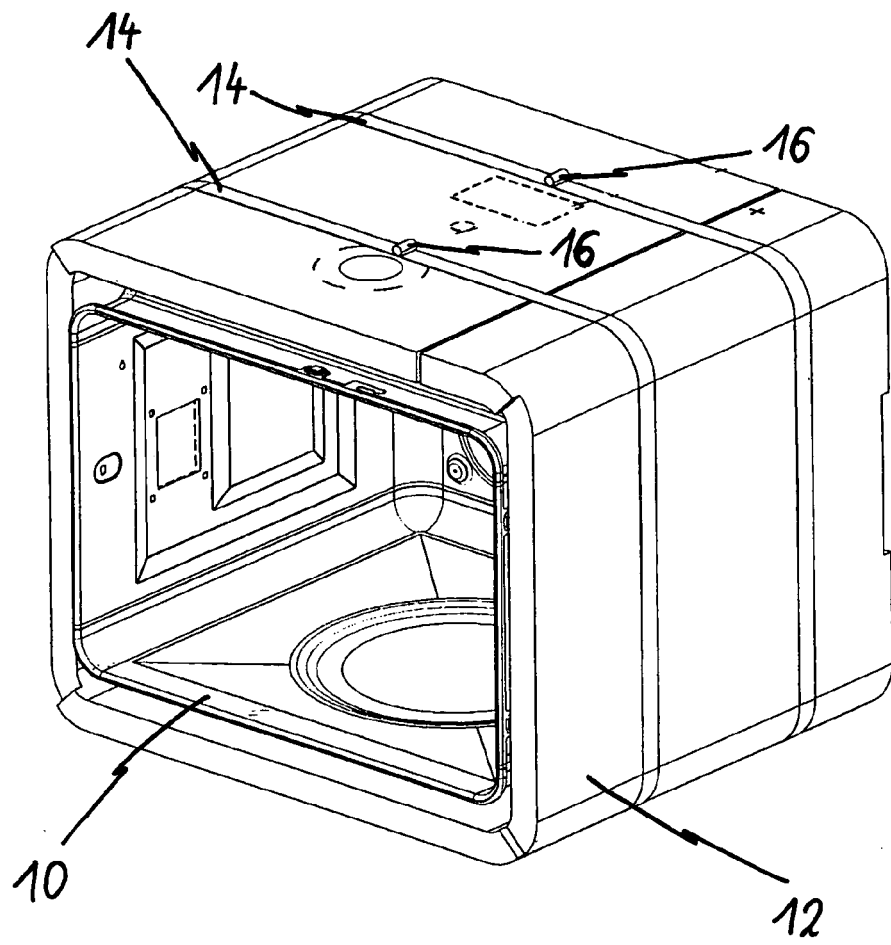


FIG. 2

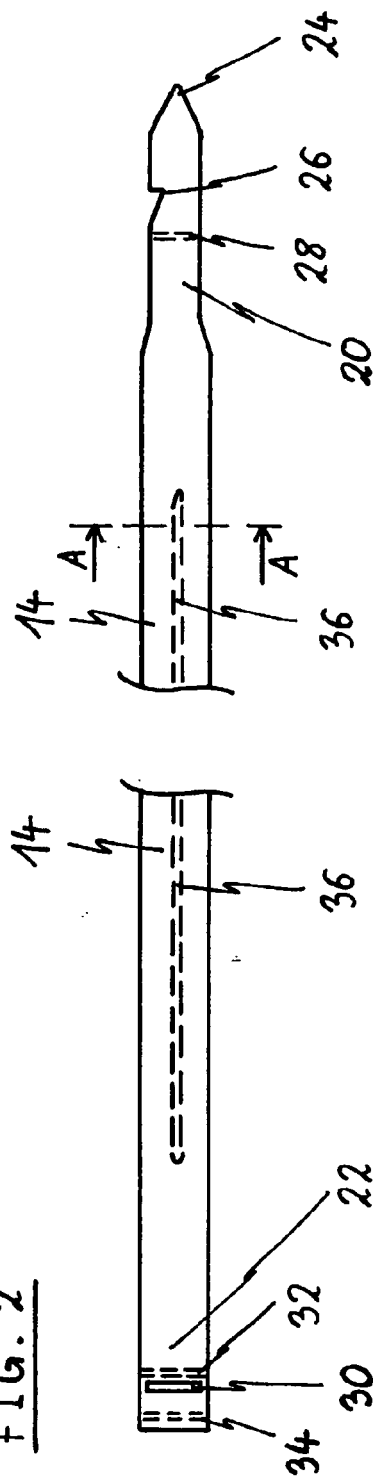


FIG. 3

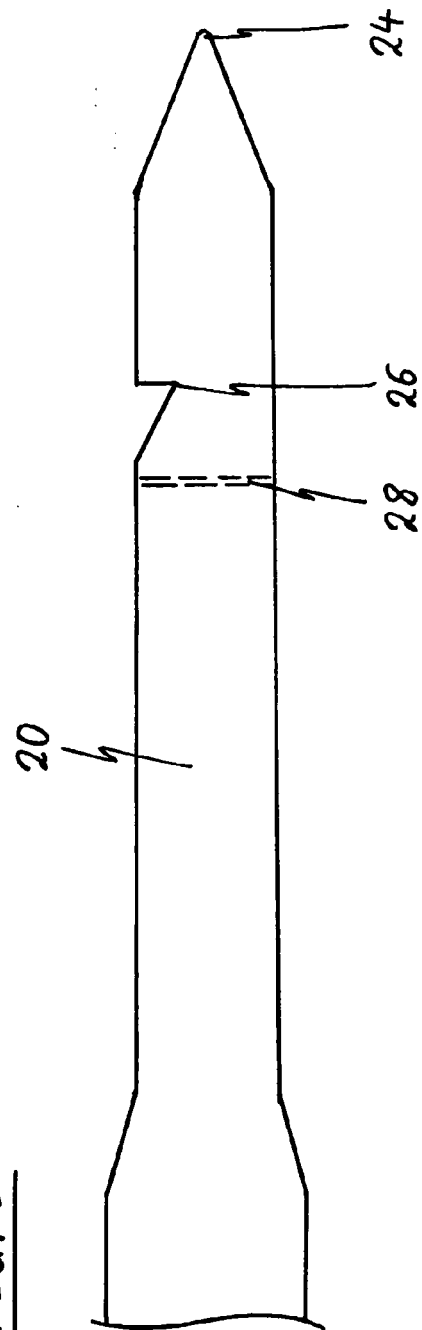


FIG. 4

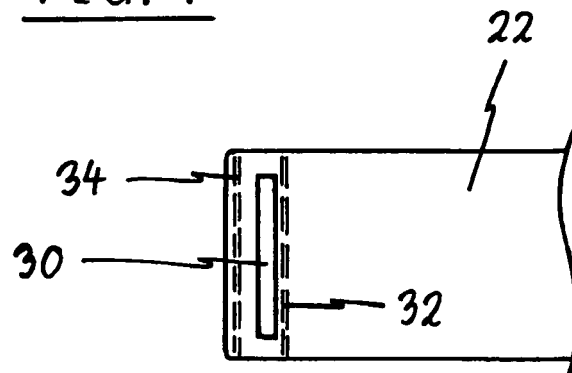


FIG. 5

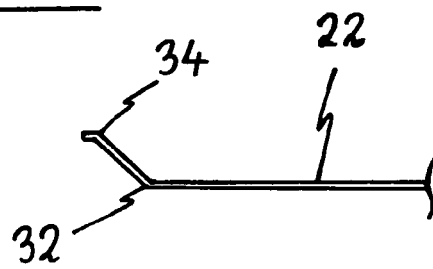
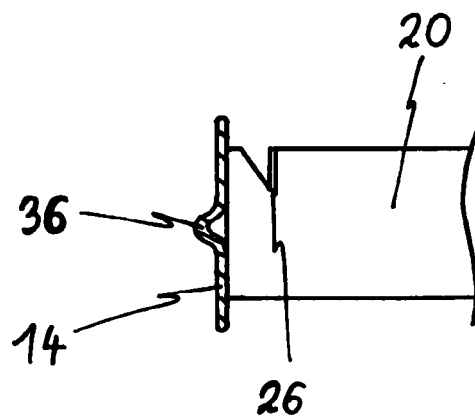


FIG. 6





EUROPEAN SEARCH REPORT

Application Number
EP 10 00 7897

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	US 3 216 079 A (KEYWORTH THOMAS H) 9 November 1965 (1965-11-09)	1,4,7-9	INV. F24C15/34
Y	* figures 1-4 *	2,3,5,6, 10-15	
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Y	----- US R E33 639 E (HANS OETIKER) 16 July 1991 (1991-07-16) * figure 8 *	5	TECHNICAL FIELDS SEARCHED (IPC)
			F24C F16L F25D B65B F16B B65D B21D F17C A47L
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 March 2011	Examiner Adant, Vincent
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 (P04C01)

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

EP 10 00 7897

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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14-03-2011

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