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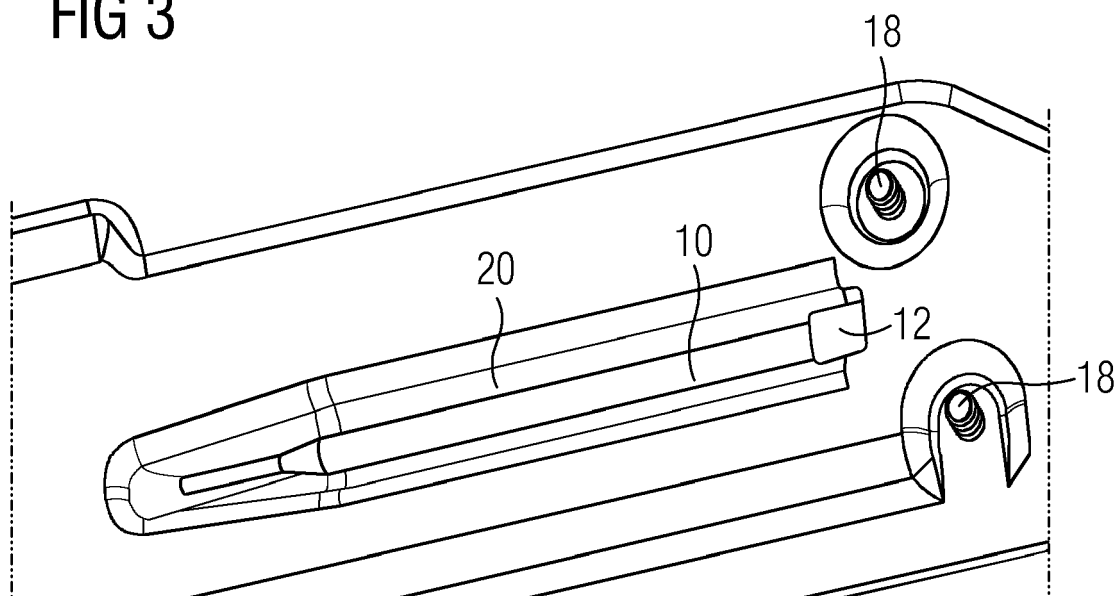
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(54) **SHIELDING SYSTEM FOR A THERMOSTAT IN AN OVEN CAVITY OF A COOKING OVEN**

(57) The present invention relates to a shielding system for a thermostat (10) in an oven cavity of a cooking oven. The shielding system includes a niche (20) for receiving the thermostat (10). The niche (20) is formed by

a buckling in a sheet element. Said sheet element is installable into the oven cavity or is an integrated part of a wall of said oven cavity.

FIG 3



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Description

[0001] The present invention relates to a shielding system for a thermostat in an oven cavity of a cooking oven. Further, the present invention relates to an oven cavity for a cooking oven. Moreover, the present invention relates to a cooking oven.

[0002] Usually, a cooking oven comprises a thermostat for detecting the temperature in an oven cavity during a cooking process. The detection of the temperature allows an automatic control of the cooking process.

[0003] FIG 4 illustrates a schematic perspective view of a support element 22 with the thermostat 10 according to the prior art. In this example, the thermostat 10 is a gas-filled-bulb type thermostat. The support element 22 holds the thermostat 10 and is fixed to the wall of the oven cavity by means of some screws 18. The support element 22 includes a grab on the thermostat 10. The grab and the screws 18 guarantee that the thermostat 10 is electrically grounded.

[0004] FIG 5 illustrates a schematic perspective view of the support element 22 with the thermostat 10 and its environment according to the prior art. Heating elements 24 are arranged in the environment of the thermostat 10. FIG 5 clarifies that the thermostat 10 is directly exposed to the hot air 26 flowing from the bottom part of the oven cavity upwards due to thermal convection effects and a rear fan operation. This phenomenon affects the temperature sensed by the thermostat 10 in an uncontrolled way.

[0005] Further, the assembling of the thermostat 10 to the wall of the oven cavity requires several steps. At first, the support element 22 has to be fixed to the oven cavity. FIG 6 illustrates a schematic perspective view of the support element 22 without the thermostat 10 according to the prior art. In FIG 6 the support element 22 is just fixed to the oven cavity. Then, the thermostat 10 has to be inserted into the oven cavity through a hole 28.

[0006] FIG 7 illustrates a schematic perspective view of the insertion of the thermostat 10 into the support element 22 according to the prior art. The hole 28 is arranged at the rear wall of the oven cavity. At last, the thermostat 10 is installed at the support element 22 from the interior of the oven cavity as shown in FIG 4. The insertion of the thermostat 10 in FIG 7 requires place on the rear side of the oven cavity. In contrast, the installation of the thermostat 10 as shown in FIG 4 requires place on the front side of the oven cavity. The support element 22 must be in contact to the thermostat 10 in a certain way in order to guarantee the ground connection of the thermostat 10, which is achieved by means of the special shape of the support element 22. The operator has limited space for installing the thermostat 10, since the movements of said thermostat 22 must be performed inside the oven cavity.

[0007] It is an object of the present invention to provide a system for a thermostat in an oven cavity, which allows an easy assembling of said thermostat and avoids that the thermostat is directly exposed to hot air.

[0008] The object is achieved by the shielding system according to claim 1.

[0009] According to the present invention a shielding system for a thermostat in an oven cavity of a cooking oven is provided, wherein:

- the shielding system includes a niche for receiving the thermostat,
- the niche is formed by a buckling in a sheet element, and
- said sheet element is installable into the oven cavity or is an integrated part of a wall of said oven cavity.

[0010] The core of the present invention is the niche for the thermostat. Said niche may be indirectly arranged within the oven cavity or directly formed in a wall of said oven cavity. Since the niche is formed by the buckling in the sheet element, the shielding system may be obtained by low complexity. The niche allows that the thermostat is arranged out of the stream of hot air within the oven cavity, so that the temperature detected by the thermostat is not distorted by said stream of hot air.

[0011] Alternatively, the niche may be formed in another sheet element within the oven cavity. For example, the niche may be formed in a dividing wall between a fan and cooking area of the oven cavity. However, the niche must shield the thermostat from the direct hit of the hot air stream.

[0012] Preferably, the niche has the same shape as the thermostat, wherein said niche is marginally bigger than the thermostat.

[0013] In particular, the shielding system includes at least one hole, through which the thermostat is insertable into the oven cavity from the outside.

[0014] Further, the hole may be arranged beside the niche.

[0015] For example, the shielding system is provided for an elongated thermostat, wherein the niche extends parallel to the plane of the sheet element.

[0016] Alternatively, other shapes are also possible for the thermostat. For example, the thermostat may be spherical, cubical-shaped, discoidal, annular or U-shaped. In a similar way, other shapes are also possible for the niche, wherein the niche may be hemispherical, cylindrical, annular or U-shaped. However, the thermostat must be insertable into the niche, so that the niche can protect said thermostat from direct hit of the hot air stream inside the oven cavity. Moreover, the hole, through which the thermostat is insertable into the oven cavity, should have a shape that an arbitrary formed thermostat could be fit.

[0017] Preferably, the hole is arranged beside a front end of the niche.

[0018] In particular, the shielding system comprises at least one support element attached or attachable at an outer side of the oven cavity.

[0019] The support element may include one or more grabbing wings for enclosing the thermostat.

[0020] Preferably, the support element is formed as single-piece part, wherein preferably said support element is made of metal.

[0021] Further, the support element may be attached or attachable by screws at the outer side of the oven cavity.

[0022] Moreover, the thermostat is grounded or connectable to the ground via the support element.

[0023] Additionally, the shielding system may be provided for a thermostat connected or connectable to a cable, wherein said cable is arranged or arrangeable out of the oven cavity. Thus, the cable is arranged or arrangeable in a cool area.

[0024] For example the shielding system is provided for a gas-filled-bulb type thermostat.

[0025] Further, the present invention relates to an oven cavity comprising at least one thermostat, wherein said oven cavity comprises at least one shielding system mentioned above.

[0026] Moreover, the present invention relates to a cooking oven comprising at least one oven cavity mentioned above.

[0027] Novel and inventive features of the present invention are set forth in the appended claims.

[0028] The present invention will be described in further detail with reference to the drawing, in which

FIG 1 illustrates a schematic perspective view of a support element of a shielding system for a thermostat according to a preferred embodiment of the present invention,

FIG 2 illustrates a schematic perspective view of the shielding system according to the preferred embodiment of the present invention from an outer side of an oven cavity,

FIG 3 illustrates a schematic perspective view of the shielding system according to the preferred embodiment of the present invention from an inner side of an oven cavity,

FIG 4 illustrates a schematic perspective view of the support element with the thermostat according to the prior art,

FIG 5 illustrates a schematic perspective view of the support element with the thermostat and its environment according to the prior art,

FIG 6 illustrates a schematic perspective view of the support element without thermostat according to the prior art, and

FIG 7 illustrates a schematic perspective view of the insertion of the thermostat into the support element according to the prior art.

[0029] FIG 1 illustrates a schematic perspective view of a support element 12 of a shielding system for a thermostat 10 according to a preferred embodiment of the present invention.

[0030] The support element 12 includes a sheet portion and grabbing wings 14. In this example, the support element 12 includes four tongue-shaped grabbing wings 14. Said grabbing wings 14 are arranged pairwise, wherein two grabbing wings 14 enclose the thermostat 10 in each case. The thermostat 10 is formed as an elongated bar. In this example, the thermostat 10 is a gas-filled-bulb type thermostat.

[0031] Alternatively, other shapes for the thermostat 10 are also possible. For example, the thermostat 10 may be spherical, cubical-shaped, discoidal, annular or U-shaped.

[0032] The support element 12 is made of metal. Suitable materials are those that assure the grounding connection between the thermostat 10 and the oven cavity, are able to withstand high temperature and are able to firmly grab the thermostat 10. This contributes to a reliable electrical grounding of the thermostat 10. In this example, the support element 12 is formed as a single-piece part, which also contributes to the reliable electrical grounding of the thermostat 10. Preferably, the support element 12 is made of a punched-out or cut sheet element, wherein the grabbing wings 14 are bent.

[0033] Additionally, a cable 16 is connected to the thermostat 10. In this example, the cable 16 is helical and connected to one end of the thermostat 10.

[0034] FIG 2 illustrates a schematic perspective view of the shielding system according to the preferred embodiment of the present invention from an outer side of an oven cavity.

[0035] The shielding system includes an elongated niche 20 for receiving the thermostat 10. The niche 20 is formed directly in a side wall of the oven cavity. Further, the niche 20 may be formed in a sheet element, which is insertable into a cut-out in the side wall of the oven cavity.

[0036] Alternatively, the niche 20 may be formed in another sheet element within the oven cavity. For example, the niche 20 may be formed in a dividing wall between a fan and cooking area of the oven cavity. However, the niche 20 must shield the thermostat 10 from the direct hit of the hot air stream.

[0037] The niche 20 is formed by a buckling in the side wall of the oven cavity. Preferably, the niche 20 is marginally bigger than the thermostat 10. A hole is formed in one front end of the niche 20. The thermostat 10 is insertable into the niche 20 through said hole from the outer side of the oven cavity.

[0038] Alternatively, other shapes are also possible for the niche 20, wherein the niche 20 may be hemispherical, cylindrical, annular or U-shaped. However, the thermostat 10 must be insertable into the niche 20, so that the niche 20 can protect said thermostat 10 from direct hit of the hot air stream inside the oven cavity. Moreover, the

hole, through which the thermostat 10 is insertable into the oven cavity, should have a shape that an arbitrary formed thermostat 10 could be fit.

[0039] The support element 12 is attached at the outer side of the oven cavity and beside the hole in the niche 20. The support element 12 is fixed by two screws 18 at the outer side of the oven cavity. The thermostat 10 is fixed at the support element 12 by bending the grabbing wings 14. The thermostat 10 is fixed at the support element 12, after the support element 12 has been fixed at the outer side of the oven cavity. The grabbing wings 14 are bent around the thermostat 10, after said thermostat 10 has been inserted into the niche 20. The cable 16 is arranged completely out of the oven cavity.

[0040] The shielding system according to the present invention allows that the thermostat 10 is installable in the oven cavity from one side, i.e. from the outer side of said oven cavity.

[0041] FIG 3 illustrates a schematic perspective view of the shielding system according to the preferred embodiment of the present invention from an inner side of an oven cavity.

[0042] The thermostat 10 is arranged within the niche 20. FIG 3 clarifies that the niche 20 is marginally bigger than the thermostat 10. The niche 20 effects that the thermostat 10 is arranged out of a stream of hot air in the oven cavity. Thus, the temperature detected by the thermostat 10 is not distorted by said stream of hot air.

[0043] The thermostat 10 is fixed at the support element 12 by the bent grabbing wings 14 arranged at the outer side of the oven cavity. In turn, the support element 12 is attached at the outer side of the oven cavity by the screws 18. The support element 12 is arranged beside the hole in the niche 20.

[0044] The shielding system according to the present invention allows a reliable detection of the temperature in the oven cavity by the thermostat 10.

[0045] FIG 4 illustrates a schematic perspective view of a support element 22 with the thermostat 10 according to the prior art. In this example, the thermostat 10 is a gas-filled-bulb type thermostat. The support element 22 holds the thermostat 10 and is fixed to the wall of the oven cavity by means of some screws 18. The support element 22 includes a grab on the thermostat 10. The grab and the screws 18 guarantee that the thermostat 10 is electrically grounded.

[0046] FIG 5 illustrates a schematic perspective view of the support element 22 with the thermostat 10 and its environment according to the prior art. Heating elements 24 are arranged in the environment of the thermostat 10. FIG 5 clarifies that the thermostat 10 is directly exposed to the hot air 26 flowing from the bottom part of the oven cavity upwards due to thermal convection effects and a rear fan operation. This phenomenon affects the temperature sensed by the thermostat 10 in an uncontrolled way.

[0047] Further, the assembling of the thermostat 10 to the wall of the oven cavity requires several steps. At first, the support element 22 has to be fixed to the oven cavity.

FIG 6 illustrates a schematic perspective view of the support element 22 without the thermostat 10 according to the prior art. In FIG 6 the support element 22 is just fixed to the oven cavity. Then, the thermostat 10 has to be inserted into the oven cavity through a hole 28.

[0048] FIG 7 illustrates a schematic perspective view of the insertion of the thermostat 10 into the support element 22 according to the prior art. The hole 28 is arranged at the rear wall of the oven cavity. At last, the thermostat 10 is installed at the support element 22 from the interior of the oven cavity as shown in FIG 4. The insertion of the thermostat 10 in FIG 7 requires place on the rear side of the oven cavity. In contrast, the installation of the thermostat 10 as shown in FIG 4 requires place on the front side of the oven cavity. The support element 22 must be in contact to the thermostat 10 in a certain way in order to guarantee the ground connection of the thermostat 10, which is achieved by means of the special shape of the support element 22. The operator has limited space for installing the thermostat 10, since the movements of said thermostat 22 must be performed inside the oven cavity.

[0049] 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

[0050]

10	thermostat
12	support element
14	grabbing wings
16	cable
18	screw
20	niche
22	support element
24	heating element
26	hot air
28	hole

Claims

1. A shielding system for a thermostat (10) in an oven cavity of a cooking oven, wherein:
 - the shielding system includes a niche (20) for receiving the thermostat (10),
 - the niche (20) is formed by a buckling in a sheet element, and

- said sheet element is installable into the oven cavity or is an integrated part of a wall of said oven cavity.

2. The shielding system according to claim 1,
characterised in that
the niche (20) has the same shape as the thermostat (10), wherein said niche (20) is marginally bigger than the thermostat (10). 5
3. The shielding system according to claim 1 or 2,
characterised in that
the shielding system includes at least one hole, through which the thermostat (10) is insertable into the oven cavity from the outside. 10
4. The shielding system according to claim 3,
characterised in that
the hole is arranged beside the niche (20). 15
5. The shielding system according to any one of the preceding claims,
characterised in that
the shielding system is provided for an elongated thermostat (10), wherein the niche (20) extends parallel to the plane of the sheet element. 20
6. The shielding system according to claim 5,
characterised in that
the hole is arranged beside a front end of the niche (20). 25
7. The shielding system according to any one of the preceding claims,
characterised in that
the shielding system comprises at least one support element (12) attached or attachable at an outer side of the oven cavity. 30
8. The shielding system according to claim 7,
characterised in that
the support element (12) includes one or more grabbing wings (14) for enclosing the thermostat (10). 35
9. The shielding system according to claim 7 or 8,
characterised in that
the support element (12) is formed as single-piece part, wherein preferably said support element (12) is made of metal. 40
10. The shielding system according to any one of the claims 7 to 9,
characterised in that
the support element (12) is attached or attachable by screws (18) at the outer side of the oven cavity. 45
11. The shielding system according to any one of the claims 7 to 10, 50

characterised in that

the thermostat (10) is grounded or connectable to the ground via the support element (12).

12. The shielding system according to any one of the preceding claims,
characterised in that
the shielding system is provided for a thermostat (10) connected or connectable to a cable (16), wherein said cable (16) is arranged or arrangeable out of the oven cavity. 55
13. The shielding system according to any one of the preceding claims,
characterised in that
the shielding system is provided for a gas-filled-bulb type thermostat (10).
14. An oven cavity comprising at least one thermostat (10),
characterised in that
the oven cavity comprises at least one shielding system according to any one of the preceding claims.
15. A cooking oven comprising at least one oven cavity,
characterised in that
the cooking oven comprises at least one oven cavity according to claim 14.

FIG 1

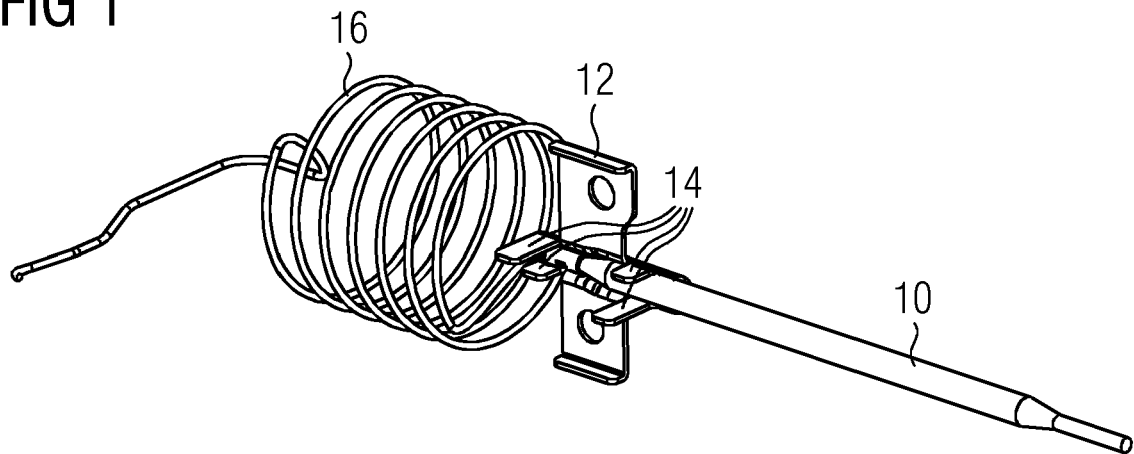


FIG 2

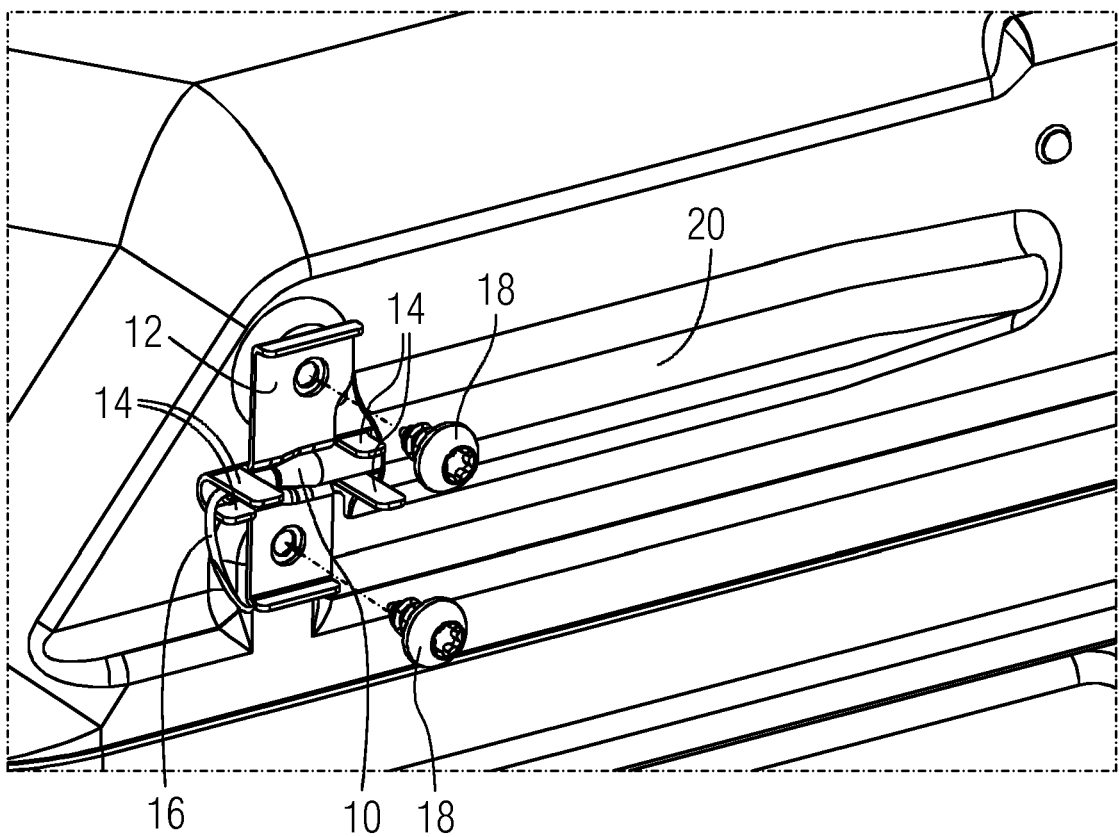


FIG 3

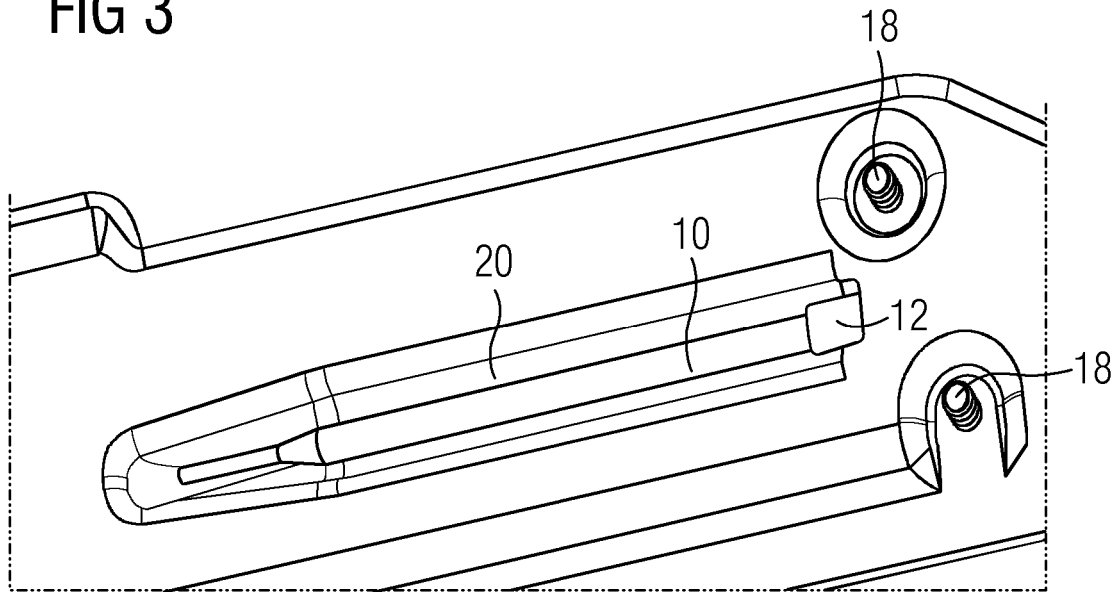


FIG 4

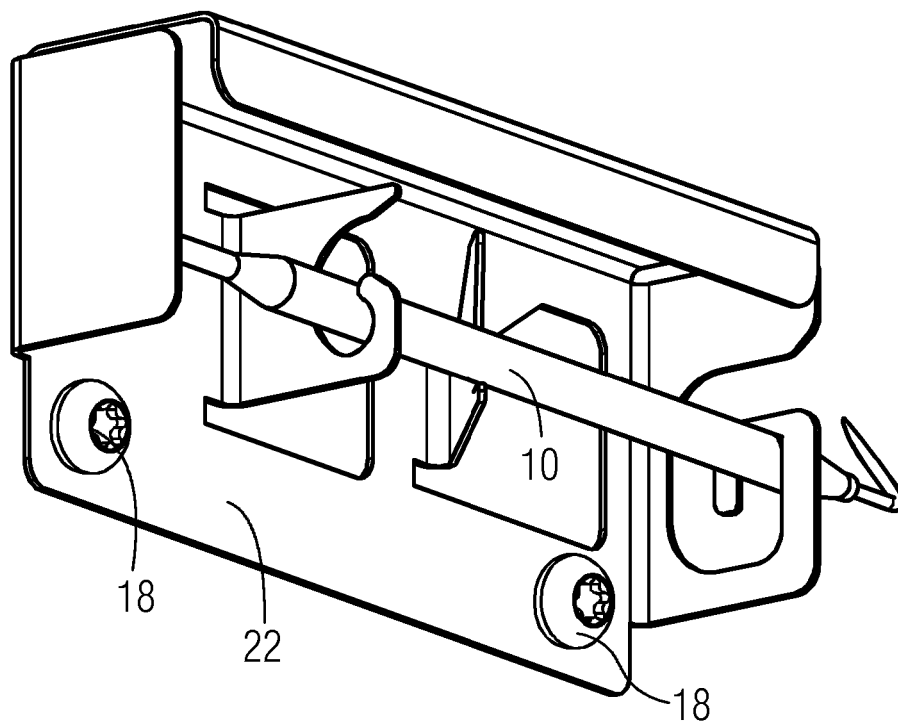


FIG 5

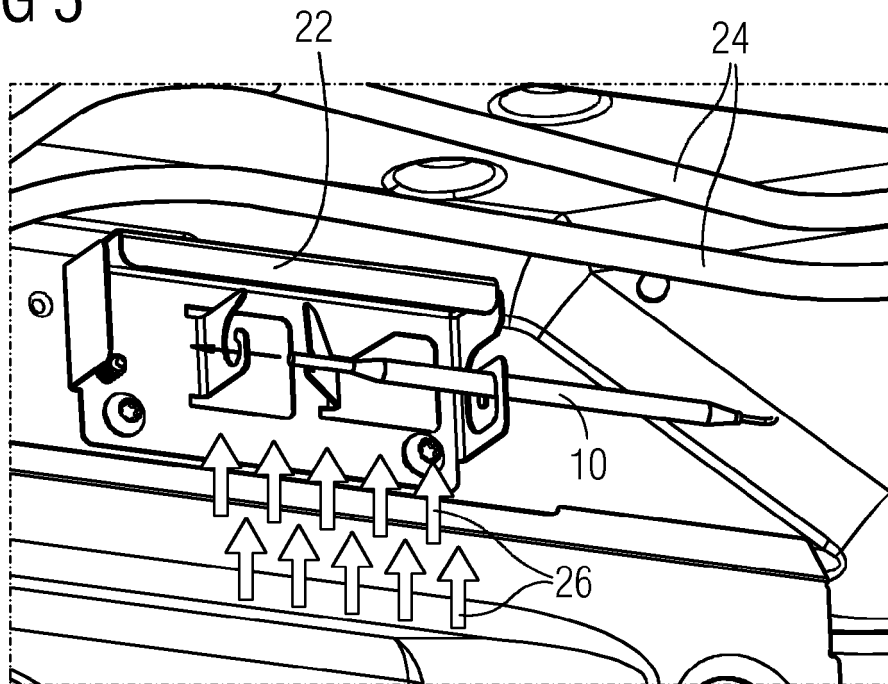


FIG 6

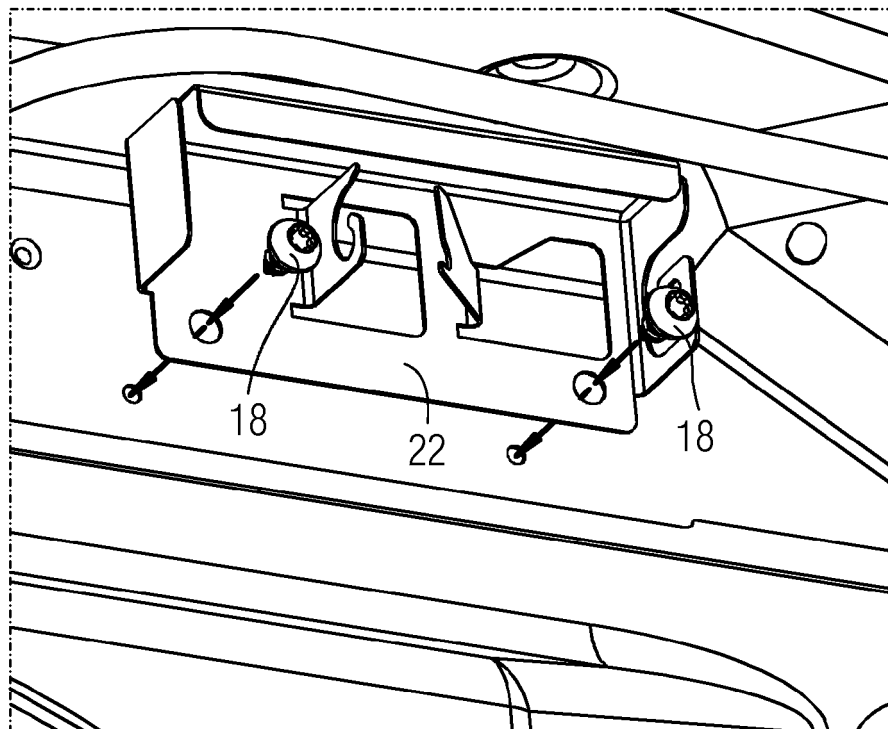
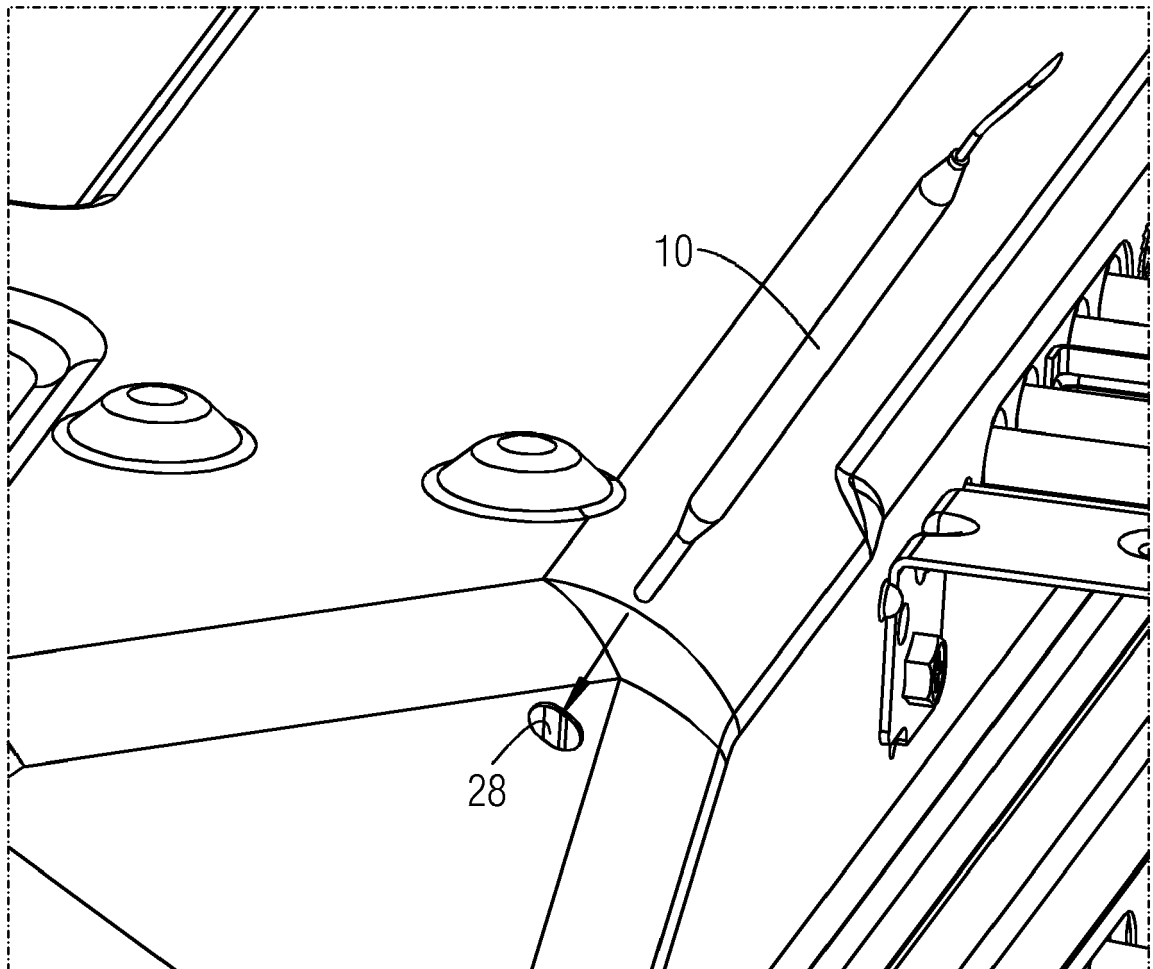


FIG 7





EUROPEAN SEARCH REPORT

Application Number
EP 18 17 4006

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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 29 09 243 B1 (LICENTIA GMBH) 24 July 1980 (1980-07-24) * column 1, line 51 - column 1, line 66 * * column 3, line 19 - column 3, line 24 * * column 3, line 32 - column 4, line 3 * * figures 1, 2 *	1-6, 12-15	INV. F24C3/12 F24C7/08 ADD. H01H37/04
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 25 October 2018	Examiner Jalal, Rashwan
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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25-10-2018

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