



(11) **EP 2 371 035 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention
of the grant of the patent:
25.04.2018 Bulletin 2018/17

(21) Application number: **09775165.5**

(22) Date of filing: **10.12.2009**

(51) Int Cl.:
H02G 3/12 ^(2006.01) **H01R 9/24** ^(2006.01)
H01R 13/514 ^(2006.01) **H01R 24/00** ^(2011.01)
F24C 7/08 ^(2006.01) **H01R 13/74** ^(2006.01)
H01R 4/18 ^(2006.01)

(86) International application number:
PCT/EP2009/066804

(87) International publication number:
WO 2010/076144 (08.07.2010 Gazette 2010/27)

(54) **A COOKING DEVICE COMPRISING CABLES WHICH CARRY ELECTRICITY**

KOCHGERÄT MIT KABELN, DIE ELEKTRIZITÄT FÜHREN

DISPOSITIF DE CUISSON COMPORTANT DES CÂBLES QUI TRANSPORTENT DE L'ÉLECTRICITÉ

(84) Designated Contracting States:
**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**

(30) Priority: **30.12.2008 TR 200810033**

(43) Date of publication of application:
05.10.2011 Bulletin 2011/40

(73) Proprietor: **Arçelik Anonim Sirketi**
34950 Istanbul (TR)

(72) Inventors:
• **ARSLANTEKIN, Ihsan**
34950 Istanbul (TR)
• **YIRMILI, Yasin Sedat**
34950 Istanbul (TR)

(56) References cited:
EP-A- 1 710 874 EP-A- 1 724 878
EP-A- 1 737 083 WO-A-2009/113039
GB-A- 1 590 478 GB-A- 2 415 097
US-A- 3 514 743 US-A- 5 407 363

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).

EP 2 371 035 B1

Description

[0001] The present invention relates to a cooking device comprising cables which carry electricity.

[0002] Cooking devices generally have a cooking volume wherein the food to be cooked is disposed, and walls which are formed from sheet metal and which surround this volume. The cooking device, furthermore, comprises electrically operated elements such as heater heating the cooking volume, fan providing the heated air to be circulated in the cooking volume, motor operating the fan. The cables which carry electricity to these electrically operated elements are gathered together and taken out of the wall and thus, are connected to the feeder.

[0003] In the state of the art German Patent Application No DE4011557, a terminal block suitable for using to transmit electricity in domestic appliances is explained.

[0004] In another state of the art document, the German Patent Application No DE4304525, a terminal block suitable for using to transmit electricity in domestic appliances is explained.

[0005] The EP 1 737 083 A2 describes a household appliance with a terminal box mounted to an opening which is located at its wall. A cable having connection ends for carrying electricity to the electrically operated elements of the household appliance terminates in a male plug that is then connected to the terminal box. On the household appliance side, a female, socket-like element is provided.

[0006] The GB 2 415 097 similarly discloses a female element for receiving a male plug. The US 5 407 363 discloses an electrical connector comprising "silos" for positioning plugs at an elevated position.

[0007] The aim of the present invention is the realization of a cooking device, cables of which are easily assembled.

[0008] The cooking device realized in order to attain the aim of the present invention is explicated in the claims.

[0009] The cooking device comprises a terminal box which is mounted to an opening located on the wall of the cooking device and whereto the cables that carry electricity to the electrically operated elements are connected from the outer side surface of the cooking volume, and whereto the electrically operated elements are connected for electricity transmission from the inner side surface of the cooking volume. The cooking device, furthermore, comprises more than one terminal which holds several cables together such that the connection ends of the cables will remain outside and will not touch each other. The cables are mounted to the terminal box by means of the terminals.

[0010] The terminal box comprises more than one housing wherein the terminals will be mounted, and more than one hole located on the housing base. When the terminal is mounted to the housing, each connection end corresponds to the level of one hole. The terminal box comprises cylindrical extensions which are located at the

terminal box side that faces the cooking volume, across each hole, and wherein the connection end enters. When the terminal is mounted to the housing, the connection ends pass through the holes and enter into the extensions, and thus, the assembly of the cables such that they will transmit electricity to the desired point is performed in a practical manner.

[0011] One side of both the lock and the extension are flat. Thus, the lock can be disposed into the extension only such that their flat edges will be in the same direction and therefore, the possibility of its erroneous assembly is eliminated.

[0012] The terminal box comprises a gap located at the edge of the hole and the lock comprises an arm inclined outwards in comparison with its body. While the lock is disposed into the extension, the arm passes through the gap by being closed and when it completely passes to the other side, it opens and thus, provides the lock to be fixed such that the lock will not be detached from the extension. When the lock is desired to be detached, a pointed device is inserted through the gap and thus, the arm is provided to be pressed; in this situation, the arm can pass through the gap and the lock is detached.

[0013] The lock is shaped at least partially cylindrically. The lock side, whereto the connection end is mounted, is sized to allow the connection end to be disposed therein.

[0014] The lines transmitting electricity to the electrically operated elements comprise wire and sleeve surrounding the wire and made of plastic material. At its side whereto the lines transmitting electricity to the electrically operated elements are mounted, the lock comprises a tunnel-shaped first clamp which provides the line ends to pass therethrough together with the sleeve and to be aligned, and after the first clamp, the lock comprises a tunnel-shaped second clamp wherein only the wires enter. In order to provide the electricity transmission, the second clamp is produced from a highly conductive material or covered with a conductor.

[0015] At its side facing the cooking volume, the terminal box comprises at least one retaining member which is located on the terminal box edges and wherein the lines mounted to the extensions are disposed in order to provide the lines to be held arranged inside the cooking device and to prevent the lines from contacting the walls. The retaining member comprises two side by side legs extending from the terminal box outwards and two lugs located at the ends of the legs, flexibly closing the space between the legs. By means of their flexible structures, the lugs allow the lines to be easily inserted between the retaining members while preventing them from being easily detached.

[0016] In an example, the terminal box comprises at least one detent means providing the terminal box to be press-fittingly fixed to the housing edges when it is seated in the housing.

[0017] In different examples, the cooking device is a

built-in oven or a built-in cooking range.

[0018] The model embodiments that relate to the cooking device realized in order to attain the aim of the present invention are illustrated in the attached figures, where:

Figure 1 - is the perspective view of a cooking device.

Figure 2 - is the top perspective view of the terminal box mounted to the opening and of a terminal.

Figure 3 - is the bottom perspective view of the terminal box.

Figure 4 - is the top perspective view of the terminal box.

Figure 5 - is the perspective view of the terminal and the cables.

Figure 6 - is the top perspective view of the wall, the terminal box, the terminal and the cables.

Figure 7 - is the bottom perspective view of the wall and the terminal box.

Figure 8 - is the sideways view of the wall, the terminal box, the terminal and the cables.

Figure 9 - is the detailed top view of the terminal box.

Figure 10 - is the view of detail of the terminal box.

Figure 11 - is the lateral perspective view of the lock.

Figure 12 - is the rear perspective view of the lock.

[0019] The elements illustrated in the figures are numbered as follows:

1. Cooking device
2. Cooking volume
3. Wall
4. Opening
5. Cable
6. Connection end
7. Terminal box
8. Terminal
9. Housing
10. Hole
11. Extension
12. Lock
13. Gap
14. Arm
15. First clamp
16. Second clamp
17. Retaining member
18. Leg
19. Lug
20. Detent means

[0020] The cooking device (1) comprises a cooking volume (2) wherein foods to be cooked are disposed, walls (3) which surround the cooking volume (2), an opening (4) which is located on one of the walls (3), cables (5) which have a connection end (6) that carries electricity to the electrically operated elements, and a terminal box (7) which is mounted to the opening (4) and whereon the cables (5) are mounted from the wall (3) side that faces the outer environment and whereon the electrically oper-

ated elements are connected for electricity transmission from the wall (3) side that faces the cooking volume (2) (Figure 1 and Figure 2).

[0021] The cooking device (1), furthermore, comprises more than one terminal (8) which holds the cables (5) one by one from their ends such that they will not contact each other and groups the cables (5) as bundles such that the connection ends (6) will remain outside, and which enables the connection ends (6) to be mounted to the terminal box (7) (Figure 2 and Figure 5).

[0022] The terminal box (7) comprises

- more than one housing (9) wherein the terminal (8) will be press-fittingly seated,
- more than one hole (10) which is located on the housing (9) base and which enables the connection ends (6) to pass to the other side of the housing (9) by being aligned with each connection end (6) when the terminal (8) is mounted to the housing (9),
- tubular extensions (11) which are located at the terminal box (7) side that faces the cooking volume (2), across each hole (10), and wherein the connection end (6) is seated

[0023] The number of terminals (8) needed for electricity transmission to the electrically operated elements is less than the number of housings (9) located on the terminal box (7). In this situation, some housing (9) remains empty.

[0024] In an example, each terminal (8) comprises a protrusion with a different position, and each housing (9) comprises a recess in a position such that the recess will correspond to the protrusion located on the terminal (8) which will be disposed into the housings (9) (Not illustrated in the figures). Thus, each terminal (8) is provided to be mounted only to the housing (9) belonging to it and thus, assembly errors are minimized.

[0025] Thus, during the assembly of the cooking device (1), the cables (5) are provided to be mounted to the terminal box (7) without the need of an additional connection member and the connection ends (6) are provided to be assembled in a grouped and aligned manner such that they will facilitate the connection with the elements, whereon electricity will be transmitted, inside the cooking device (1). Thus, the assembly time is shortened and the assembly costs are minimized.

[0026] The terminal box (7) comprises a lock (12) which is disposed into the extension (11) and which provides both the connection end (6) and the lines (not illustrated in the figures) transmitting electricity to the electrically operated elements from the terminal box (7) to be fixed to the terminal box (7) (Figure 10 and Figure 11). The lock (12) is produced from metal and structured such that it will provide the electricity transmission between the connection end (6) and the lines transmitting electricity to the electrically operated elements from the terminal box (7).

[0027] One side of both the lock (12) and the extension

(11) are flat such that they will allow the lock (12) to be disposed to the extension (11) only in one direction (Figure 3, Figure 10 and Figure 11). Thus, the lock (12) can be disposed into the extension (11) only such that their flat edges will face each other and therefore, assembly errors are prevented.

[0028] The terminal box (7) comprises a gap (13) which is located at the edge of the hole (10) and which enables the lock (12) to be detached from the extension (11) (Figure 9). On the other side, the lock (12) comprises an arm (14) angled with respect to the entering direction such that it will enable the lock (12) to be fixed by being easily mounted into its place during the placement of the lock (12) in the extension (11), however prevent the lock (12) from being easily detached when the lock (12) is desired to be detached by being pulled to the opposite direction (Figure 10 and Figure 11). Thus, when the lock (12) is mounted into its place, locking is provided by the arm (14) passing over the hole (10) and the lock (12) is fixed to the terminal box (7). When the lock (12) is desired to be detached from the extension (11) afterwards, the arm (14) is pushed in the closing direction by means of a pointed device and the lock (12) is pulled back to be detached. In the meantime, the arm (14) is aligned with the gap (13) and the detachment process is provided to be performed easily. By means of the arm (14), the lock (12) is fixed to the terminal box (7) without the need of an additional process or connection member.

[0029] The lock (12) is at least partially tubular and its end, whereto the connection end (6) is mounted, has a diameter such that the connection end (6) can enter therein, and is shaped such that it will at least partially grasp the connection end (6).

[0030] The lines transmitting electricity to the electrically operated elements comprise wires which carry electricity and a plastic sleeve which surrounds the wires. At its end whereto the lines transmitting electricity to the electrically operated elements are mounted, the lock (12) comprises a first clamp (15), through which the line ends pass together with the sleeve, and after the first clamp (15), the lock (12) comprises a second clamp (16) wherein only the wires of the line enter (Figure 10 and Figure 11). In order to provide the electricity transmission, the second clamp (16) is produced from a highly conductive material or covered with a conductor.

[0031] At its side facing the cooking volume (2), the terminal box (7) comprises a retaining member (17) which is located on the terminal box (7) edges and wherein the lines mounted to the extensions (11) are disposed in order to provide the lines to be held orderly inside the cooking device (1).

[0032] The retaining member (17) comprises

- two legs (18) which are almost parallel to each other and which extend from the terminal box (7) outwards, and
- two lugs (19) which extend from the end of the legs (18) towards each other and which cover the space

between the legs (18) such that the lugs (19) will serve as a flexible door

[0033] (Figure 4 and Figure 9). When the lines are desired to be disposed into the retaining member (17), the lugs (19) allow the lines to enter by bending inwards. The lugs (19), returning to their initial position after the lines are disposed between the legs (18), prevent the lines from detaching from the retaining member (17).

[0034] In an example, the terminal box (7) comprises at least one detent means (20) providing the terminal box (7) to be press-fittingly fixed to the housing (9) edges when it is seated in the housing (9) (Figure 2, Figure 3 and Figure 4).

[0035] In an other example, the terminal box (7) is fixed to the housing (9) by fixing elements such as screw.

[0036] In different examples, the cooking device (1) is a built-in oven or a built-in cooking range.

Claims

1. A cooking device (1) comprising a cooking volume (2) wherein foods to be cooked are disposed, walls (3) which surround the cooking volume (2), an opening (4) which is located on one of the walls (3), cables (5) which have a connection end (6) that carries electricity to electrically operated elements, a terminal box (7) which is mounted to the opening (4) and whereon the cables (5) are mounted from the wall (3) side that faces the outer environment and whereto the electrically operated elements are connected for electricity transmission from the wall (3) side that faces the cooking volume (2), **characterized by** more than one terminal (8) which holds the cables (5) one by one from their ends such that they will not contact each other and groups the cables (5) as bundles such that the connection ends (6) will remain outside the terminal (8), and which enables the connection ends (6) to be mounted to the terminal box (7), and **by** the terminal box (7) that has

- more than one housing (9) wherein the terminal (8) is press-fittingly seated,
- more than one hole (10) which is located on the housing (9) base and which enables the connection ends (6) to pass to the other side of the housing (9) by being aligned with each connection end (6) when the terminal (8) is mounted to the housing (9), and
- tubular extensions (11) which are located at a terminal box (7) side that faces the cooking volume (2), across each hole (10), and wherein the connection end (6) is seated,
- a lock (12) which is disposed into the extension

(11) and which provides both the connection end (6) and lines transmitting electricity to the electrically operated elements from the terminal box (7) to be fixed to the terminal box (7), wherein the lock (12) is produced from metal and provides the electricity transmission between the connection end (6) and the lines transmitting electricity to the electrically operated elements from the terminal box (7).

2. A cooking device (1) as in Claim 1, **characterized by** the lock (12) and the extension (11) wherein one side of both are flat such that they will allow the lock (12) to be disposed to the extension (11) only in one direction.

Patentansprüche

1. Kochgerät (1) umfassend einen Kochvolumen (2), in dem zu kochende Nahrungsmittel angeordnet sind, Wände (3), die das Kochvolumen (2) umgeben, eine Öffnung (4), die sich an einer der Wände (3) befindet, Kabel (5), die ein Verbindungsende (6) aufweisen, das Elektrizität zu elektrisch betriebenen Elementen führt, einen Anschlusskasten (7), der an der Öffnung (4) angebracht ist und auf dem die Kabel (5) von der der Außenumgebung zugewandten Seite der Wand (3) angebracht sind, und worin die elektrisch betriebenen Elemente zur Stromübertragung von der Seite der Wand (3), die dem Kochvolumen (2) zugewandt ist, verbunden sind
- gekennzeichnet durch**
- mehr als ein Anschluß (8), der die Kabel (5) einzeln von ihren Enden hält, sodass sie einander nicht berühren und die Kabel (5) als Bündel gruppieren, sodass die Verbindungsenden (6) außerhalb des Anschlusses (8) verbleiben, und der es ermöglicht, dass die Verbindungsenden (6) an dem Anschlusskasten (7) zu montieren und durch den Anschlusskasten (7), der folgendes umfasst:
- mehr als ein Gehäuse (9), in dem der Anschluss (8) pressschlüssig sitzt,
 - mehr als ein Loch (10), das sich auf der Basis des Gehäuses (9) befindet und das den Verbindungsenden (6) es ermöglicht, auf die andere Seite des Gehäuses (9) zu gelangen, durch Ausrichtung mit jedem Verbindungsende (6), wenn der Anschluss (8) an dem Gehäuse (9) montiert ist, und
 - rohrförmige Verlängerungen (11), die an einer Seite des Anschlusskastens (7) angeordnet sind, die dem Kochvolumen (2) über jedes Loch

(10) zugewandt ist, und bei der das Verbindungsende (6) eingesetzt ist,

- einen Riegel (12), der in der Verlängerung (11) angeordnet ist und der sowohl das Verbindungsende (6) als auch Leitungen zur Übertragung von Elektrizität auf die elektrisch betriebenen Elemente aus dem Anschlusskasten (7) zur Befestigung an dem Anschlusskasten (7) bereitstellt, wobei der Riegel (12) aus Metall hergestellt ist und Elektrizitätsübertragung zwischen dem Verbindungsende (6) und den Leitungen, die Elektrizität zu den elektrisch betriebenen Elementen von dem Anschlusskasten (7) übertragen, bereitstellt,

2. Ein Kochgerät (1) nach Anspruch 1, **gekennzeichnet durch** den Riegel (12) und die Verlängerung (11), wobei eine Seite der beiden flach sind, sodass sie dem Riegel (12) es ermöglichen, nur in einer Richtung an der Verlängerung (11) angeordnet zu werden.

Revendications

1. Dispositif de cuisson (1) comprenant un volume de cuisson (2) dans lequel les aliments à cuire sont disposés, des parois (3) entourant le volume de cuisson (2), une ouverture (4) qui est située sur l'une des parois (3), des câbles (5) ayant une extrémité de connexion (6) qui transporte l'électricité vers des éléments électriques, une boîte à bornes (7) qui est montée sur l'ouverture (4) et sur laquelle les câbles (5) sont montés du côté de la paroi (3) qui fait face à l'environnement extérieur et auquel les éléments électriques sont connectés pour la transmission de l'électricité (3) côté faisant face au volume de cuisson (2), **caractérisé par**
- plus d'une borne (8) qui retient les câbles (5) un par un de leurs extrémités de sorte qu'ils ne se touchent pas et regroupe les câbles (5) en faisceaux de sorte que les extrémités de connexion (6) restent à l'extérieur du terminal (8), et qui permet de monter les extrémités de connexion (6) sur la boîte à bornes (7), et
- par** la boîte à bornes (7) qui a
- plus d'un boîtier (9) dans lequel la borne (8) est ajustée à la presse,
 - plus d'un trou (10) qui est situé sur la base du boîtier (9) et qui permet aux extrémités de connexion (6) de passer de l'autre côté du boîtier (9) en étant aligné avec chaque extrémité de connexion (6) lorsque la borne (8) est montée sur le boîtier (9), et

- des extensions tubulaires (11) qui sont situées sur un côté de la boîte à bornes (7) qui fait face au volume de cuisson (2), à travers chaque trou (10), et dans lequel l'extrémité de connexion (6) est placée, 5

- un verrou (12) qui est disposé dans l'extension (11) et qui fournit à la fois l'extrémité de connexion (6) et des lignes transmettant de l'électricité aux éléments électriques depuis la boîte à bornes (7) à fixer à la boîte à bornes (7), dans lequel le verrou (12) est fabriqué à partir de métal et fournit la transmission d'électricité entre l'extrémité de connexion (6) et les lignes transmettant l'électricité aux éléments actionnés électriquement à partir de la boîte à bornes (7). 10 15

2. Dispositif de cuisson (1) selon la revendication 1, **caractérisé par** le verrou (12) et le prolongement (11) dans lequel un côté des deux est plat de sorte qu'ils permettent à la serrure (12) d'être disposée sur l'extension (11) seulement dans une direction. 20

25

30

35

40

45

50

55

Figure 1

1 →

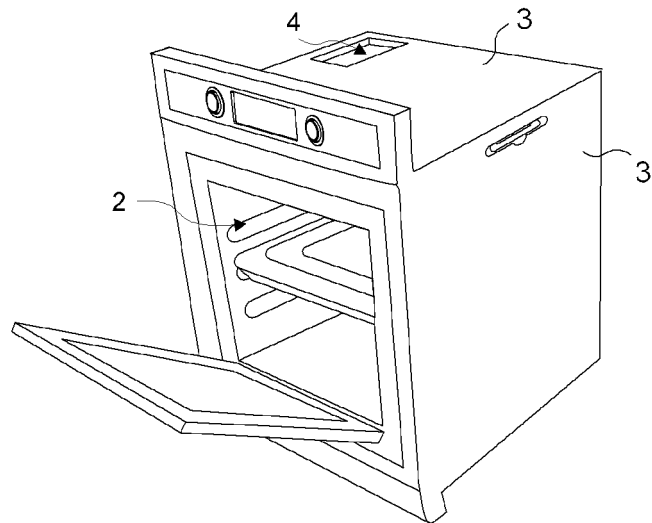


Figure 2

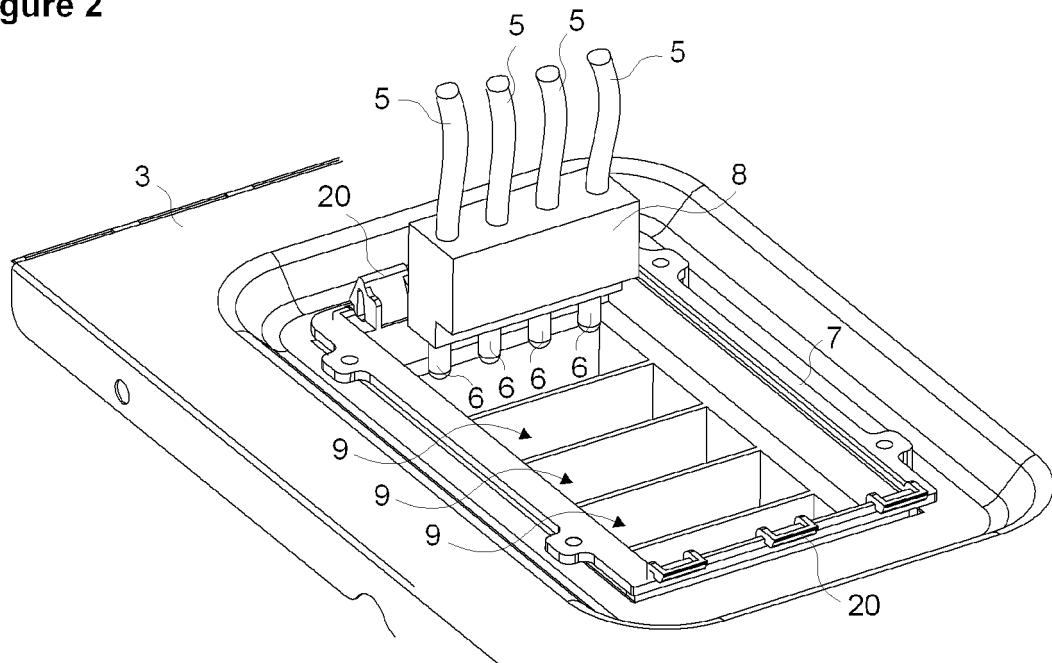


Figure 3

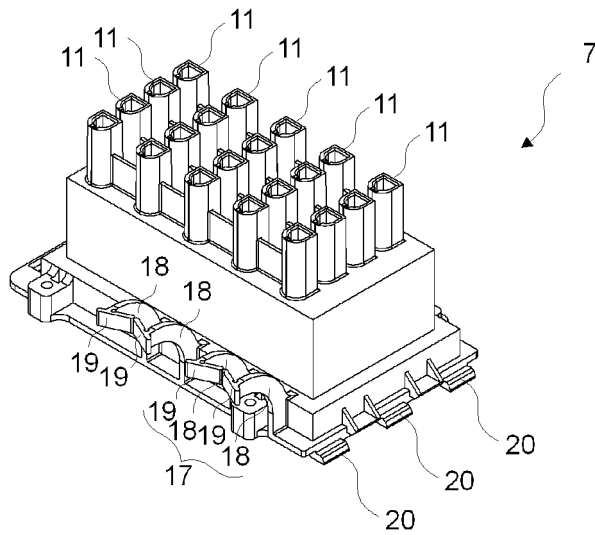


Figure 4

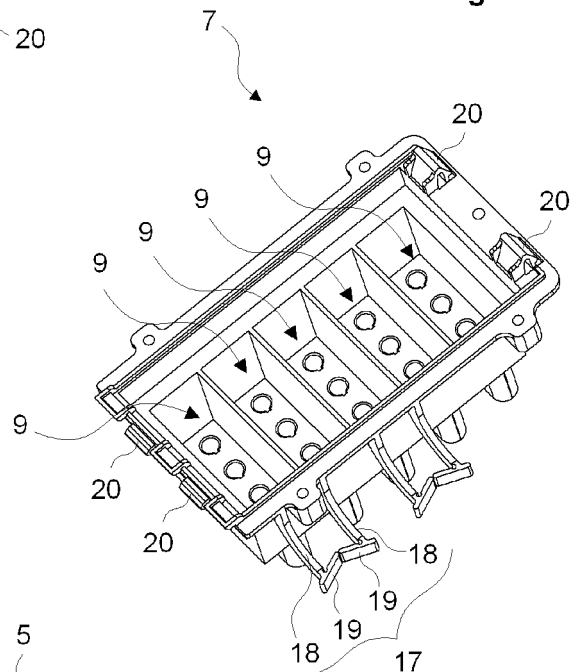


Figure 5

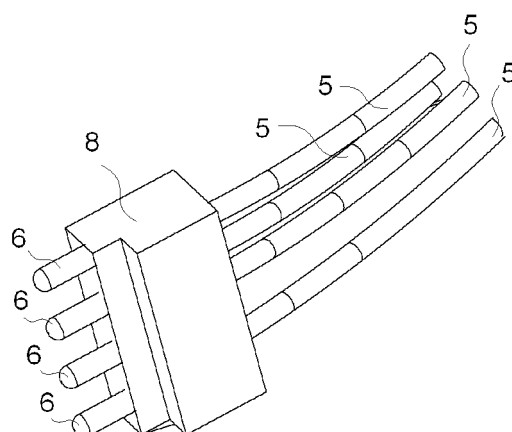


Figure 6

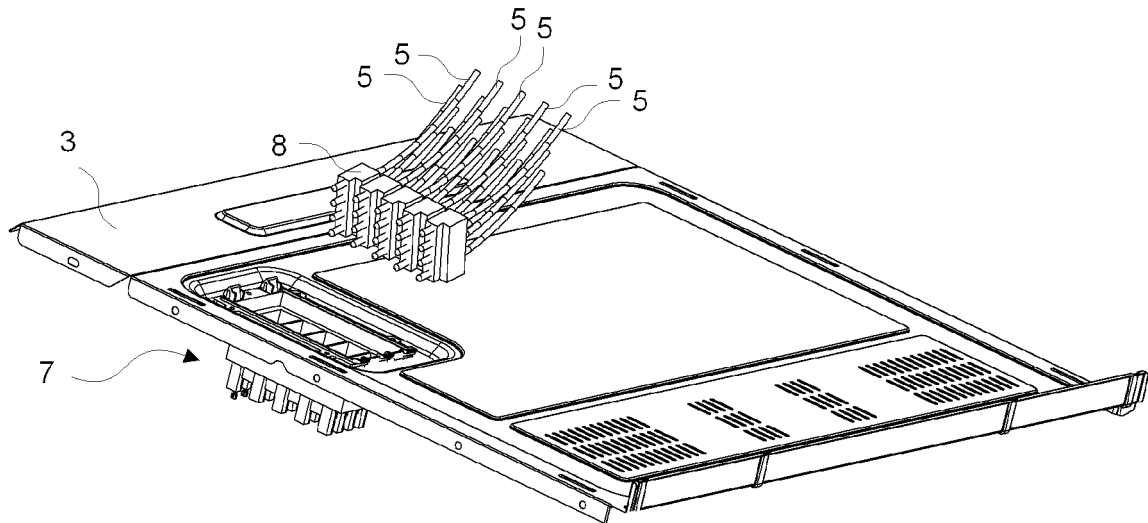


Figure 7

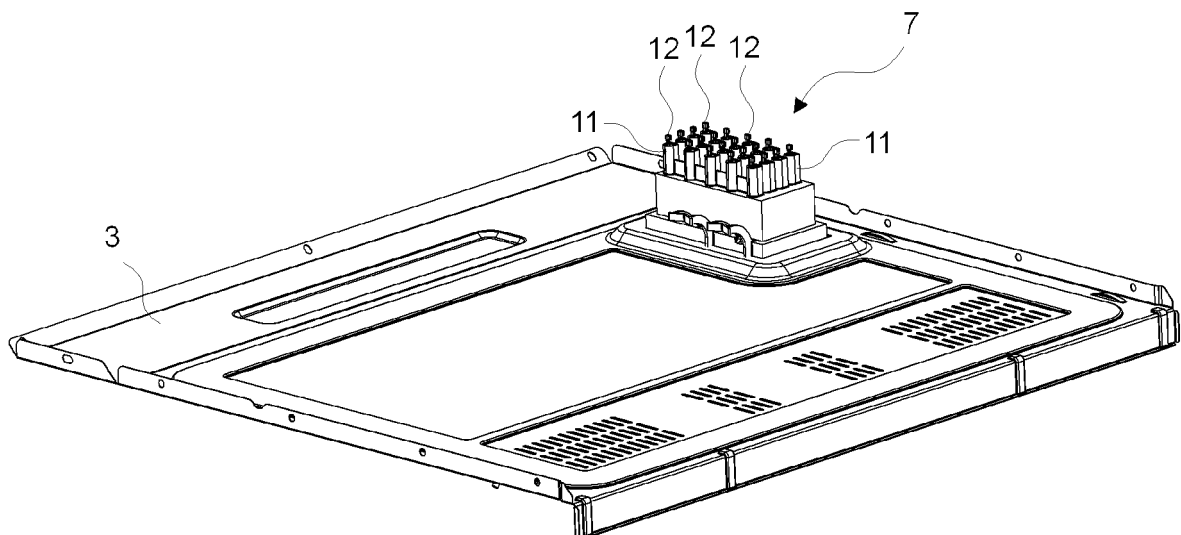


Figure 8

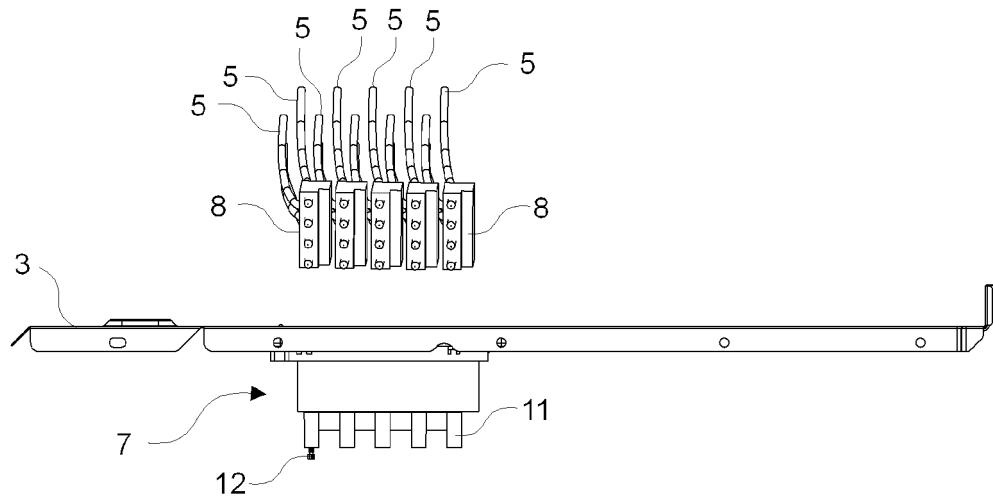


Figure 9

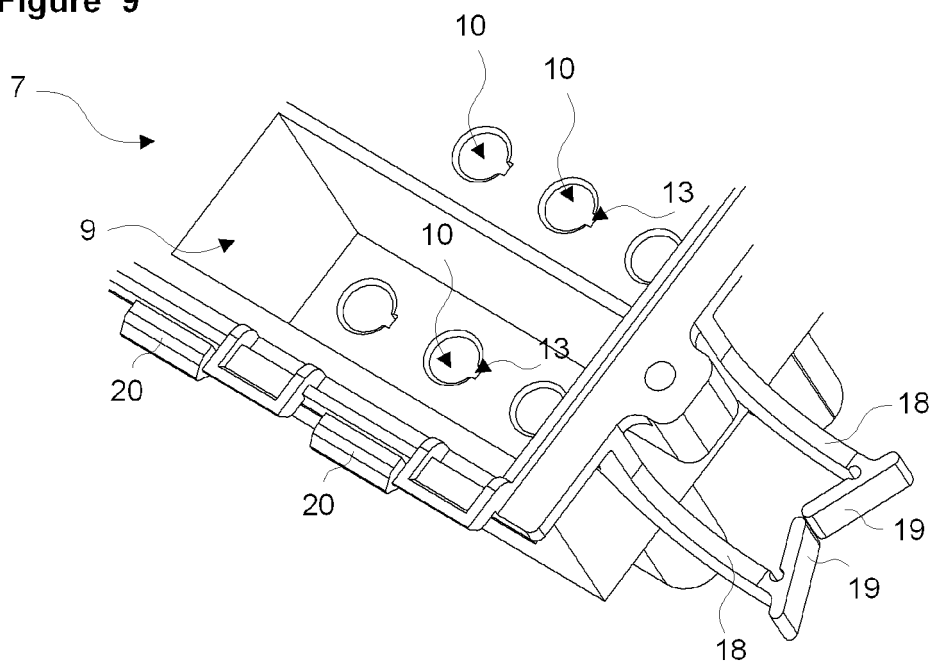


Figure 10

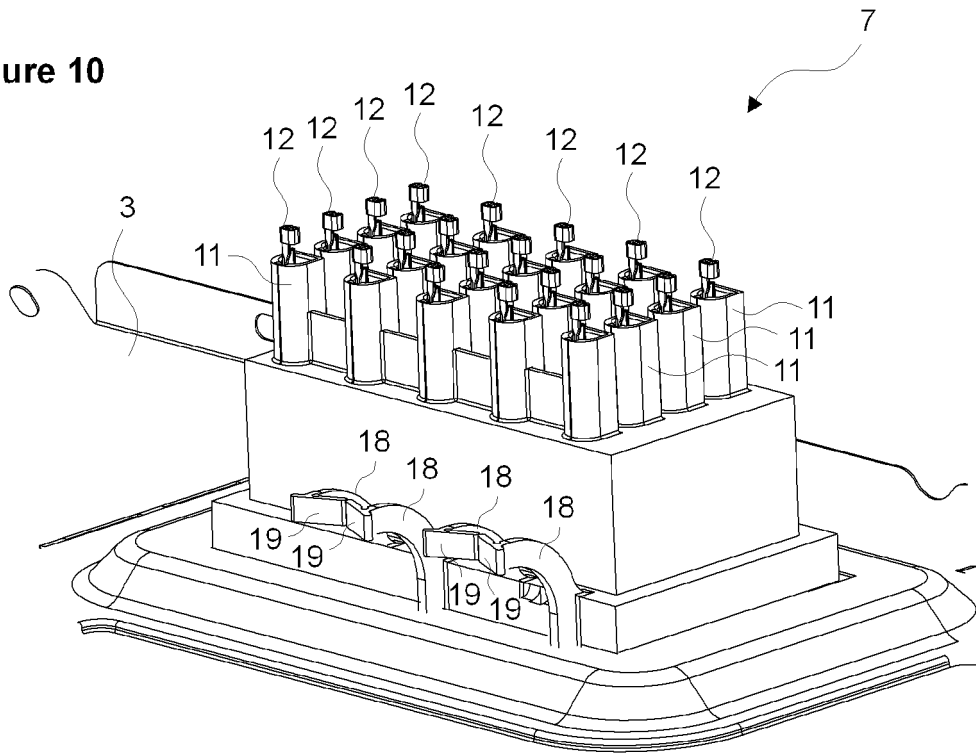


Figure 11

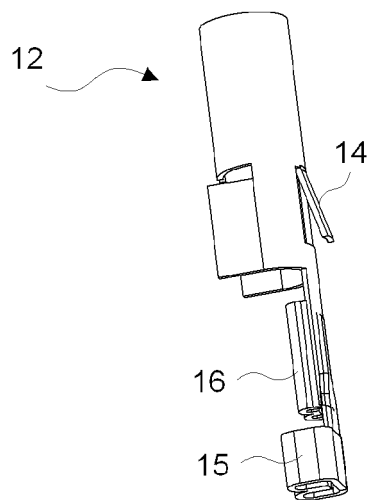
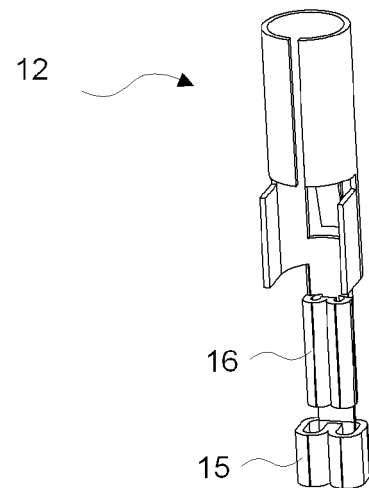


Figure 12



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 4011557 [0003]
- DE 4304525 [0004]
- EP 1737083 A2 [0005]
- GB 2415097 A [0006]
- US 5407363 A [0006]