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(54) Title: GAS HOB

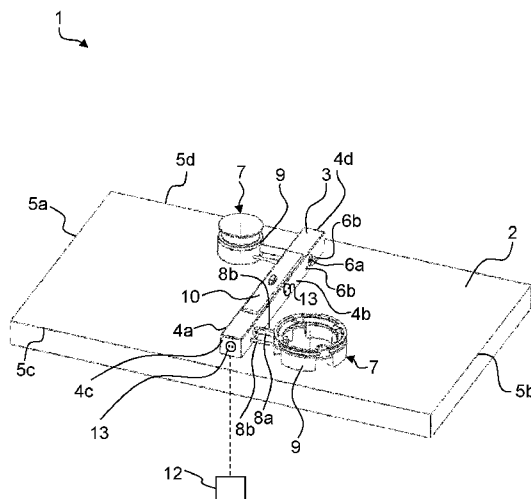


Fig. 1

(57) Abstract: A gas hob (1) comprising a top sheet (2), a connection rail (3) having a plurality of ports (6a) and arranged on the top sheet (2), and gas burners (7) arranged on the top sheet (2) and releasably connected to the ports (6a) of the connection rail (3), the ports (6a) being configured to supply the gas burners (7) with fuel gas.

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GAS HOB

The present invention relates to a gas hob.

5 A gas hob typically comprises a top sheet and gas burners. A respective gas burner is associated with a gas valve for providing fuel gas. The gas valve is typically provided below the top sheet. The fuel gas is mixed with primary air to obtain a flammable gas/air mixture which is burnt at openings of the gas burner. A respective pan support for supporting a pan or pot is associated with each gas burner.

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CN206160207U discloses a modular gas hob with a number of gas burners and burner modules, wherein one gas burner is connected to one burner module. The gas burners are provided with fuel gas via the burner modules. If the gas hob is not in use, the gas burners can be disconnected from the burner modules.

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It is one object of the present invention to provide an improved gas hob.

Accordingly, a gas hob is provided comprising a top sheet, a connection rail having a plurality of ports and arranged on the top sheet, and gas burners arranged on the top
20 sheet and releasably connected to the ports of the connection rail, the ports being configured to supply the gas burners with fuel gas .

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Thereby, a compact gas hob is created which can be set up according to the needs of the user by connecting one or more gas burners to a single connection rail.

The top sheet can be made of metal, glass, ceramic and/or glass-ceramic. The top sheet may also be of the same material as a common kitchen worktop, e.g. stone (in particular granite). Thus, the top sheet can be a kitchen worktop and/or a cooking zone of a continuous kitchen work top.

30

That the gas burners are releasably connected to the ports herein relates to a respective fluid connection which can be established (connected), i.e. fluid may flow from the port to the gas burner, and released (disconnected), i.e. fluid may not flow from the port to the

gas burner. "Fluid" refers to a gas, in particular. The fluid connection may also include a mechanical connection comprising engaging elements engaging each other such as recesses, protrusions, pins, hooks, threads, screws etc. A respective port may comprise an injector for injecting fuel gas into a respective gas burner, in particular into a pipe or venturi portion thereof.

The gas hob comprises, preferably, a single connection rail to connect all gas burners. For example, 2, 3, 4, 5, 6 or more ports (to supply gas) and corresponding gas burners are provided. The fuel gas and the primary air may be mixed directly at each of the gas burners, within the connection rail or below the top sheet using, e.g., a venturi portion and an injector. Preferably, the gas hob is configured such that the user can choose to, at any time, connect a single gas burner to one port, some gas burners to some ports or a gas burner to every port.

The connection rail is, preferably, an elongated element whose length is, for example, at least twice its width. For example, the connection rail may have a bar shape. The connection rail may have a rectangular or square cross-section. The connection rail may be made, at least partially, of metal. The gas burners may be detached therefrom when they are not in use. If a gas burner is not connected to a specific port, said port is designed to prevent an emission of fuel gas - especially when some ports are connected to a respective gas burner and some ports are not.

According to an embodiment, the ports are arranged on different sides of the connection rail.

In this way, the gas burners may be connected to the connection rail on different sides and the space (surface area) on the top sheet can be used more efficiently. "Different sides" sides encompasses opposite sides, sides that are connected via one or more corners etc.

According to a further embodiment, the ports are arranged on opposite sides of the connection rail.

According to a further embodiment, the connection rail protrudes perpendicularly upwards from the top sheet.

5 Perpendicularly means that sides (in particular side panels) of the connection rail have an angle of 90 degrees (including deviations of up to 10 or 20 degrees) in relation to the top sheet.

10 The connection rail may be provided on the top sheet so as to extend away (with its lengthwise dimension) from a user which improves efficient usage of the kitchen surface.

According to a further embodiment, the connection rail is arranged in the center of the top sheet.

15 This means that the connection rail passes through the center of the top sheet in a top view.

According to a further embodiment, the connection rail is arranged equidistant from opposite edges of the top sheet.

20 This allows to arrange the gas burners in a space efficient way. Edges can be understood in that way that an edge is a side of the top sheet which limits the gas hob. Equidistant does not necessarily mean that the distances from the connection rail to the opposite edges of the top sheet are exactly the same. Rather, the distances can vary by up to 10 or 20%.

25 According to a further embodiment, the gas hob comprises an extraction unit to extract fumes arranged on or at least partially inside the connection rail.

30 Thus, more working space for users on the top sheet is provided. For example, the extraction unit is a downdraft extraction unit which removes fumes downwardly, i.e. into an area below the top sheet. According to an alternative embodiment, the extraction unit is not arranged on the connection rail, but arranged on the top sheet.

According to a further embodiment, the extraction unit is retractable into the connection rail.

Thus, the extraction unit stays hidden when not in use.

5

According to a further embodiment, the connection rail is retractable into the top sheet.

In this way, additional working space can be created when the gas hob is not in use. In addition, the surface of the top sheet can be easily cleaned.

10

According to a further embodiment, the top sheet and the connection rail, in its retracted state, form a flat surface.

This allows to provide a flat working surface formed by the top sheet and the retracted connection rail, which can then be used in other ways. For example, it is possible to perform kitchen work on the top sheet before cooking. After cooking, it can be easily cleaned because the user is not impeded by an uneven top sheet. A flat surface especially means that the upper side of the connection rail is flush with the top sheet in the retracted state.

20

According to a further embodiment, the gas hob comprises means configured to retract the connection rail into the top sheet.

Such means may include a pneumatic system and/or a mechanical system and/or an

25

electronical system.

The same system may be configured to retract the extraction unit into the connection rail. Also, the same means can be used to drive the connection rail out of the top sheet and/or to drive the extraction unit out of the connection rail. Alternatively, the connecting rail and/or the extraction unit can be retracted or extended manually.

30

According to a further embodiment, the connection rail has at least one power supply socket for connecting electrical devices.

This allows the user to use kitchen appliances on the top sheet – even while cooking on the "other" side of the connection rail.

According to a further embodiment, the top sheet has, at least below each gas burner, a
5 continuous flat surface on which a respective gas burner stands.

Again, this makes cleaning easier.

According to a further embodiment, the gas hob comprises pan supports for supporting a
10 pan above each gas burner, at least one pan support being connected to at least one gas burner so as to form a unit which is configured to be lifted off the top sheet as one.

Having such a unit allows easy assembly (or disassembly) when setting up the gas hob (or when it is not used anymore). "Pan" is to be understood to comprise any kind of cooking
15 vessel, for example a pan, pot, wok etc. For example, the gas burner and pan support may be connected by a form fit, force fit or adhesive fit.

According to a further embodiment, the at least one pan support is formed integrally with
20 at least one gas burner.

In this case, the pan support and the gas burner are formed from one piece of material (integrally). For example, the pan support and the gas burner are cast as one (from cast iron, for example).

25 "An" or "one" is not to be understood as limiting to exactly one element but multiple elements may be provided unless otherwise specified.

Further possible implementations or alternative solutions of the invention also encompass combinations – that are not explicitly mentioned herein – of features described above or
30 below with regard to the embodiments. The person skilled in the art may also add individual or isolated aspects and features to the most basic form of the invention.

Further embodiments, features and advantages of the present invention will become apparent from the subsequent description and dependent claims, taken in conjunction with the accompanying drawings, in which:

5 Fig. 1 shows a perspective view of a gas hob with one connection rail connected to two gas burners and a retracted extraction unit;

Fig. 2 shows a perspective view of the gas hob of Fig. 1 with the extraction unit extended;

10 Fig. 3 shows the gas hob with the connection rail and extraction unit retracted and the gas burners removed; and

Fig. 4 shows a left-hand view from Fig. 1 with the gas burners removed.

15 In the Figures, like reference numerals designate like or functionally equivalent elements, unless otherwise indicated.

Fig. 1 shows a gas hob 1 in a perspective view. The gas hob 1 has a top sheet 2. The top sheet 2 may be of a rectangular shape having short edges 5a, 5b and long edges 5c, 5d.

20 The edges 5a, 5b, 5c, 5d may limit the area of the gas hob 1.

A connection rail 3 is arranged on the top sheet 2 and, when seen in a top view, passing through its center, for example. In particular, opposing sides 4a, 4b, 4c, 4d of the connection rail 3 each have the same distance to opposite edges 5a, 5b, 5c, 5d of the top sheet 2 which are parallel to the opposing sides 4a, 4b, 4c, 4d of the connection rail 3.

Opposing sides 4c, 4d of the connection rail 3 are formed as, for example, rectangular end faces 4c, 4d (and a rectangular cross-section). The connection rail 3 has its lengthwise direction in a direction perpendicular to the long edges 5c, 5d of the top sheet 2 (long sides 4a, 4b of the connection rail 3 parallel to the short edges 5a, 5b of the top sheet 2). This allows placement of gas burners 7 (as will be explained in more detail later) to the left and right of the connection rail 3 when standing in front of the long side 5c (or 5d) of the top sheet 2, i.e. when cooking. The sides 4a, 4b, 4c, 4d are, preferably, oriented perpendicularly to the top sheet 2, thus extending upwards therefrom. In embodiments

where the connection rail 3 is configured to be retractable into the top sheet 2 (see below), this applies only to the extended state of the connection rail 3, of course.

The connection rail 3 has ports 6a, 6b to connect gas burners 7 thereto. The ports 6a, 6b are arranged on different sides 4a, 4b, especially on opposite sides, of the connection rail 3. Thus, at least one, preferably 2, 3 or more gas burners 7 can be arranged on either side of the connection rail 3. For example, the ports 6a are configured to supply fuel-gas, whereas the ports 6b supply electrical power for an ignitor (not shown) of the gas burner 7. Or also port 6b can carry an electrical flame detection signal (e.g. from a thermocouple) to keep the gas regulation valve open.

In Fig. 4, the gas burners 7 are disconnected, and ports 6a, 6b on the left-hand side of the connection rail 3 are shown (in addition to the ports 6a, 6b seen on the right-hand side in Fig. 1).

For example, each gas burner 7 is connected to one (gas) port 6a and two ports 6b (for electricity) of the connection rail 3. The gas burners 7 are provided with the fuel-gas-air-mixture through a respective pipe 8a via a respective port 6a. Two ignition connectors 8b connect each gas burner 7 to the ports 6b. The ignition connectors 8b are connected to an ignitor (not shown) inside each gas burner 7 configured to ignite the fuel-gas-air-mixture.

In another embodiment, there are provided two struts 8b (instead or in addition to the ignition connectors or the ignition connectors may be integrated into the struts 8b) per gas burner 7 and fixedly connected thereto at one end. At the other end, each strut 8b engages a respective hole or pocket 6b (not or not exclusively a port in this case) formed inside the connection rail 3. By way of the struts 8b the gas burners 7 may be prevented from moving inadvertently on the top sheet 2, i.e. the gas burners 7 are secured in the horizontal plane.

For example, the gas burners 7 each stand on a continuous flat surface 2a (see Fig. 2a) of the top sheet 2. In fact, the entire surface of the top sheet 2 may be formed as one continuous flat surface 2a. When the gas burners 7 are not needed by the user, they can be disconnected from the ports 6a, 6b to create more free space on the top sheet 2.

Further, each gas burner 7 may be associated with a pan support 9 to support a pan. The pan support 9 may be formed integrally with the gas burner 7 or be a separate element which can be connected to the gas burners 7 to form a unit therewith which can be handled as one. The gas burners 7 may be of the same or different kind – the latter case being shown in Fig. 1.

Furthermore, the gas hob 1 comprises, for example, an extraction unit 10 arranged partially (extended state, Fig. 2) or fully (retracted state Fig. 1, 3 and 4) inside the connection rail 3. In Fig. 1, the extraction unit 10 is retracted into the connection rail 3 (for example when the gas hob 1 is not in use). Fig. 2 shows the extraction unit 10 extended from the connection rail 3 (for example when cooking). In operation, the extraction unit 10 extracts fumes from the cooking area. The extraction unit 10 may be configured to remove gases from above the top sheet 2 to a location under the top sheet 2 (so called downdraft extraction unit). The extraction unit 10 can be retracted into the connection rail 3 and extended therefrom using an electric motor or pneumatic system (not shown), for example.

Fig. 3 shows the gas hob 1 with the connection rail 3 in a retracted state, wherein the connection rail 3 is retracted completely into the top sheet 2. Preferably, the retracted connection rail 3 is flush with the top sheet 2. The retracted extraction unit 10 and the retracted connection rail 3 form a substantially flat area on the top sheet 2 in Fig. 3.

When the user starts cooking, the connection rail 3 can be extended upwardly from the top sheet 2 (which is shown by arrows 11) using drive means 12, for example an electric motor, or by hand. The connection rail 3 may extend upon a user input, for example, via a touch screen (not shown) controlling the drive means 12. Or, the connection rail 3 may extend automatically when the user turns on a stand-by mode of the modular gas hob 1. Of course, the connection rail 3 may be retracted, for example after cooking, through user input (e.g. via the touch screen) or by hand.

Returning to Fig. 1, the connection rail 3 may comprise one or more sockets 13 for electrically connecting kitchen appliances or other electrical devices (i.e. the sockets supply electrical power, for example at 220 Volts). The sockets 13 may be arranged on different sides 4b, 4c of the connection rail 3. In embodiments where the connection rail 3

is configured to be retractable into the top sheet 2, the sockets 13 move along with the connection rail 3, and are thus also hidden in the retracted state of the connection rail 3.

5 Although the present invention has been described in accordance with preferred embodiments, it is obvious for the person skilled in the art that modifications are possible in all embodiments.

Reference Numerals:

	1	gas hob
	2	top sheet
5	2a	flat surface
	3	connection rail
	4a - 4d	sides
	5a - 5d	edges
	6a, 6b	ports
10	7	gas burners
	8a	pipe
	8b	ignition connectors
	9	pan support
	10	extraction unit
15	11	arrow – indicating the lifting direction
	12	means
	13	socket

CLAIMS

1. A gas hob (1) comprising a top sheet (2), a connection rail (3) having a plurality of
5 ports (6a) and arranged on the top sheet (2), and gas burners (7) arranged on the top
sheet (2) and releasably connected to the ports (6a) of the connection rail (3), the
ports (6a) being configured to supply the gas burners (7) with fuel gas.
2. The gas hob of claim 1, wherein the ports (6a) are arranged on different sides (4a,
10 4b) of the connection rail (3).
3. The gas hob of claim 2, wherein the ports (6a) are arranged on opposite sides (4a,
4b) of the connection rail (3).
- 15 4. The gas hob of one of claims 1 - 3, wherein the connection rail (3) protrudes
perpendicularly upwards from the top sheet (2).
5. The gas hob of one of claims 1 - 4, wherein the connection rail (3) is arranged in the
center of the top sheet (2).
20
6. The gas hob of claim 5, wherein the connection rail (3) is arranged equidistant from
opposite edges (5a – 5d) of the top sheet (2).
7. The gas hob of one of claims 1 - 6, comprising an extraction unit (10) to extract fumes
25 arranged on or at least partially inside the connection rail (3).
8. The gas hob of claim 7, wherein the extraction unit (10) is retractable into the
connection rail (3).
- 30 9. The gas hob of one of claims 1 - 8, wherein the connection rail (3) is retractable into
the top sheet (2).

10. The gas hob of claim 9, wherein the top sheet (2) and the connection rail (3), in its retracted state, form a flat surface.
11. The gas hob of claim 10, comprising means (12) configured to retract the connection
5 rail (3) into the top sheet (2).
12. The gas hob of one of claims 1 - 11, wherein the connection rail (3) has at least one power supply socket (13) for connecting electrical devices.
- 10 13. The gas hob of one of claims 1 - 12, wherein the top sheet (2) has, at least below each gas burner (7), a continuous flat surface (2a) on which a respective gas burner (7) stands.
14. The gas hob of one of claims 1 - 13, comprising pan supports (9) for supporting a pan
15 above each gas burner (7), at least one pan support (9) being connected to at least one gas burner (7) so as to form a unit which is configured to be lifted off the top sheet (2) as one.
15. The gas hob of claim 14, wherein the at least one pan support (9) is formed integrally
20 with at least one gas burner (7).

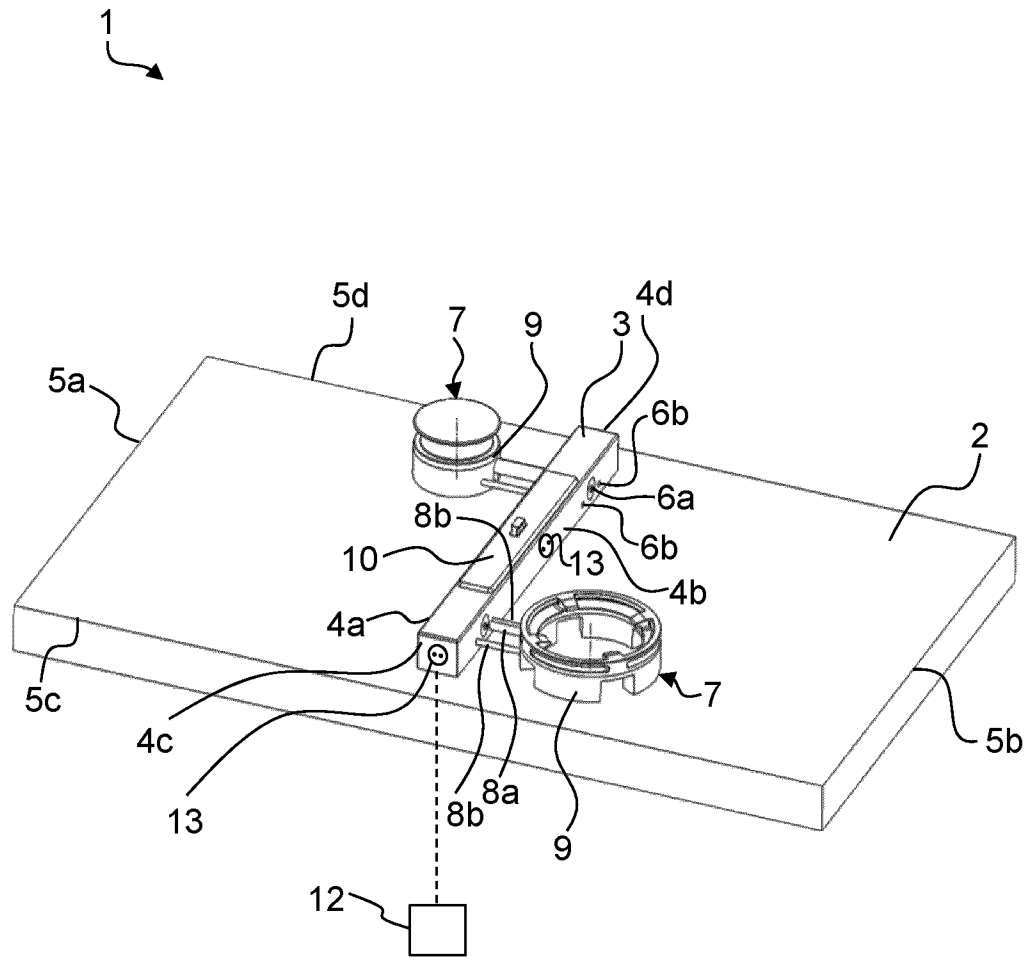


Fig. 1

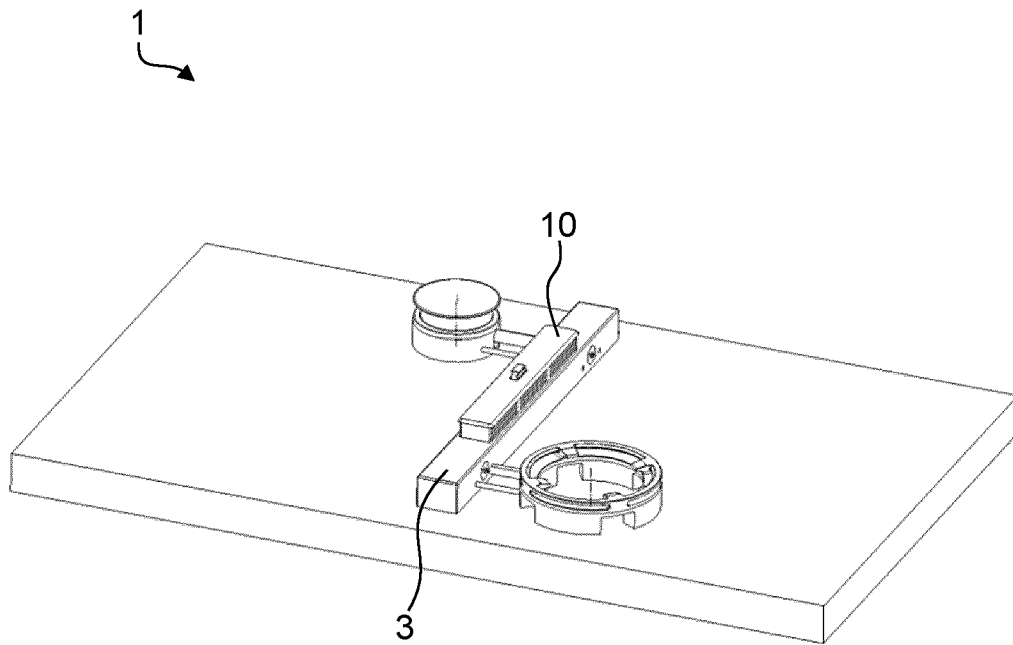


Fig. 2

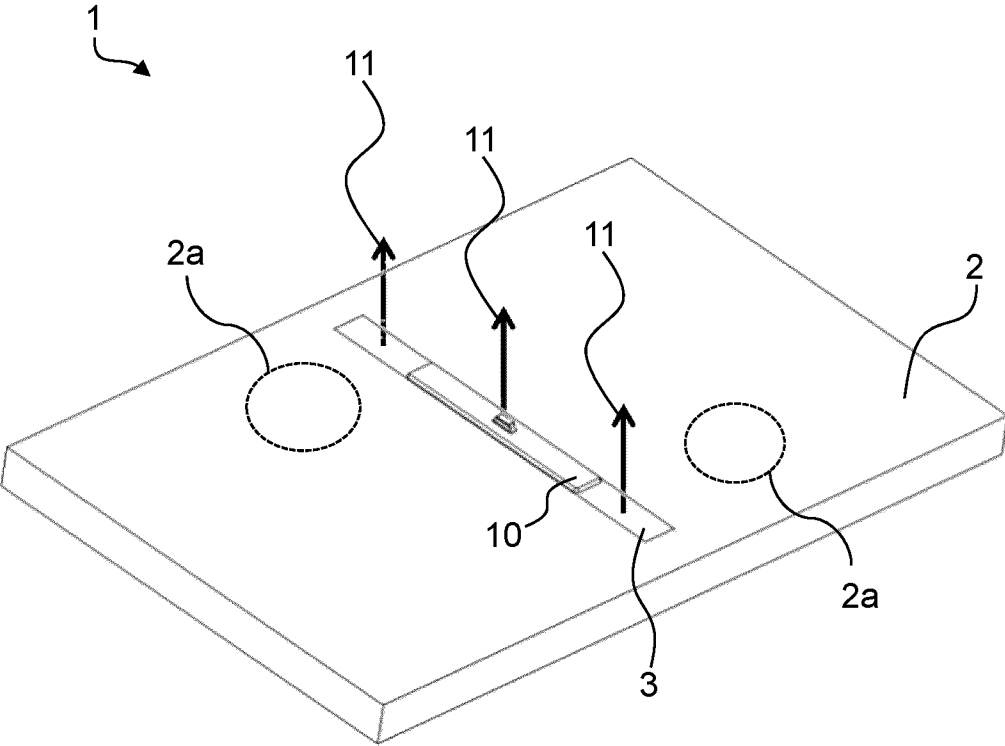


Fig. 3

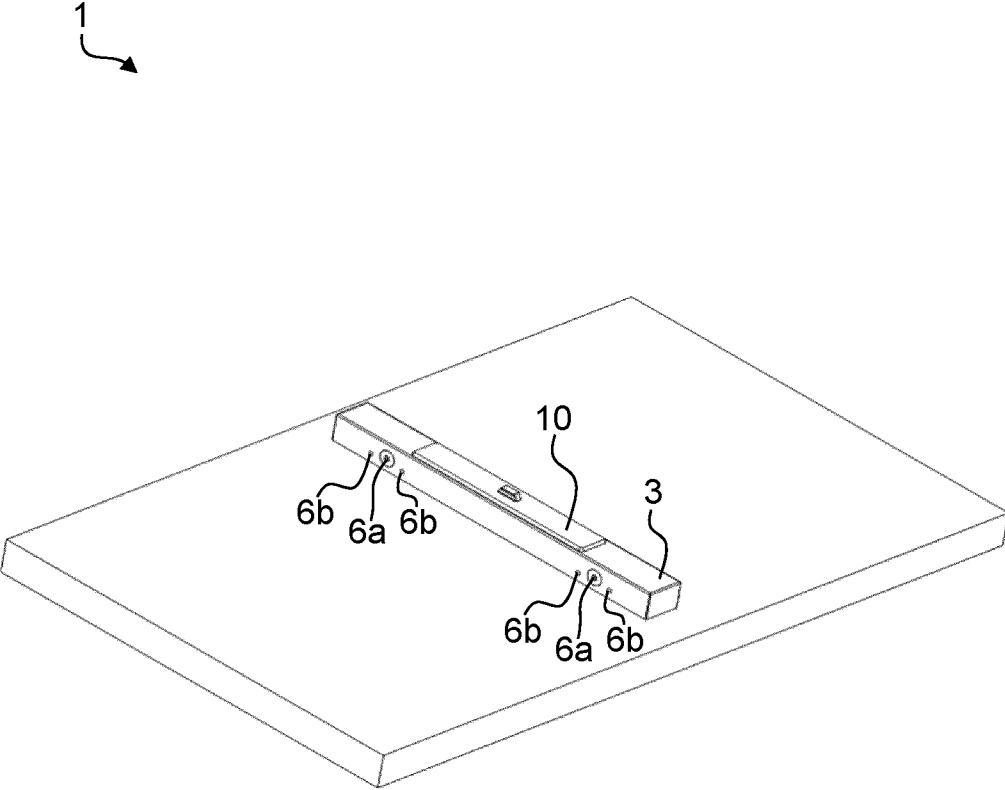


Fig. 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2020/057396

A. CLASSIFICATION OF SUBJECT MATTER
INV. F24C3/08 F24C3/12
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 practicable, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009/126715 A1 (GRASSI MICHAEL J [US] ET AL) 21 May 2009 (2009-05-21) paragraph [0134]; figures 1,5,10A,12 -----	1-6, 12-15
X	CN 108 613 223 A (GUANGDONG WANJIALE KITCHEN TECH CO LTD) 2 October 2018 (2018-10-02) figures -----	1
A	CN 206 160 207 U (WANG YINGZHI) cited in the application figures 2-3 -----	1-15
A	CN 108 386 874 A (HUANG WENKAI; LUO GUANLONG) 10 August 2018 (2018-08-10) figures 1-15 -----	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2020/057396

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