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(54) Cooker kit assembly

(57) A cooking range kit for assembly to a horizontal plate (12) includes a plurality of heater units (14,32), energy conduits (16,34) connectable to said heater units (14,32), and controls for said heater units (14,32), said plate (12) being provided with apertures (22) for the insertion therein of part of said heater unit (14,32), an upper surface of said heater unit arranged to support a cooking vessel projecting, when assembled to said plate, above the upper surface of said plate (12), said energy connections when assembled being located below said plate (12).

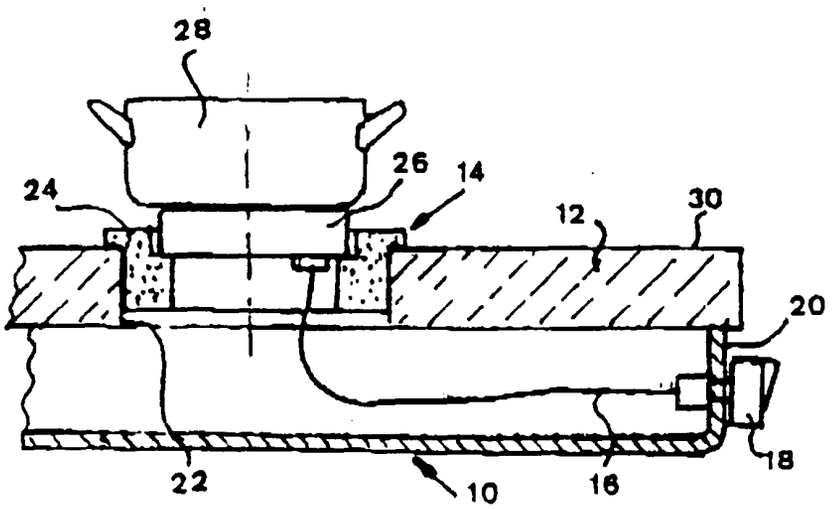

FIG. 1b

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Description

[0001] The present invention relates to a cooking device.

[0002] More particularly, the invention provides a set of parts for construction of a domestic cooker which can be assembled to a pre-drilled countertop, support surfaces being included in the kit of parts to hold cooking vessels above the upper surface of said countertop plate.

[0003] A simple free-standing cooker comprises an enclosure for the support of one or more gas burners or electric hot-plates, the enclosure having openings, and feet for resting on a heat and water resistant horizontal counter top. Industrial cookers are larger, and are often made with a framework not provided with a metal enclosure.

[0004] A more advanced cooker is combined with and forms the upper part of a baking oven. Such cooker-ovens are often built to fit into a gap in a kitchen countertop, and may stand either on the floor or on a shelf. Trimming strips may be used to enhance the built-in appearance.

[0005] A further degree of integration of the cooker into the countertop is based on the cutting of a large rectangular aperture in the countertop above which the installed cooker projects, a flange of the cooker resting on the counter top. A difficulty with this method is that a narrow bridge which is formed between said aperture and the outer edge of the countertop is a source of dangerous weakness, particularly where the countertop is made of a ceramic material such as granite or marble.

[0006] Easy-to-clean electric cooker tops comprising a sheet of tough glass having a coefficient of thermal expansion of close to zero have been commercially available for about 10 years. Electric hot plates positioned under the glass transfer heat to the cooking vessel primarily by radiation and to a lesser extent by conduction. In a report "What's Cooking" in MACHINE DESIGN, February 19, 1998, the SCHOTT GLASWERKE company (Germany) reports that work is in hand to allow a grade of glass under the trademark CERAN® to operate also with gas burners. Using either gas or electricity, the disadvantage of the glass plate is that heat spreads by conduction over the whole plate, wasting energy and requiring special precautions to prevent causing burns to a less-than-careful user. The Maytag company is trying to overcome the problem by using electric burners which transfer heat directly through the glass and to the cookware by induction, without substantial heating of the intermediate glass plate. The method is reported by MACHINE DESIGN to be energy efficient but extremely expensive.

[0007] Whatever the advantages and disadvantages of prior art cooking stoves, there is no doubt that users favour the built-in feature of this appliance where available, for aesthetic reasons and for easy cleanability. It is likely that there are also safety advantages therein.

[0008] It is therefore one of the objects of the present invention to obviate the disadvantages of prior art domestic cooking devices and to provide a kit of parts which can be assembled to a pre-drilled countertop.

[0009] It is a further object of the present invention to provide a domestic cooker which has the aesthetic qualities, safety features and ready cleanability associated with built in cookers.

[0010] Yet a further object of the present invention is to provide a cooker while saving the cost of the conventional top plate, yet the user receives a cooker assembled in a top plate which has better durability than that of conventional cookers.

[0011] The present invention achieves the above objects by providing a cooking range kit for assembly to the horizontal plate, especially where said plate is part of a built-in kitchen countertop.

[0012] The kit includes a plurality of heater units, energy conduits connectable to said heater units, and controls for said heater units, said plate being provided with apertures for the insertion therein of part of said heater unit, an upper surface of said heater unit arranged to support a cooking vessel projecting, when assembled to said plate, above the upper surface of said plate. Energy connections when assembled are located below the plate.

[0013] In a preferred embodiment of the present invention there is provided a kit wherein the heater unit is a gas burner, and the energy conduits carry cooking gas.

[0014] In a most preferred embodiment of the present invention there is provided a cooking range kit wherein further apertures are provided for the insertion therein of cooker controls.

[0015] Yet further embodiments of the invention, including a suitable plate, will be described hereinafter.

[0016] In U.S. Patent No. 3,773,027 Dodd describes and claims a countertop heating apparatus for a domestic cooking unit. This unit includes a drip pan, a planar countertop containing at least one opening, and a heating plate located in the opening. A gas burner is positioned below the heating plate. The drip pan, countertop, and heating plate are advantageously formed of an infra-red transmitting, heat resistant, nonporous glass-ceramic material having a low thermal expansion coefficient and a low thermal conductivity. The periphery of the heating plate is spaced inwardly from the periphery of the opening to allow escape of combustion products and to reduce heating of the countertop.

[0017] In contradistinction thereto, the present invention makes use of the existing countertop material, for example marble or granite or stainless steel, and does not subject the plate comprising the countertop to high temperatures. Consequently no special materials are needed. Furthermore, the hot plate or gas burner flame impinges directly on the base of the cooking vessel, so the inevitable heat losses caused by devices using an intermediate plate are avoided.

[0018] It will thus be realized that the novel cooker kit

of the present invention can be installed by drilling required apertures in the countertop either before the countertop is installed in the kitchen wall or thereafter. Each method has its advantages.

[0019] Drilling the plate before installation in the building allows use of factory equipment and tools, and a quantity of countertops can be drilled at one tool setting. The drilled plates, made of a material chosen to be most suitable, can be marketed as an income-producing item. Plates of various colours for customer selection are offered. Arrangements for allowing the requisite space under the countertop are easily made in a new assembly.

[0020] Drilling an existing plate after its installation allows marketing of the kit to millions of customers who already have an installed countertop in the kitchen which is to be converted to this new use. There is no problem of colour matching a new plate to an existing countertop. Several features, for example the number and position of the burners, and right or left hand controls, can be arranged to precisely suit the requirements of the particular user. Purpose-built power tools can quickly produce the required circular apertures needed to allow installation.

[0021] The invention will now be described further with reference to the accompanying drawings, which represent by example preferred embodiments of the invention. Structural details are shown only as far as necessary for a fundamental understanding thereof. The described examples, together with the drawings, will make apparent to those skilled in the art how further forms of the invention may be realized.

[0022] In the Drawings:

FIG. 1a is a perspective view of a preferred embodiment of the assembled kit according to the invention, arranged for electric cooking;

FIG. 1b is a cross-sectional elevation of the same embodiment;

FIG. 2 is a cross-sectional elevation of a single gas-fired heater unit assembled from the kit of the present invention;

FIG. 3 is a non-detailed perspective view of a four-burner kit using gas assembled to a plate, and including electronic ignition;

FIG. 4 is a cross-sectional view of a part of a gas burner, showing the use of an insulating disk; and

FIG. 5 is a perspective view of a thick plate for use in combination with the shown kit.

[0023] There is seen in **FIGS. 1a & 1b** a cooking range kit **10**, which comprises and is marketed as a set of parts, but is shown assembled in the drawing to a horizontal plate **12**.

[0024] Suitably the plate **12** is part of a built-in kitchen countertop, typically made of a ceramic or similar material, for example marble or stainless steel.

[0025] The kit includes a plurality of heater units **14**; **FIG. 1a** shows three electric units.

[0026] In the present embodiment the heater unit is an electric heating plate, and energy conduits comprise electric cables **16** which carry line-voltage AC electric power.

[0027] Electric cables **16** are pre-connected to heater units **14**. Controls **18** for heater units **14** are provided on a front plate **20**. Electric cables **16** as assembled are located below the plate **12**.

[0028] Plate **12** is provided with apertures **22** which have been drilled for the insertion therein of part of the heater unit **14**. The apertures **22** are typically machined on site where the plate **12** is already installed in the wall of the user's premises. A heat-insulating sleeve **24**, suitably a ceramic, is shown supporting the heater plate **26** above the horizontal plate **12**.

[0029] An upper surface of heater unit **14** is arranged to support a cooking vessel **28** projecting, when assembled to the plate **12**, above the upper surface **30** of the plate.

[0030] With reference to the rest of the figures, similar reference numerals have been used to identify similar parts.

[0031] Referring now to **FIG. 2**, there is seen a single unit **32** of a further cooking range kit after assembly. The heater unit is a gas burner, and the energy conduits **34** carry cooking gas.

[0032] The burner assembly is secured to a horizontal plate **36** by means of a tray element **38** positioned, on assembly, parallel to and underneath the plate **36**. Fasteners **40** are provided for engaging the tray element **38** to clamp a washer flange **42** of the burner assembly against the upper surface **44** of plate **36**.

[0033] Further conventional parts of the burner unit **32** - seen in exploded form in **FIG. 5** - are the pot grill **48**, burner perforated disk **50**, burner spreader housing **52**, cover cone **54** and burner inlet chamber **56** connected to a copper gas conduit **34**.

[0034] **FIG. 3** illustrates a four-burner kit **60** using gas assembled to a plate **62**. The kit **60** includes electronic ignition, for which a control **64** is provided. Further apertures **66** (not seen underneath the control panel **68**, but similar to the small apertures seen in **FIG. 5**) are provided in the plate **62** for the insertion herein of cooker controls **70**. The apertures **66** are positioned in a formation similar to the burners for easing identification of the specific control connected to the burner **72** to be operated or closed.

[0035] Seen in **FIG. 4** is a detail of part of a gas burner **74** huilt using a kit **76** which includes means for securing the gas burner **74** to the horizontal plate **78**. The burner includes a burner housing **80**, an upper support seating **82**, and a metal disk **84**. These three parts are shown interconnected by fasteners **86**, but they could be made as an integrated part. The metal disk **84** is connected to a lower tray **88**. The burner head parts and the cooking vessel support are not shown in this figure but appear in **FIG. 5**.

[0036] Advantageously the kit **76** includes a flexible

heat-insulating gasket **90**, suitably made of silicon rubber, which is shown inserted between the gas burner disk **84** and the horizontal plate **78**. Such insulation is advantageous where the plate **78** is made of a material having poor heat resistance.

[0037] **FIG. 5** shows a plate **92** provided with large apertures **94** for gas burners **74** and small apertures **66** for controls. The plate **92** is for use in combination with the cooker kit **76**; one gas burner **74** is shown assembled to the plate. The kit parts shown are pot grill **48**, burner perforated disk **50**, burner spreader housing **52**, cover cone **54** and burner inlet chamber **56** for connection to a copper gas conduit **58**.

[0038] A control panel **94** is shown with four control handles **96** and electronic ignition button **98**.

[0039] A lower tray **100** holds flexible and rigid gas conduits **58**, **102**, electric cable **104** and a connection **106** for ignition.

[0040] The plate **92** if so required, is suitable for installation of at least one edge **108** thereof into a wall. The plate **92** is preferably made of a waterproof, heat resistant, non-flammable and scratch resistant material.

[0041] The plate **92** is suitably made of a natural stone-based material such as marble or granite. In a further embodiment the plate **92** is made of a synthetic marble-like material, which is less liable to cracking than natural stone-based materials, or of stainless steel.

[0042] The scope of the described invention is intended to include all embodiments coming within the meaning of the following claims. The foregoing examples illustrate useful forms of the invention, but are not to be considered as limiting its scope, as those skilled in the art will readily be aware that additional variants and modifications of the invention can be formulated without departing from the meaning of the following claims.

Claims

1. A cooking range kit for assembly to a horizontal plate, said kit including a plurality of heater units, energy conduits connectable to said heater units, and controls for said heater units, said plate being provided with apertures for the insertion therein of part of said heater unit, an upper surface of said heater unit arranged to support a cooking vessel projecting, when assembled to said plate, above the upper surface of said plate, said energy connections when assembled being located below said plate.

2. A cooking range kit as claimed in claim 1, wherein said plate is part of a built-in kitchen countertop.

3. A cooking range kit as claimed in claim 1, wherein said heater unit is an electric heating plate, and said energy conduits carry electric power.

4. A cooking range kit as claimed in claim 1, wherein said heater unit is a gas burner, and said energy conduits carry cooking gas.

5. A cooking range kit as claimed in claim 1, wherein further apertures are provided for the insertion therein of cooker controls.

6. A cooking range kit as claimed in claim 4, wherein said kit includes means for securing said gas burners to said horizontal plate.

7. A cooking range kit as claimed in claim 1, further comprising a flexible heat-insulating gasket for insertion between said heater units and said horizontal plate.

8. A cooking range kit as claimed in claim 4, wherein said means for securing said burner assembly to said horizontal plate comprises a tray element to be positioned on assembly parallel to and underneath said horizontal plate, fasteners being provided for engaging said tray element to clamp a flange of said burner assembly against the upper surface of said horizontal plate.

9. A cooking range kit as claimed in claim 4, further including electronic ignition means.

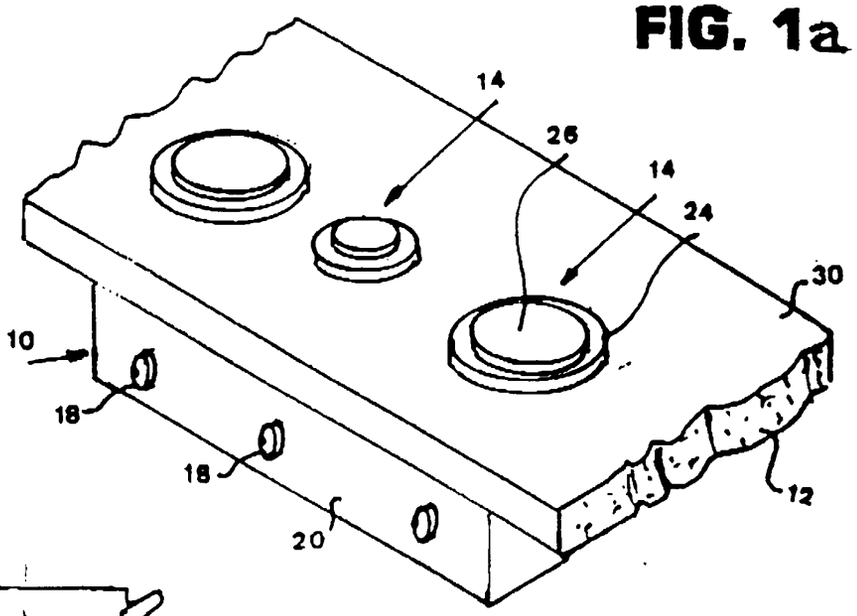
10. A counter or plate being made of a waterproof, heat resistant, non-flammable and scratch resistant material, apertures being provided for the insertion therein of a plurality of heater units of a cooker kit as claimed in claim 1.

11. A plate as claimed in claim 10, being made of a natural stone-based material.

12. A plate as claimed in claim 10, being made of a synthetic marble-like material.

13. A plate as claimed in claim 10 being made of metal.

FIG. 1a



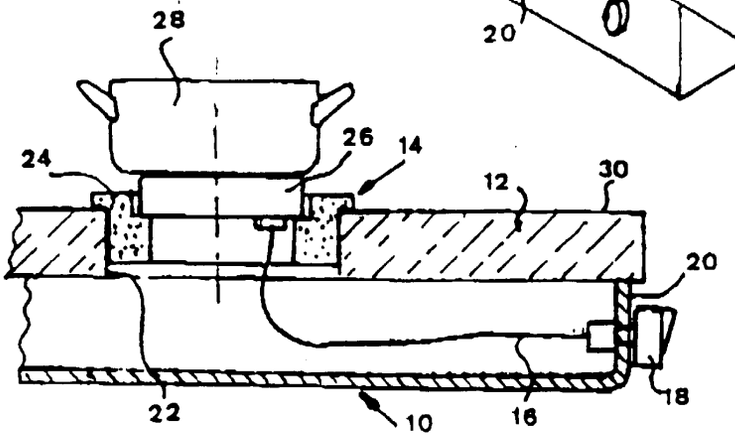


FIG. 1b

FIG. 2

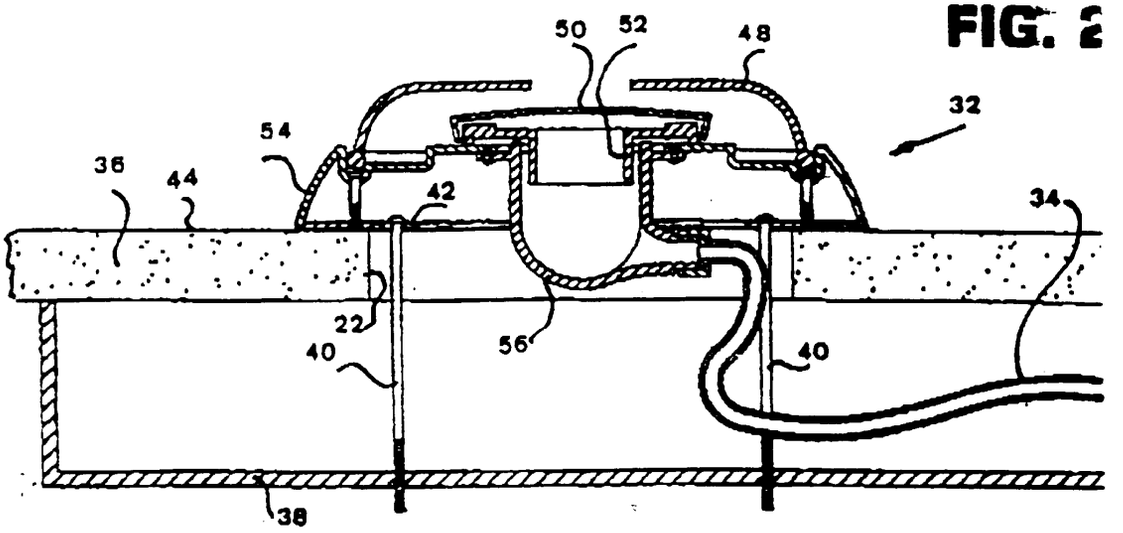


FIG. 3

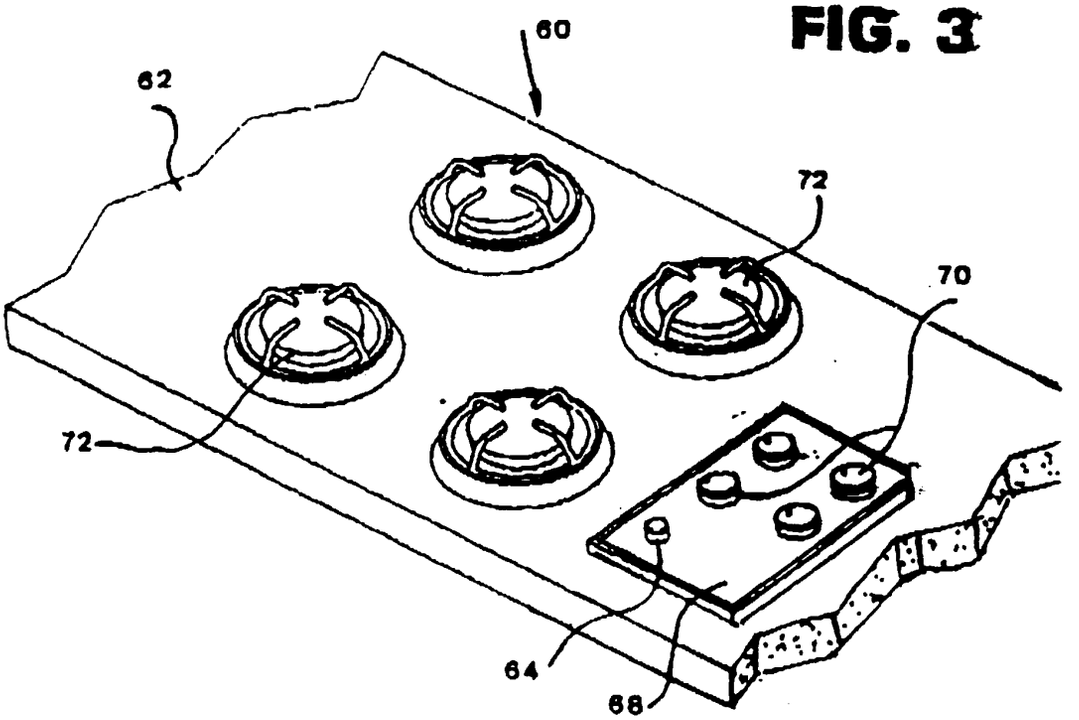
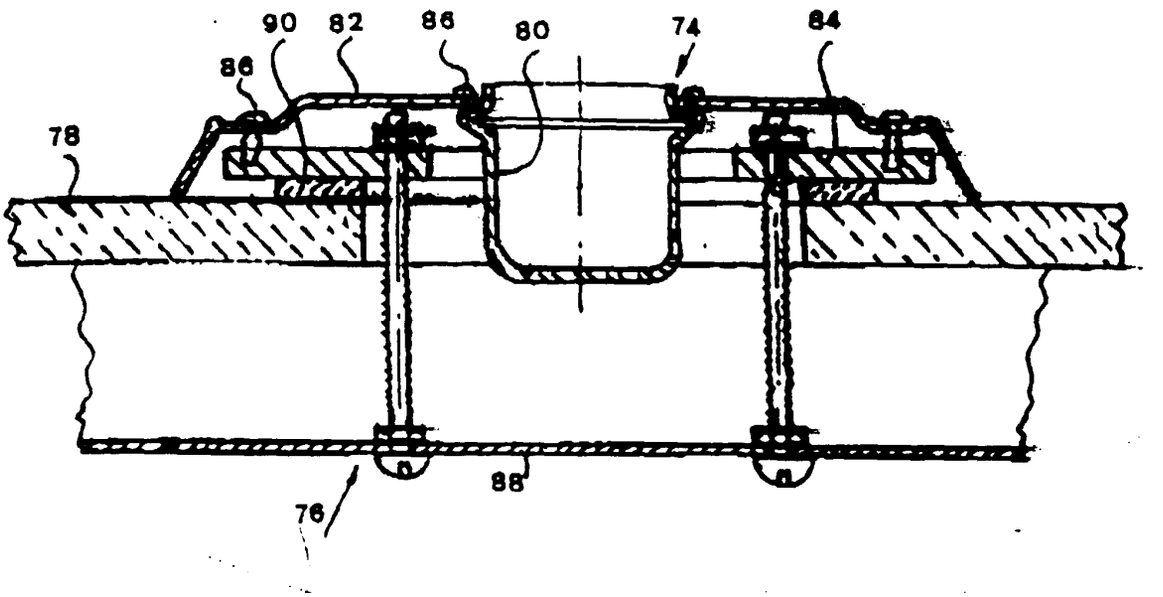
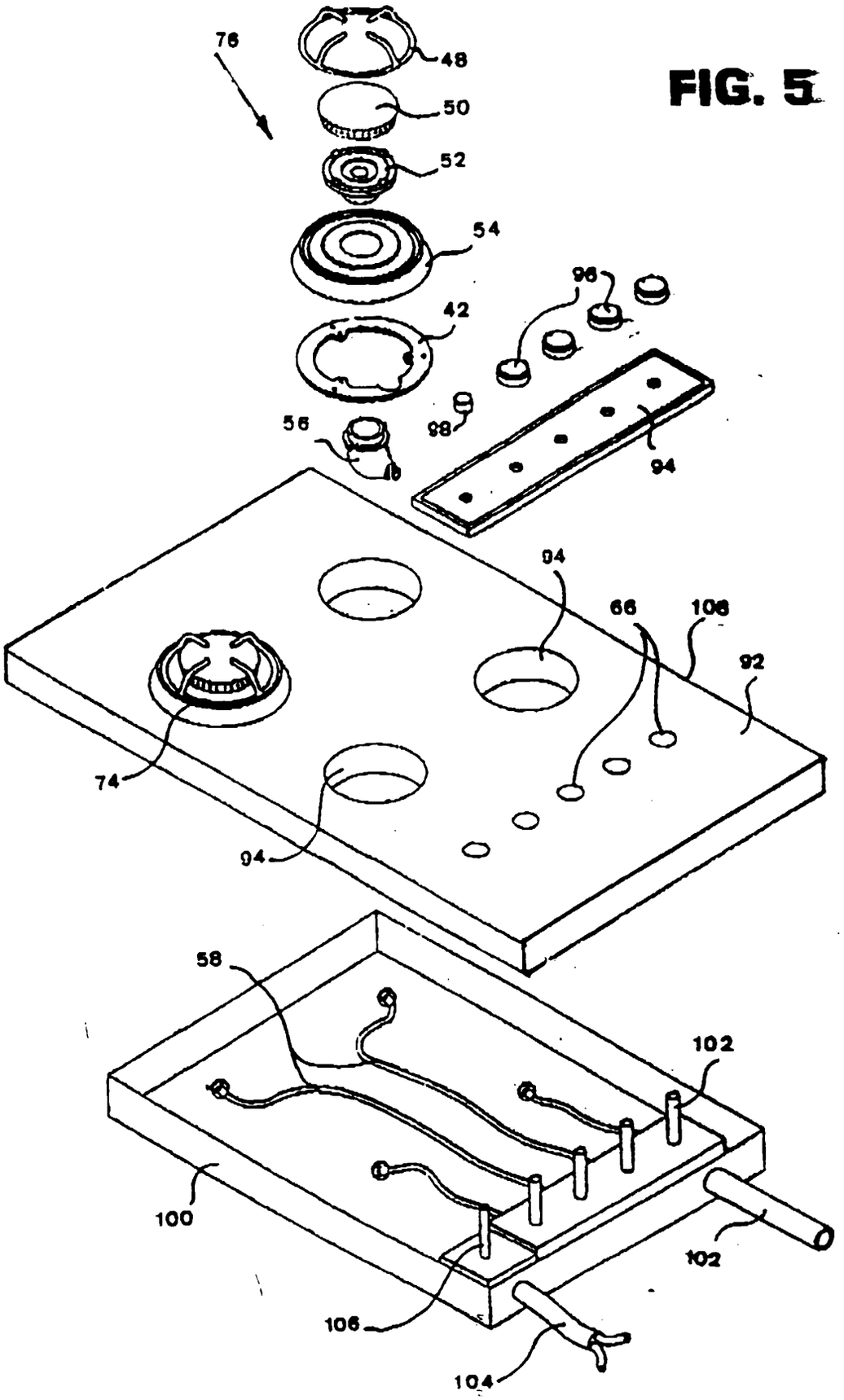


FIG. 4




76
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74
94
58
102
100
102
106
104

FIG. 5