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## 54 **Microwave ovens.**

57 A microwave oven has a food receiving cavity (10) separated by a rear wall (20) from a rear compartment (34, Figure 2) accommodating a fan for forcing air through the cavity (10). An electrical resistance heating element (38) located at the top of the cavity serves to heat the air forced through the cavity by the fan, and also as a radiant grill element when the fan is not operative.

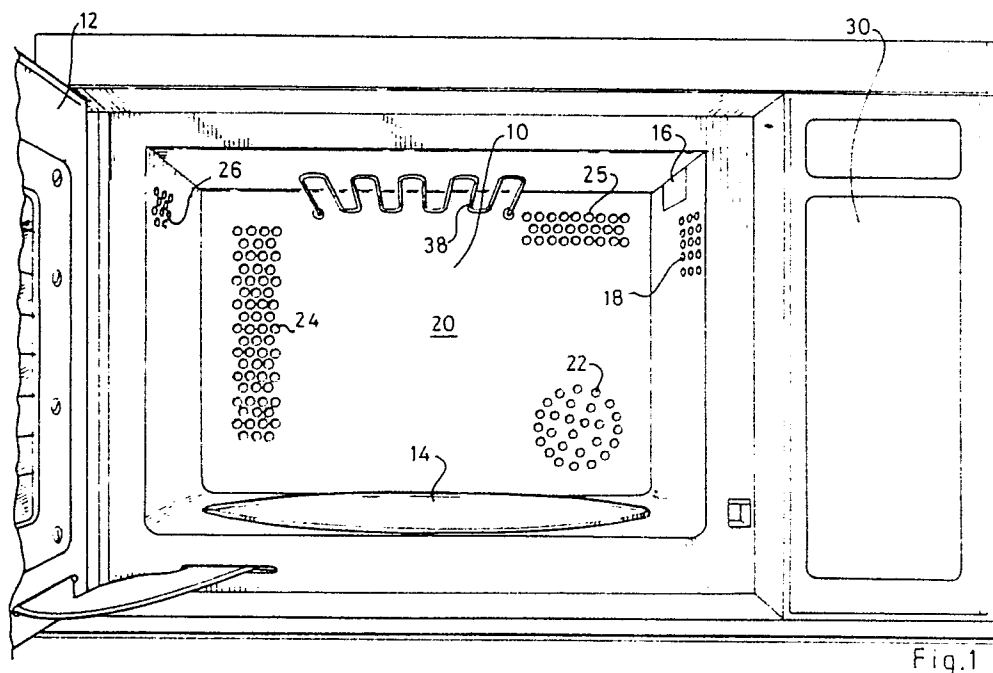


Fig.1

**EP 0 243 025 A2**

## Microwave Ovens

### Field of the invention

This invention relates to microwave ovens of the type having both a magnetron for delivering microwave power to the oven cavity and a system for delivering a forced flow of air through the oven cavity.

### Summary of the invention

According to the invention a microwave oven comprises a food-receiving cavity, a magnetron for delivering microwave power to the cavity, and a forced air system comprising a fan located in a compartment separated from the cavity by a dividing wall, a first aperture in the wall serving as an outlet for air from the cavity and a second aperture in the wall serving as an inlet for air into the cavity, an electrical resistance heating element located at the top of the cavity and being capable of serving not only as a heating element for heating the air forced through the cavity by the fan but also as a radiant grill element when the fan is not operative, there being no electrical resistance heating element for heating the air in the compartment.

The dividing wall is preferably at the rear of the cavity, but an alternative arrangement is for the dividing wall to be a side wall of the cavity, the compartment then being located beside the cavity.

The outlet aperture may have a horizontal extent greater at its upper end than its lower end, in which case the inlet aperture is preferably constituted by perforations extending over an area which is of inverted L shape. The preferred oven has time controls but no temperature controls, and the top of the oven may be fitted with a hob provided by a ring element and an induction hob.

A microwave oven forming a preferred embodiment of the invention will now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a front perspective view of the oven with an oven door open; and

Figure 2 shows the rear of the oven with a rear panel removed to show a hot air compartment of the oven.

The oven is similar in construction and in circuit configuration to the ovens disclosed in the Applicants' two UK patent Specifications 2127658A and 2137860A. In particular, the oven has a food-receiving cavity 10 which is closable by a hinged front door 12 and in the base of which is located a rotatable turntable 14. A magnetron (not shown)

delivers microwave power to the cavity through an inlet 16, and cooling air from a magnetron blower fan is capable of entering the cavity through a perforated inlet 18. The rear wall 20 of the cavity has a perforated outlet aperture 22 and a perforated inlet aperture 24, these two outlets respectively serving for the exit and entry of forced air through the cavity. The cavity has a further vent 25, and a perforated area 26 which is illuminated. The front of the casing of the oven has a control panel 30.

Referring to Figure 2, the rear of the oven has a casing 32 shaped to provide a rear compartment 34 through which air passes behind the panel. Within the compartment 34 is located a fan 36, disposed behind the outlet aperture 22. The fan 36 is rotatable about a horizontal axis and has around its periphery a plurality of impeller blades which draw air from the cavity 10, through the outlet aperture 22, and thence force the air back into the cavity 10 through the inlet aperture 24. The wall 20 thus separates the cavity from the compartment 34.

Referring again to Figure 1, the top of the cavity 10 is provided with a electrical resistance heating element 38. The element 38 is supported from the upper part of the rear wall 20 and projects forwardly therefrom so as to underlie the top panel of the cavity. The element 38 heats the air circulated through the cavity by the fan 36. Also, when the forced flow of air through the cavity is not required, ie when the fan 36 is not operative, the element 38 serves as a radiant grill element.

It will be noted that the inlet aperture 24 is defined by perforations which extend over an area generally of rectangular shape. As an alternative, the aperture 24 may have perforations extending over an area of generally inverted L shape, so that the horizontal extent of the inlet aperture 24 is greater at the top of the aperture than at the bottom, the upper end extending partially below the heating element 38. This enlarged width of the inlet aperture 24 at its upper end causes more air to enter the upper part of the cavity 10 where it is heated by the element 38.

The compartment, instead of being behind the cavity, may be positioned beside the cavity. The dividing wall between the compartment and cavity is then a side wall of the cavity and will have spaced inlet and outlet apertures providing a flow pattern similar to that of the oven described, but transposed through ninety degrees.

## Claims

1. A microwave oven comprising a food-receiving cavity, a magnetron for delivering microwave power to the cavity, and a forced air system comprising a fan located in a compartment separated from the cavity by a dividing wall, a first aperture in the wall serving as an outlet for air from the cavity and a second aperture in the wall serving as an inlet for air into the cavity, an electrical resistance heating element located at the top of the cavity and being capable of serving not only as a heating element for heating the air forced through the cavity by the fan but also as a radiant grill element when the fan is not operative, there being no electrical resistance heating element for heating the air in the compartment.

2. A microwave oven according to claim 1, wherein the dividing wall is a rear wall of the cavity, the compartment being disposed behind the cavity.

3. A microwave oven according to claim 1, wherein the dividing wall is a side wall of the cavity, the compartment being disposed beside the cavity.

4. A microwave oven according to any of the preceding claims, wherein the outlet aperture has a horizontal extent greater at its upper end than its lower end.

5. A microwave oven according to claim 4, wherein the inlet aperture is constituted by perforations extending over an area which is of inverted L shape.

6. A microwave oven according to any of the preceding claims, wherein the top of the oven is fitted with a hob provided by a ring element and an induction hob.

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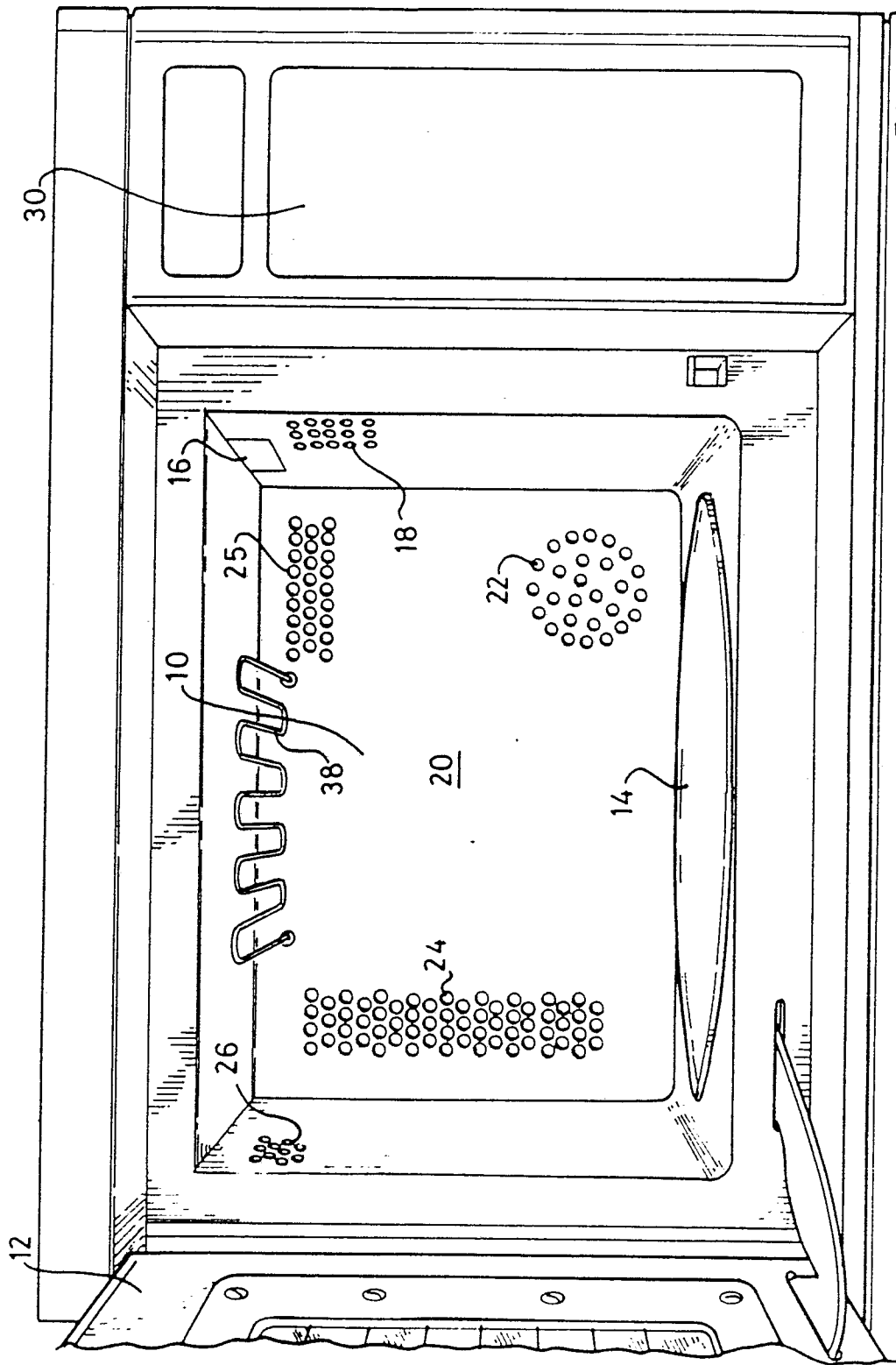


Fig.1

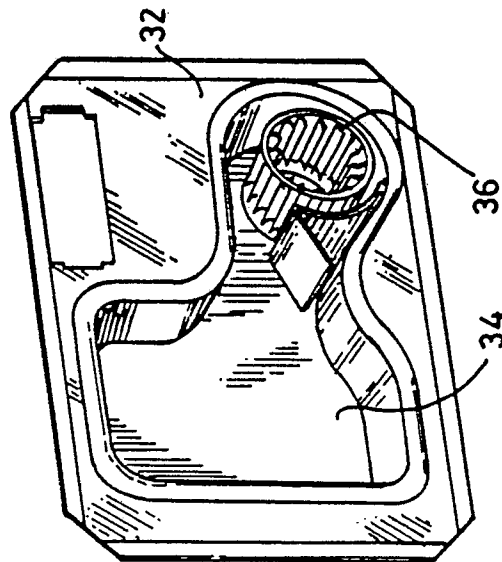
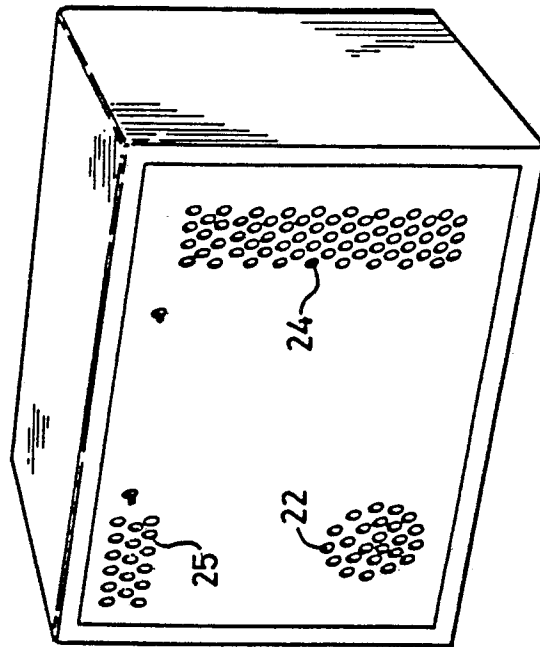


Fig. 2