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(54) **Appliance with heated casing**

(57) An appliance 1 having a casing 2, a primary heat source (not shown) for cooking or heating and a secondary heat source, 30, 32, for warming the casing 2, the

secondary heat source 30, 32 being distributed about the casing 2. The secondary heat source 30, 32 may comprise a resistive electric heating element.

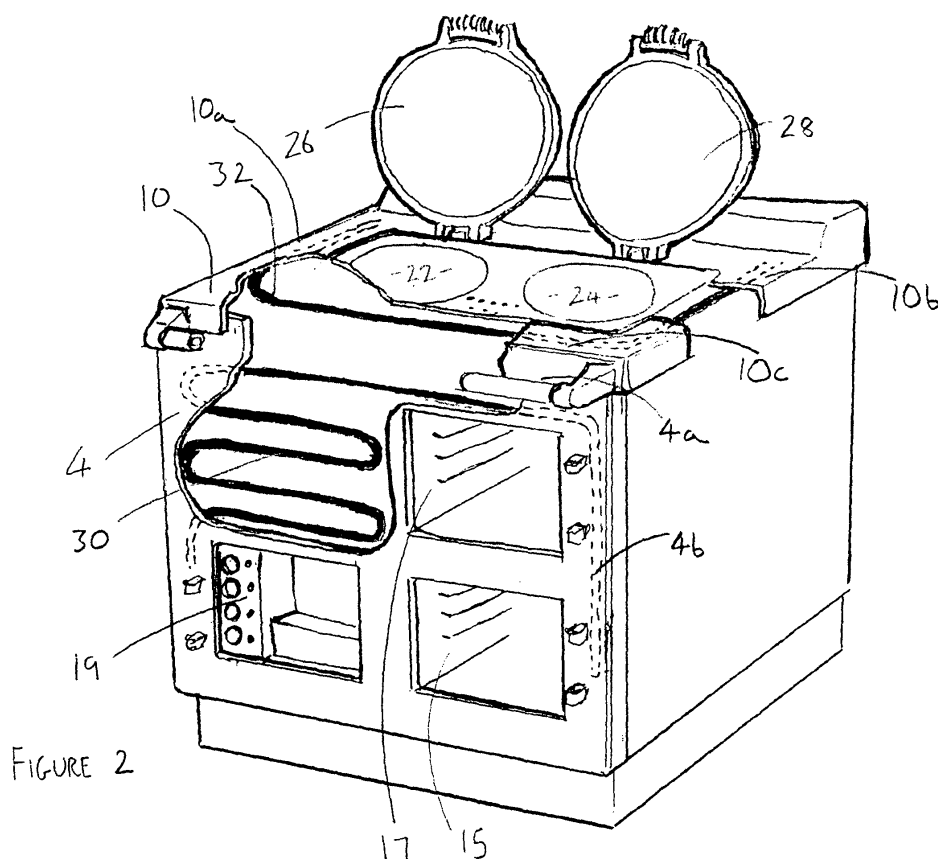


FIGURE 2

Description

Introduction

[0001] This invention relates to an appliance with a heated casing, and particularly, although not exclusively, relates to range cookers with electrically heated ovens and hobs, and a dedicated heating element to heat the casing of the range cooker, and to domestic space heating appliances with a primary heat source, an imitation heat source or a lighting effect and a secondary heating element to heat the casing of the appliance.

Background

[0002] Range cookers have been in common use for many decades and their principle of operation is well known.

[0003] Conventional range cookers use a single heat source to heat at least two ovens, and usually also two hot plates on top of the cooker. The cooker is constructed using massive cast iron components that store the heat and distribute this heat to the various cooking surfaces and ovens. The spaces around these massive cast iron components are heavily insulated to prevent excessive heat loss. The heat source has a relatively low power rating but runs continuously to bring the cooker up to the required temperature.

[0004] With the above-described principle of operation, even though the cooker is heavily insulated, it is warm to the touch and gives off heat to its surroundings. Particularly in the winter this is a very welcome feature, but in the summer it can be less welcome, and some users turn their cookers off in the summer. Because the cooker needs several hours to come back up to temperature, it may not be considered practical to turn the cooker back on until the cold weather starts again. To overcome the problem of not having the range cooker working, these users must also have a conventional cooker as a backup to use in the summer months.

[0005] The present invention seeks to address these problems and to provide a modern and efficient range cooker, which is warm to the touch, just like a conventional range cooker.

[0006] Domestic electric space heaters have been in common use for many decades and they produce useful heat for the room by way of one of the following methods:

- a) An electrically heated element with an electrically driven fan to blow air through the element and into the room.
- b) An electrically heated element that becomes incandescent usually combined with a reflector to radiate the heat into the room.
- c) An electrically powered light source e.g. halogen which has been tuned to produce more heat than light.
- d) Oil filled radiators which are electrically heated.

[0007] The problems with the above solutions are as follows:

- a) Any device fitted with a fan introduces two unwelcome properties, noise and a drying effect for the room.
- b) Heating appliances fitted with fans require a significant amount of space to house the fan and the element making slim appliance difficult to achieve.
- c) Heating appliances fitted with a fan generally have the heat exiting at one concentrated point creating a specific hazard in terms of temperatures of adjacent materials.
- d) Incandescent heaters also have specific problems relating to safety as they give out a concentrated heat source that needs specific protection e.g. guards.
- e) Heaters relying on 'de-tuned' light emitters such as halogen still give out significant amounts of unnecessary light

[0008] The present invention seeks to address the problems mentioned above by providing an appliance that has a primary heat source, an imitation heat source or a lighting effect and also has a secondary heat source distributed about the casing to warm at least part of the casing, but which is also safe, quiet and slim.

Summary of the Invention

[0009] According to a first aspect of the present invention there is provided an appliance, having a casing, a primary heat source for cooking and a secondary heat source for warming the casing, the secondary heat source being distributed around the casing.

[0010] The above may be applied to a cooker, and particularly to a range cooker. It is becoming increasingly important not to waste energy, and consumers are more likely to purchase a range cooker which is energy efficient. Consequently it is desirable to reproduce the traditional look of a range cooker but to include in that cooker conventional ovens and hobs which warm up quickly and conduct little heat to the casing of the cooker.

[0011] Consumers may be reluctant to buy such cookers if they do not reproduce the "warm to the touch" character of a conventional range cooker. This problem is addressed in accordance with the present invention, since the casing of the cooker is heated by the secondary heating element. As the secondary heating element is distributed around the casing, a low output secondary heating element can be used to provide sufficient heating of the casing than would be possible with a localised heat source which is not distributed around the casing. Furthermore, the casing can be heated more evenly if the secondary heating element is distributed around the casing.

[0012] The secondary heat source may comprise an elongate heating element, which may for example be

electrically powered, or comprise a tube filled with hot fluid. The heating element may be a power-dissipative heating element. For example it may be a resistive heating element.

[0013] The heating element may be coiled around the casing, or may be folded back on itself repeatedly to form a substantially planar heating element formed from convoluted lengths of elongate heating element.

[0014] The secondary heat source may be distributed around a front part of the casing. In addition, or instead, the secondary heat source may be distributed around a top part of the casing. In addition, or instead, the secondary heat source may be distributed around at least one end part of the casing.

[0015] The secondary heating element may be controlled by a thermostat. In addition, or instead, it may be controlled by a timer.

[0016] If a thermostat is provided in a heating circuit of the secondary heating element, a consumer can set the temperature of the casing as desired, within the capacity of the secondary heating element. If a timer is provided, the secondary heating element could be operated, for example, only during the day, so that during the night, when the casing of the cooker does not need to be warm, the energy consumption of the cooker is minimised.

[0017] According to a second aspect of the present invention, there is provided an appliance having a casing, a primary heat source, an imitation heat source, or a lighting effect and a distributable heat source distributed around the casing, wherein said distributable heat source is operable to warm at least part of said casing.

[0018] Preferably, the appliance according to the second aspect of the invention is a domestic space heating appliance.

[0019] According to a third aspect of the present invention, there is provided an appliance having a casing, a primary heat source and a secondary dedicated heat source for heating the casing. The appliance could, for example, be a cooker, an oven, a stove, or a fire.

[0020] The various features described above in relation to the first aspect of the invention are also applicable to the second and third aspects of the invention.

Brief Description of the Drawings

[0021] For a better understanding of the present invention, and to show more clearly how it may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which: -

Figure 1 shows a two-oven range cooker in accordance with the present invention;

Figure 2 shows the two oven range cooker of figure 1 with oven doors removed and with portions of the casing removed to reveal the interior of the cooker; and

Figure 3 shows a casing of a domestic space-heating appliance in accordance with the present invention, whereby the primary heat source or imitation heat source would be positioned inside the hole.

[0022] Referring to figure 1, a two oven range cooker 1 comprises a box shaped casing 2 having a front wall 4, side walls 6, 8, a top wall 10 and a rear wall 12. Three doors, 14, 16, 18 are attached to the front wall 4, and a hob 20 having two hotplates 22, 24 is mounted in the top wall 10. Lids 26, 28 are pivotably attached to the top wall 10 along an edge of the hob 20 and can be swung down to cover the hotplates 22, 24.

[0023] Referring also to figure 2, the oven doors, 16, 18, provide access to conventional electric ovens 15, 17, heated by primary heat sources, for example in the form of conventional electric heating elements (not shown), and the oven door 14 provides access to cooker controls 19 for the ovens 15, 17.

[0024] Figure 2 shows the cooker of figure 1 with a portion of the front wall 4 and top wall 10 cut away to reveal heating elements 30, 32 situated within, and in contact with, the front wall 4 and the top wall 10, respectively. Each heating element 30, 32 comprises a power-dissipative electric heating element in the form of a flexible conductor, which is distributed around the casing 2, so that an even heating effect is achieved in the casing. The power-dissipative heating element may, for example, comprise a resistive heating element. In an alternative embodiment (not illustrated) the heating element could comprise a pipe or tube, in which is circulated a heated fluid. This embodiment is particularly appropriate in a range cooker which has a back boiler, because a proportion of the flow from the back boiler can be diverted into the heating element to heat the casing 2 of the range cooker.

[0025] The front heating element 30 behind the front wall 4 of the cooker is folded back on itself repeatedly to form a substantially planar heating element, which heats the top left hand side of the front wall 4 of the cooker. The right hand side of the front wall 4, as viewed in figure 2, is already heated to some extent by the ovens 16, 18, but a free end of the heating element 30 is extended across the top edge 4a of the front wall 4 and down the right hand edge 4b of the front wall 4, so that the entire upper part of the front wall 4 is warm to the touch, when the heating element 30 is switched on.

[0026] The top-heating element 32 is substantially U-shaped when viewed in plan and extends beneath the two side edges 10a, 10b and the front edge 10c of the top wall 10. Consequently, the entire exposed edge of the top wall 10 is warm to the touch, when the heating element 32 is switched on.

[0027] The cooker controls 19 may include switch gear to switch on the heating elements 30, 32, either together or independently. Furthermore, the controls may include a thermostat and/or a timer for controlling the operation of the heating elements 30, 32, either together or inde-

pendently. It is envisaged that the total power consumption of both heating elements 30, 32 to achieve a "warm to the touch" feel to the casing 2 could be achieved with a power output of only approximately 40 watts.

[0028] Referring to figure 3, a domestic heating appliance comprises a casing 2 having a front wall 4, side walls 6, 8, inner walls 34, 36, 38, 40, a top wall 10 and a rear wall 12. A primary heat source or imitation heat source (not shown) is provided within the inner walls of the casing.

[0029] Figure 3 shows the domestic heating appliance with a portion of the front wall 4 cut away to reveal heating element 30 situated within, and in contact with, the casing walls. The heating element 30 comprises a power-dissipative electric heating element in the form of a flexible conductor, which is distributed around the casing 2, so that an even heating effect is achieved in the casing. The power-dissipative heating element may, for example, comprise a resistive heating element. In an alternative embodiment (not illustrated) the heating element could comprise a pipe or tube, in which is circulated a heated fluid.

[0030] The heating element 30 behind the front wall 4 of the domestic space-heating appliance is folded back on itself repeatedly to form a substantially planar heating element, which heats at least part of the casing. Certain parts of the casing may be provided with a reflective coating, or alternative means to prevent heat escaping from a specific wall of the casing.

[0031] In figure 3 the domestic space-heating appliance is shown with a single heating element 30, however it is contemplated that several heating elements may be provided. The domestic space-heating appliance controls (not shown) may include switch gear to switch on the heating element 30, and additional heating elements (not shown) either together or independently. Furthermore, the controls may include a thermostat and/or a timer for controlling the operation of the heating elements either together or independently.

[0032] Although in the illustrated embodiments the heating elements 30, 32 are shown as electric heating elements, any form of heating element is contemplated. In addition, heating elements such as the heating elements 30, 32, could be situated in any desired position or orientation beneath, or at least partially within the thickness of, the casing 2 of the cooker.

[0033] It is to be understood that this invention could extend to any appliance for which it is desirable to achieve and/or maintain a specific surface temperature.

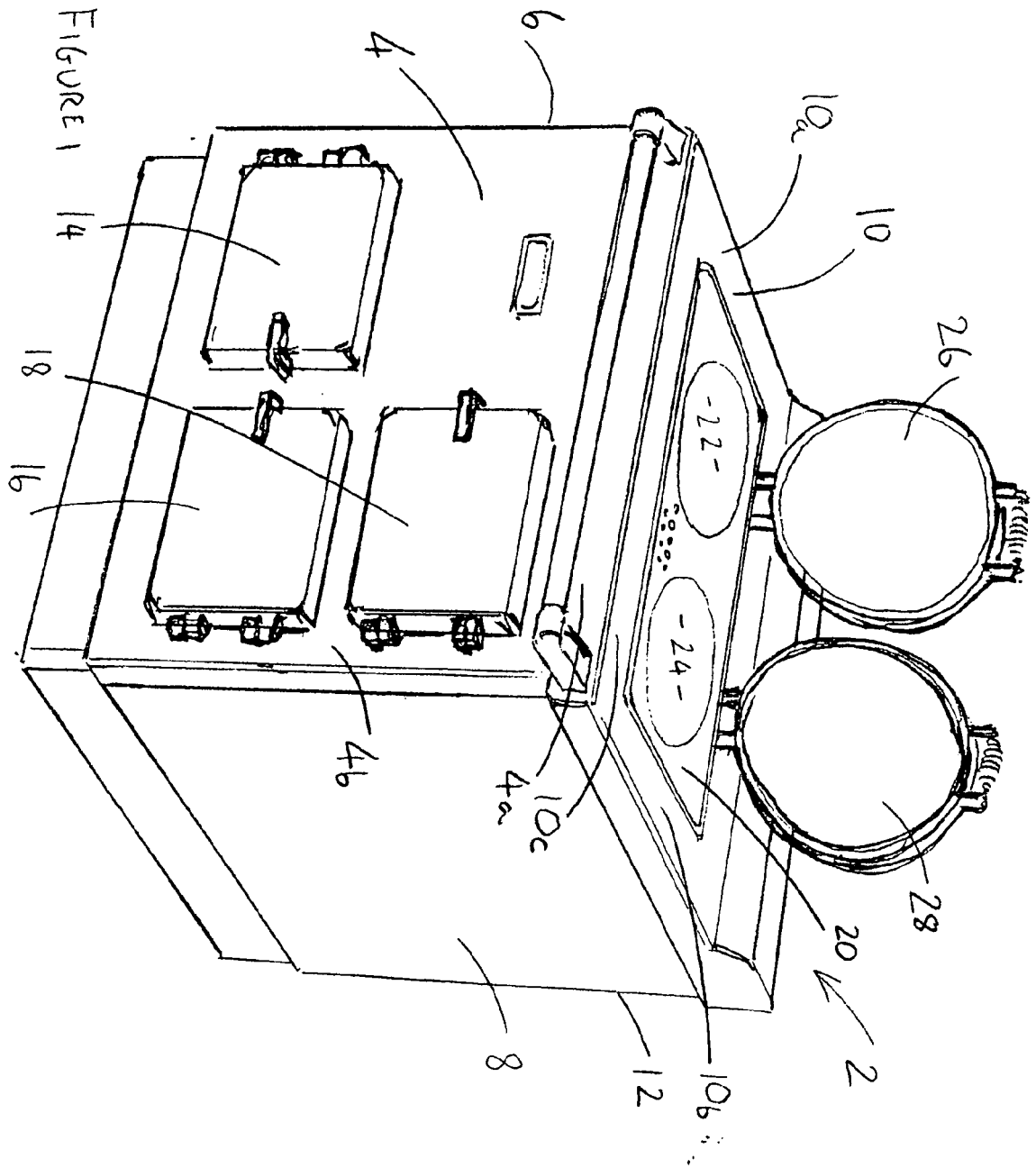
[0034] It is also to be understood that features of an embodiment of the invention may be used with any other embodiment of the invention.

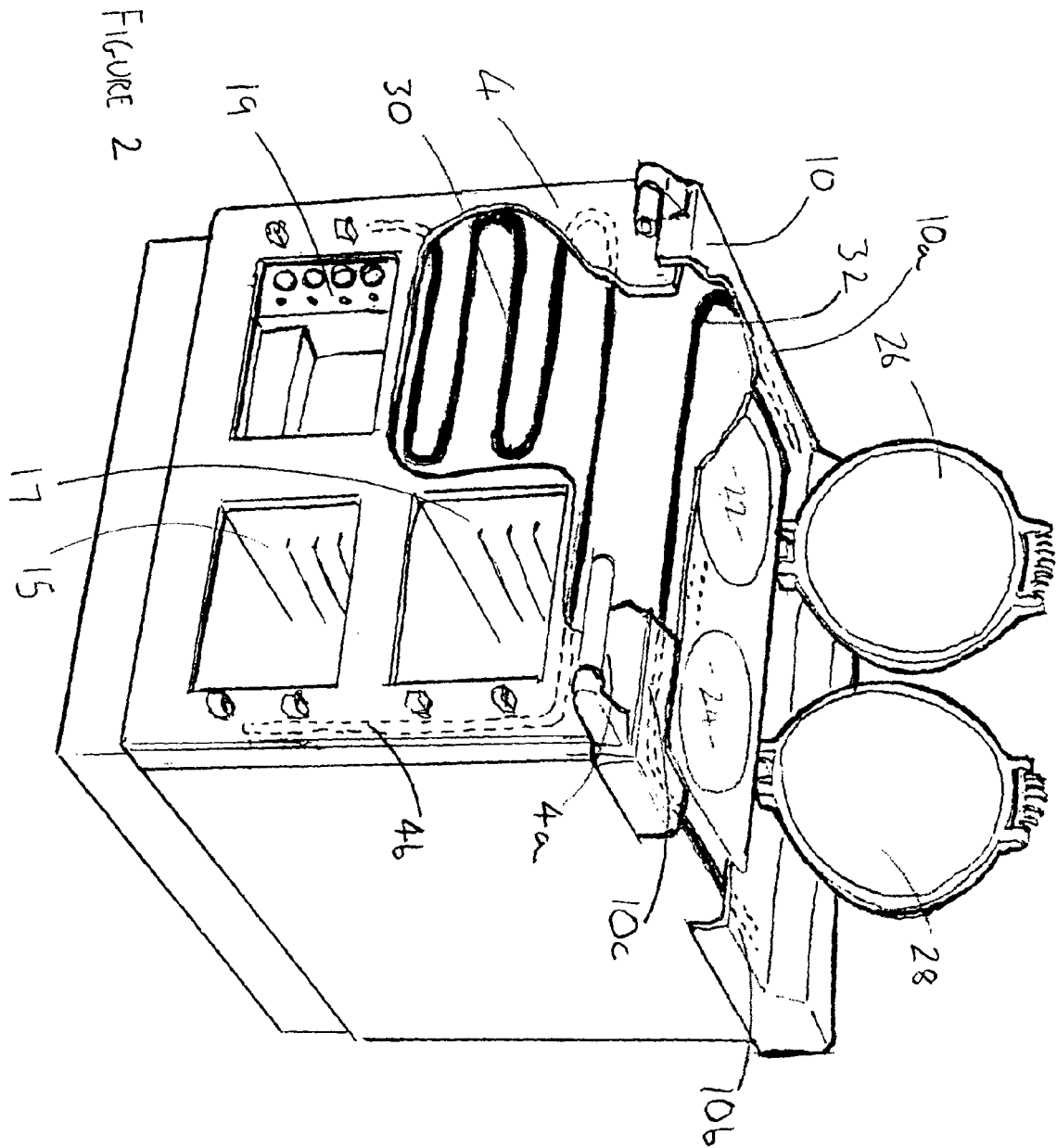
and a secondary heat source distributed about the casing.

2. An appliance as claimed in claim 1, wherein the secondary heat source comprises an elongate heating element.
3. An appliance as claimed in claim 2, wherein the elongate heating element comprises a power-dissipative heating element.
4. An appliance as claimed in claim 3, wherein the heating element comprises a resistive heating element.
5. An appliance as claimed in any one of the preceding claims, wherein the heating element is folded back on itself repeatedly to form a substantially planar heating element.
6. An appliance as claimed in any one of the preceding claims, wherein the secondary heat source is distributed about a front part of the casing.
7. An appliance as claimed in any one of the preceding claims, wherein the secondary heat source is distributed about a top part of the casing.
8. An appliance as claimed in any one of the preceding claims, wherein the secondary heat source is distributed about at least one end part of the casing.
9. An appliance as claimed in any one of the preceding claims, wherein the secondary heat source contacts an underside of the casing.
10. An appliance as claimed in any one of the preceding claims, wherein the secondary heating source is controlled by a thermostat.
11. An appliance as claimed in any one of the preceding claims, wherein the secondary heating source is controlled by a timer.
12. An appliance as claimed in any one of the preceding claims, wherein the appliance is a cooker.
13. An appliance as claimed in any one of claims 1 to 11, wherein the appliance is a domestic space heating appliance.

Claims

1. An appliance comprising a casing, a primary heat source, an imitation heat source or a lighting effect,





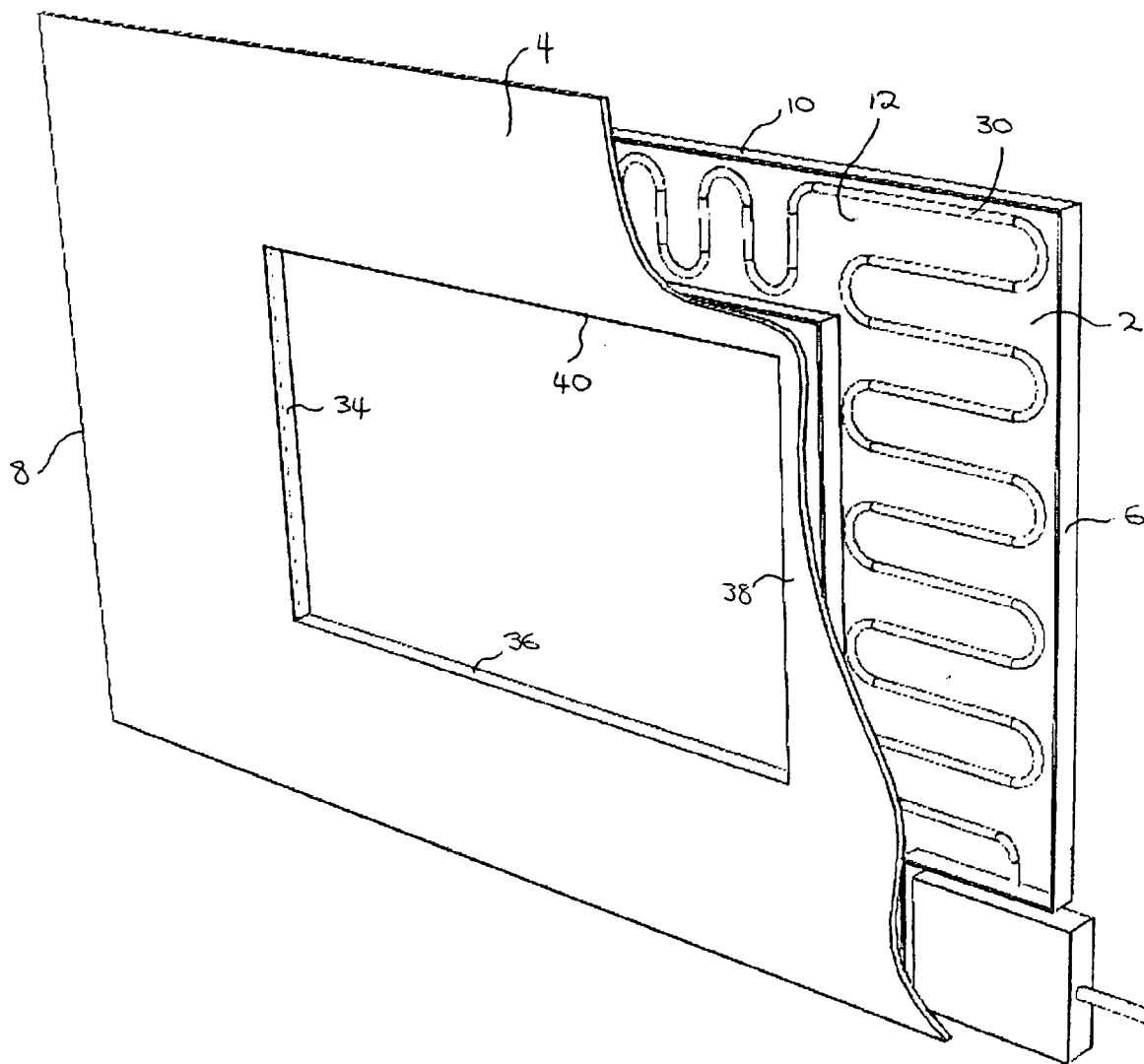


FIGURE 3



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 25 4960

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Place of search The Hague		Date of completion of the search 1 April 2008	Examiner Verdoodt, Luk
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
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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