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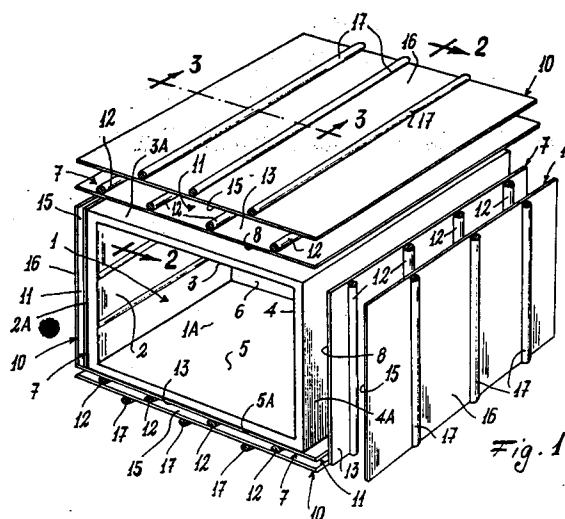
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I-21025 Comerio (VA)(IT)(54) **Device for thermally insulating household electrical appliances or parts thereof in which heat is developed, such as the cooking chamber of electric, gas or combination ovens.**

(57) A device for thermally insulating a household electrical appliance or a portion thereof in which heat is generated or developed, such as a gas, electric or combination oven or the usual cooking chamber (1) of this latter, said appliance being delimited by walls (2, 3, 4, 5, 6) subjected to radiation as a result of said heat generation or development, said walls (2, 3, 4, 5, 6) having therefore to be thermally insulated. Said device comprises at least two mutually parallel flat elements (7, 10) associated with and slightly spaced-apart from each other on each of said walls (2, 3, 4, 5, 6) to be insulated, said flat elements defining between each other an interspace (11) in which spacer members (12) are provided, said flat elements (7, 10) being of substantially smaller thickness than the walls (2, 3, 4, 5, 6) to be insulated and being formed of high reflectance material.

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This invention relates to a device for thermally insulating a household electrical appliance or a part thereof in which heat is developed, such as a cooking chamber of an electric, gas or combination oven.

With particular reference to an oven of the aforesaid type, its cooking chamber is generally insulated from the remaining parts of the appliance by being covered with a usual body of insulation material having low thermal conductivity.

This arrangement has however various drawbacks.

In this respect, forming the covering using an insulating body can involve considerable problems related to the handling of the body and its application to the usual structure defining the cooking chamber.

In addition, solid insulation material has its own emittance, resulting in heating of the external structure of the oven or the structure containing this latter if it is built into a kitchen unit.

Moreover, covering a cooking chamber with a body of insulating material of the aforesaid type involves considerable time and hence cost, which negatively affects the cost of the final oven.

An object of the present invention is to provide a device for thermally insulating a household electrical appliance or a part thereof, such as a cooking chamber of an electric, gas or similar oven, which is of simple construction, reliable and light in weight, and which can be easily fixed to the electrical appliance or the part thereof, for example to the structure of said cooking chamber.

A further object is to provide a device of the said type which is easy to handle and enables an insulation to be obtained having a level of characteristics which depends on the heat generated in the electrical appliance or the part thereof, for example in said cooking chamber.

A further object is to provide a device of the aforesaid type which is of low cost.

These and further objects which will be apparent to the expert of the art are attained by a device for thermally insulating a household electrical appliance or a portion thereof in which heat is generated or developed, such as a gas, electric or combination oven or the usual cooking chamber thereof, said electrical appliance or its portion being delimited by walls subjected to radiation as a result of said heat generation or development, said walls having therefore to be thermally insulated, characterised by comprising, disposed on each of said walls to be insulated, at least two mutually parallel flat elements associated with and slightly spaced-apart from each other, said flat elements defining between each other an interspace in which spacer members are provided, said flat elements being of substantially smaller thickness than the walls to be

insulated and being formed at least partly of high reflectance material.

The present invention will be more apparent from the accompanying drawing, which is provided by way of non-limiting example and in which:

Figure 1 is a partly exploded perspective view of a cooking chamber to which the device of the invention is applied;

Figure 2 is an enlarged section on the line 2-2 of Figure 1; and

Figure 3 is an enlarged section on the line 3-3 of Figure 2.

Said figures show a cooking chamber 1 of an oven, such as an electric oven.

For greater clarity, the heating members (of known type) have been omitted from the chamber 1.

Said cooking chamber is delimited by walls 2, 3, 4, 5 and 6 which define a usual aperture 1A providing access to the chamber.

On one side 2A, 3A, 4A, 5A, 6A of the walls 2, 3, 4, 5 and 6, external to the chamber 1, there are positioned first flat elements of substantially smaller thickness than said walls.

Said flat elements, in substantially sheet form, are constructed of material of high reflectance and low emittance, such as aluminium or like material. Alternatively, one face 8 thereof, facing the chamber 1, is of aluminium or coated with a usual aluminium-based coating.

Each element 7 can be coupled to a second flat element 10 which is spaced from and parallel to the first, so as to define with this latter an interspace 11 in which air is present.

Within the interspace there are also provided at least one spacer member 12 constructed of insulating material such as glass wool. The members 12 are fixed in any known manner (eg. glued) to that face 13 of the respective elements 7 opposite the face 8. Said spacer member or members 12 are at least partly flexible, are of substantially cylindrical shape, and cooperate with that face 15 of the second flat element 10 which faces the chamber 1, which face can be aluminized if the element 10 is not of aluminium construction. Said members 12 can thus be fixed to the face 15 itself.

Obviously the connection between the elements 7 and 10 can be formed in any known manner, either by a direct connection between said elements or by known external retention members (such as annular members which are made to embrace the flat elements when these have been positioned about the cooking chamber 1), not shown.

To enable one or more further flat elements 20 constructed of high reflectance material (shown by dashed lines in Figure 3) to be connected (for example by gluing), every second flat element 10

comprises, on that face 16 opposite the face 15, at least one spacer member 17 identical to said spacer members 12.

The chamber 1 is insulated by depositing the elements 7 on the chamber walls 2, 3, 4, 5 and 6 and fixing these elements to said walls by known means, such as screws or by gluing with heat-resistant glue.

As the flat elements 7 are constructed in sheet form they can be very quickly, simply and reliably applied to the walls 2, 3, 4, 5 and 6, so reducing the time required for applying the desired insulation and the corresponding cost.

In one modification, the elements 7 are portions of the same sheet of high reflectance material, surrounding the walls 2, 3, 4, 5 and 6 of the chamber 1 without discontinuity.

Having secured the flat elements 7 in the aforesaid manner, the second flat elements 10 are arranged on these latter or rather on the spacer members 12.

If these second elements are in the form of sheets they can be laid very simply.

The connection between the second flat elements 10 and first flat elements 7 is achieved in the already described manner, for example via the members 12.

Again in this case the second elements 10 can be in the form of one sheet surrounding the chamber 1. Advantageously, said sheet is the same as that which defines the elements 7 and wrapped a number of times about a itself, with spacer members 12 being interposed between two parallel superposed layers (defining the elements 7 and 10).

The assembly obtained in this manner (elements 7 and 10 arranged parallel to and spaced apart from each other, to define an interspace 11 in which air is present) provides the chamber 1 with excellent insulation.

In this respect, because of the material used to form the elements 7 and 10 and the presence of air between them, the heat generated within the chamber 1, which propagates to the walls 2, 3, 4, 5 and 6 by conduction and would tend to disperse into the external environment, is largely arrested and only a minimum quantity is dispersed into the environment surrounding the chamber 1.

If even greater insulation of the cooking chamber 1 is desired, several flat elements of high reflectance and low emittance are superposed until the required insulation is achieved.

The device for insulating the cooking chamber 1 as described and as illustrated on the accompanying figures is therefore of simple construction, of low cost and easy to handle.

This device (comprising at least two flat elements 7 and 10 defining the interspace 11 contain-

ing the members 12) can be used to insulate any household electrical appliance or part thereof in which heat is generated and which must therefore be insulated from the external environment or from other parts of the electrical appliance.

Claims

1. A device for thermally insulating a household electrical appliance or a portion thereof in which heat is generated or developed, such as a gas, electric or combination oven or the usual cooking chamber thereof, said electrical appliance or its portion being delimited by walls subjected to radiation as a result of said heat generation or development, said walls having therefore to be thermally insulated, characterised by comprising, disposed on each of said walls to be insulated (2, 3, 4, 5, 6), at least two mutually parallel flat elements (7, 10) associated with and slightly spaced-apart from each other, said flat elements (7, 10) defining between each other an interspace (11) in which spacer members (12, 17) are provided, said flat elements (7, 10) being of substantially smaller thickness than the walls to be insulated (2, 3, 4, 5, 6) and being formed at least partly of high reflectance material.
2. A device as claimed in claim 1, characterised in that each flat element (7, 10) is in the form of a sheet.
3. A device as claimed in claim 1, characterised in that each flat element (7, 10) is formed of aluminium or an equivalent material.
4. A device as claimed in claim 1, characterised in that each flat element (7, 10) has an aluminized surface or face (8, 15) facing the household electrical appliance or its part (1).
5. A device as claimed in claims 1 and 5, characterised in that each spacer member (12, 17) is of substantially cylindrical shape and is advantageously fixed in any known manner to that corresponding surface or face (13, 16) of a flat element (7, 10) which is opposite to that facing the household electrical appliance or its part (1).
6. A device as claimed in claim 5, characterised in that each spacer member (12, 17) is formed of glass wool.
7. A device as claimed in claim 1, characterised in that the parallel-arranged flat elements (7, 10) are secured to each other by the spacer

members (12) provided within the interspace (11) defined by said elements (7, 10) and carried by one (7) of these latter.

8. A device as claimed in claim 7, characterised in that the connection between the flat elements (7, 10) is advantageously achieved by gluing the spacer members (12) of one of them to the other element. 5
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9. A device as claimed in claim 1, characterised in that the constituent material of the flat elements (7, 10) possesses low emittance. 10
10. A device as claimed in claim 1, characterised in that the flat elements (7, 10) are parts of at least one and the same sheet of low emittance material surrounding the cooking chamber (1). 15

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