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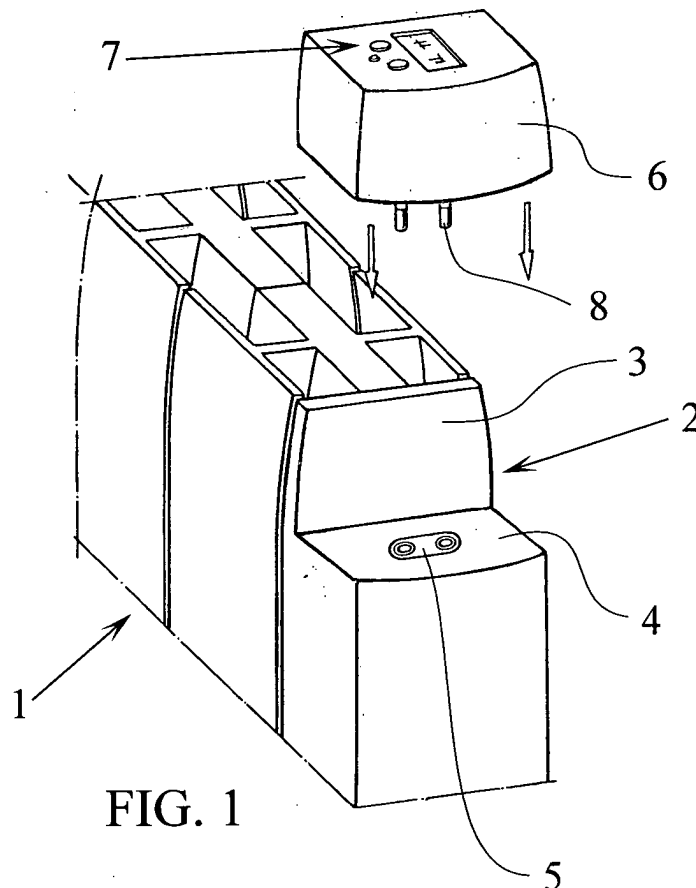
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(54) **Modular heating appliance**

(57) In a modular heating appliance, the set of control and regulation elements of the appliance is incorporated in a module which can be fitted on and removed

from the body of the heating appliance manually by pressure, permitting the implementation of a plurality of different appliances on the basis of a basic appliance body by connection of the necessary modular element.



**FIG. 1**

## Description

**[0001]** The present invention relates to a modular heating appliance and, in particular, to a domestic radiator which affords considerable advantages over the prior art.

**[0002]** The present invention is intended to confer on domestic radiators a modular character which introduces appreciable characteristics of novelty and inventive step.

**[0003]** Domestic radiators comprise a radiator panel, for example, an electrical radiator panel, and a set of members for the regulation and control of the appliance, which enable the user to observe the operation of the radiator and to adjust its characteristics such as heating intensity, timing, switching on/off, etc. At the moment, it is necessary to manufacture different specific appliances for each particular heating power and, in each of these, the set of regulation and control members also varies according to the various models to be offered on the market. This necessitates the manufacture of a very large number of different models which differ, within each power, solely by the above-mentioned set of control and regulation members. This disadvantage is also transferred to the points of sale, that is, to shops dealing with appliances of this type, which have to keep a large number of appliances in stock in order to satisfy customers' needs.

**[0004]** To overcome the above-mentioned disadvantages, the inventor has developed a modular heating appliance which, in a very simple manner, permits the manufacture of heaters of only a few basic types with fundamental variations, for example, type of heating and power, by constructing the heater in a manner such that the whole set of control and regulation members is incorporated in a separate module which can be plugged directly into a predetermined region of the heater. The heater units produced can thus be reduced to the minimum and minimal stocks can be maintained since the appropriate module of a considerable variety of modules can be incorporated in a radiator of unchanging basic type, actually at the time of sale, in order to provide the specific variant which is of interest to the customer.

**[0005]** In a preferred embodiment, the heater, which has a very flat, rectangular, parallelepipedal structure, has in a region of its body, preferably an upper corner, an opening in which a module can be incorporated by being plugged into the necessary female elements so that a heater with the desired specific characteristics can easily be produced, starting with a basic heater body with the fundamental characteristics which are common to a large variety of heaters. The module will preferably have a structure such that, when it is fitted in the opening provided, it will complete the heater body so that, once the module is incorporated, the heater will not differ in practice from a heater produced specifically for the version desired by the customer.

**[0006]** The provision of a region in the corner of the

heater for receiving the control and regulation module enables the control and regulation commands to be arranged very easily on the upper or side face of the module and in a corner; this arrangement is particularly suitable for easy visual inspection of the said control members and for quick and easy manipulation of the desired members.

**[0007]** For a better understanding, some drawings of a preferred embodiment of the present invention are appended by way of non-limiting example.

Figures 1 and 2 are respective schematic, perspective views of a modular heater according to the present invention.

Figure 3 is a perspective view of the heater as a whole.

Figures 4 and 5 are side and front elevational views of a specific embodiment of the heater, respectively. Figure 6 is a plan view.

Figures 7, 8 and 9 are a front elevational view, a side elevational view, and a plan view, respectively, of a practical embodiment of a modular element according to the present invention.

**[0008]** As shown in the drawings, the invention is characterized by the provision, in a heater body 1, for example, an electric radiator or the like of very flat, rectangular, general parallelepipedal shape as shown in Figure 3, of a region, preferably arranged in a corner of the heater, in which there is a cavity or recessed region 2, delimited in the embodiment shown by flat faces 3 and 4 and having plug-in means 5 for the connection of a module 6 carrying various control and regulation members, generally indicated 7; the module having plug-in means 8 for its incorporation in the cavity 2 so as to complete the flat, general parallelepipedal structure of the heater, as shown in Figures 2 and 3.

**[0009]** The module 6 may have particular features in order to fulfil the customers wishes in accordance with a series of catalogue variants which require the manufacturer and the retailing establishment to store only a limited number of radiators in the version shown in Figure 1, and the necessary number of modules 6 with the necessary specific embodiments. At the time of sale, the module 6 of the desired type can be connected to one of the bodies 1 that are available in order thus to make up the desired heating unit.

**[0010]** As can be seen, since the structure of the modular body 6 exactly fits the cavity 2 in order to make up the complete radiator structure, the radiator will acquire a complete shape equivalent to that which it would have if the various radiators, provided with the corresponding control and regulation elements that are variable for each case, were produced in conventional manner.

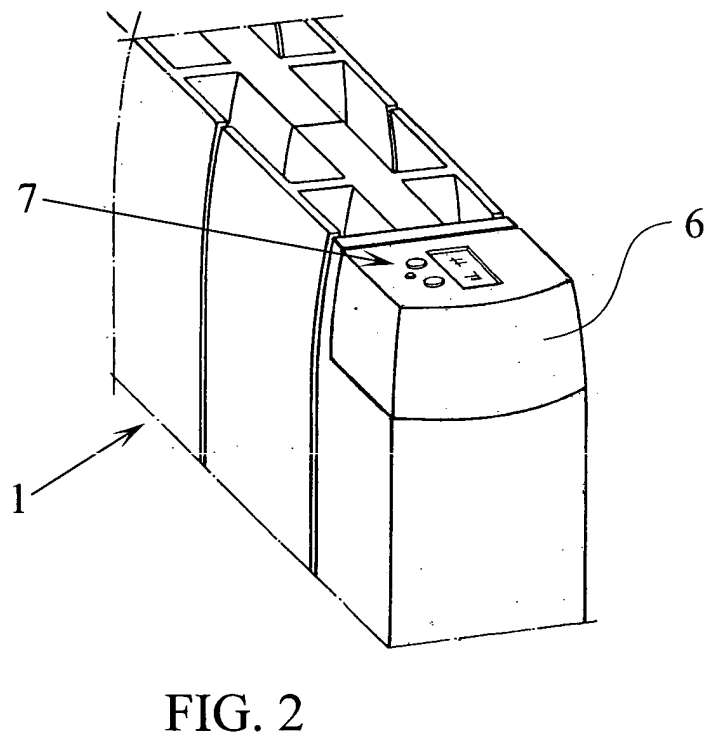
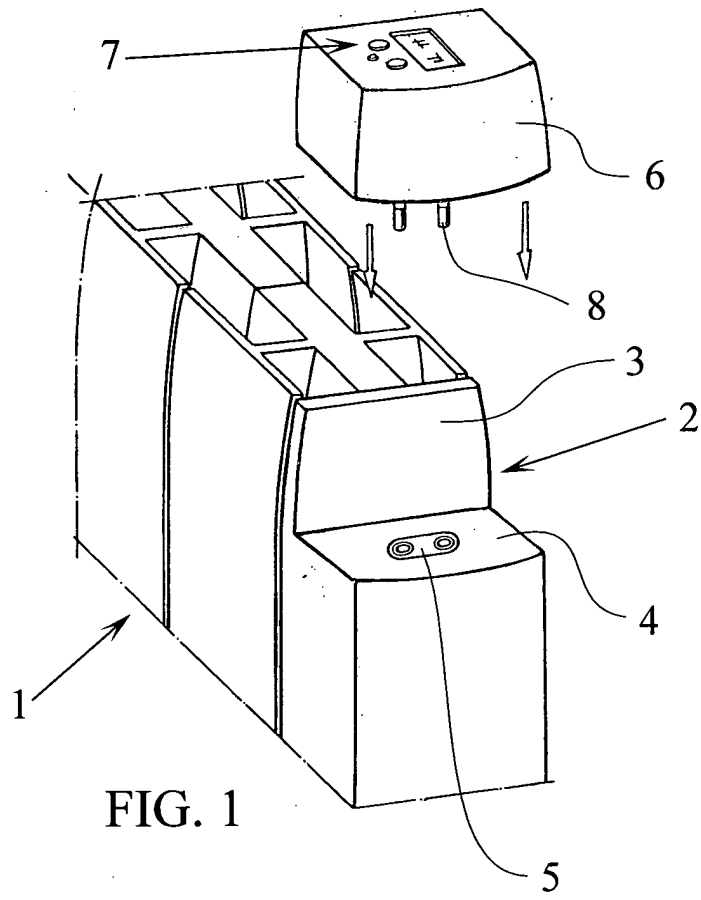
**[0011]** Figures 4 to 9 show an actual embodiment in which it can be seen that the module 9 has a flat structure with a region 10 for fitting on the body 11 of the radiator which has a region that is inclined for aesthetic

purposes. Moreover, in the embodiment shown, the upper edges 12 and 12' are slightly curved. In particular, the body 11 may have a coupling region 13 for the module 9 such that the module is coupled with a region of the upper portion of the radiator 11 with a smaller transverse dimension. In the embodiment shown, a small upper recess 14 enables a control disc 15 to be mounted on the upper face 16, or the desired control and regulation elements may be incorporated on the side faces.

**[0012]** As will be appreciated, the particular arrangement of the plug-in connection of the modular element or body and the radiator is given purely by way of example since the particular way in which it is formed may vary widely according to the number and shape of the connecting elements, the arrangement of the male or female parts on one or other of the parts to be plugged together, the arrangement of a contact region for flat elements etc., that is to say, with the use of means generally known in the art.

### Claims

1. Modular heating appliance, **characterized in that** the whole control and regulation elements of the appliance are incorporated in a module which can be fitted on and removed from the body of the heating appliance manually by pressure, permitting the implementation of a plurality of different appliances on the basis of a basic appliance body by connection of the necessary modular element.
2. Modular heating appliance according to Claim 1, **characterized in that** the body of the appliance has a cavity in which the module carrying the set of regulation and control elements of the appliance can be connected, completing the external structure of the appliance after its incorporation.
3. Modular heating appliance according to the preceding claims, **characterized in that** the basic body of the appliance has a cavity in an upper corner of the body and the connectible module has a shape complementary with the said cavity, completing the structure of the heating appliance after its incorporation and supporting the control and regulation members of the heating appliance on its outer surfaces.
4. Modular heating appliance according to Claim 1, **characterized in that** the module has plug-in connection means complementary with connection means of the cavity of the body of the heating appliance.



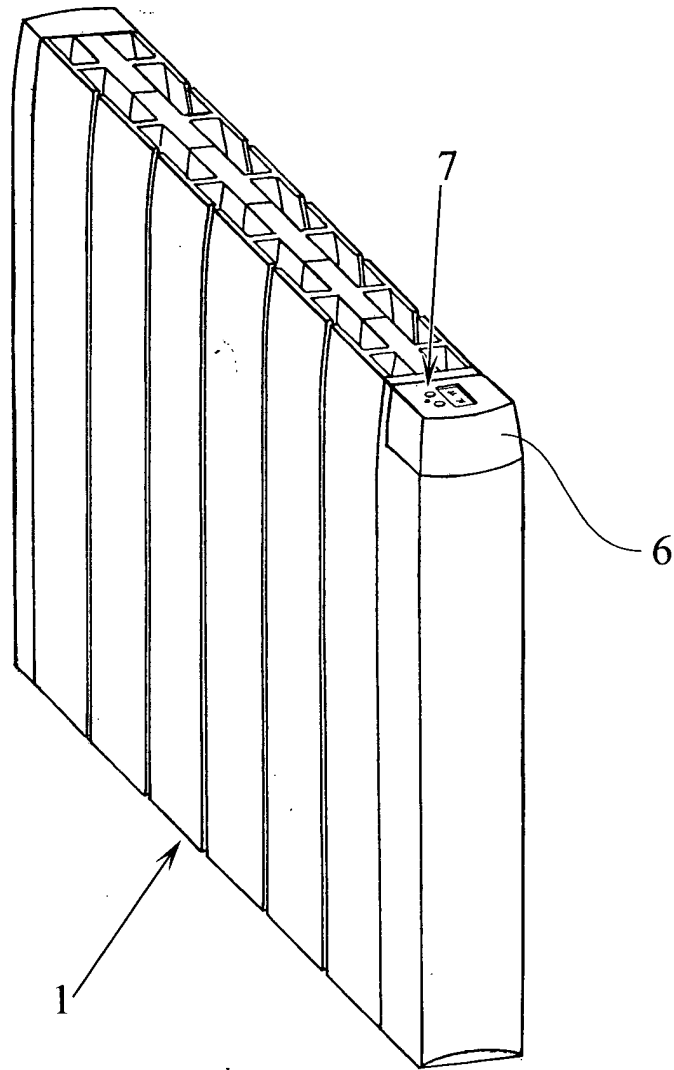


FIG. 3

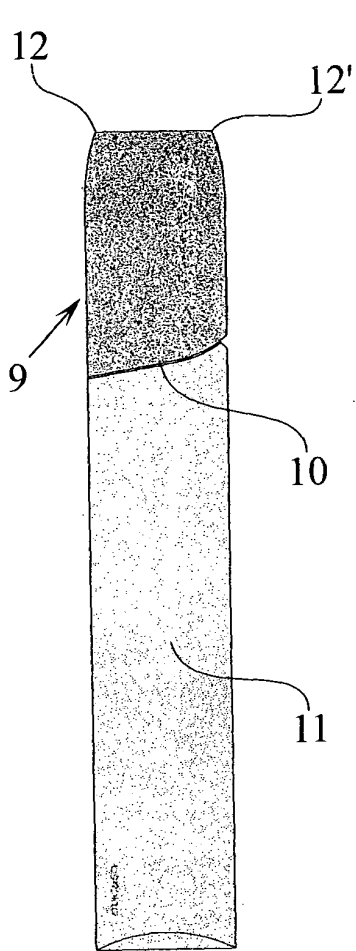


FIG. 4

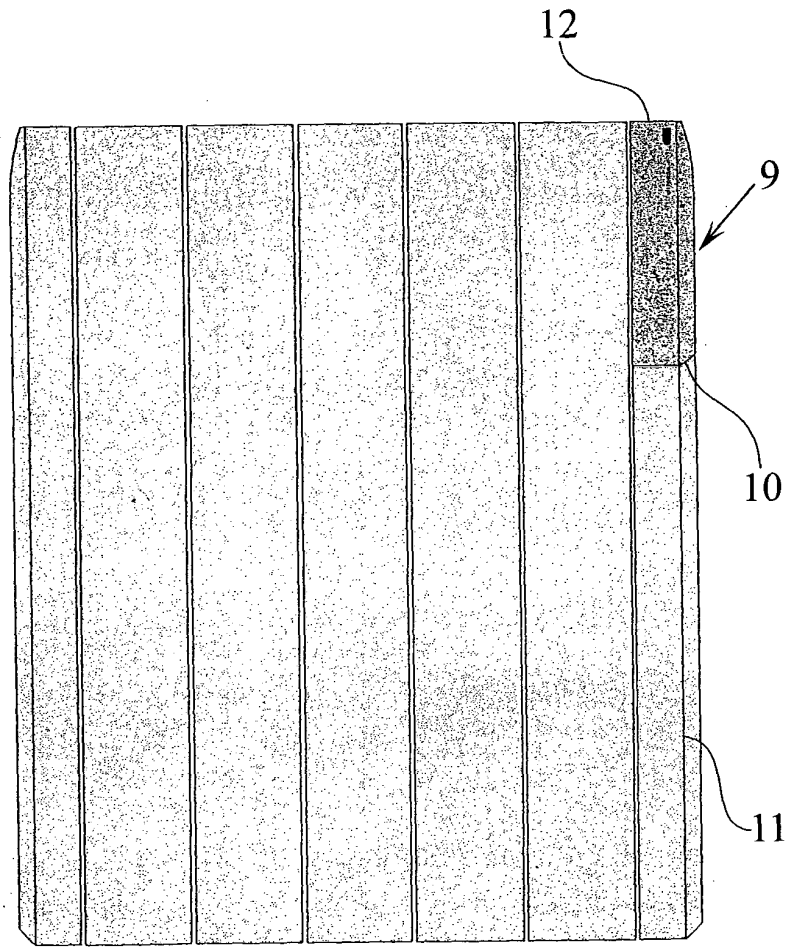


FIG. 5

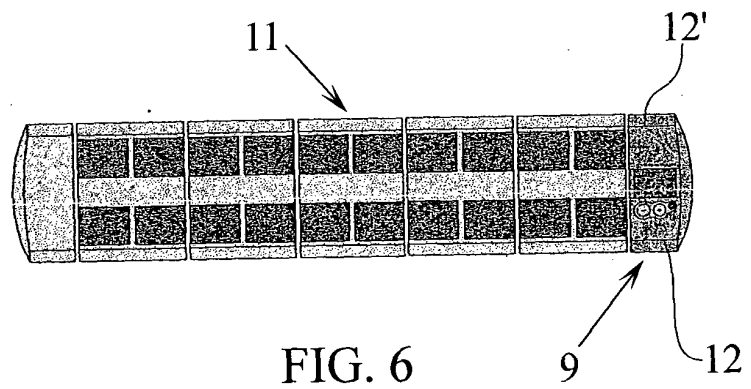


FIG. 6

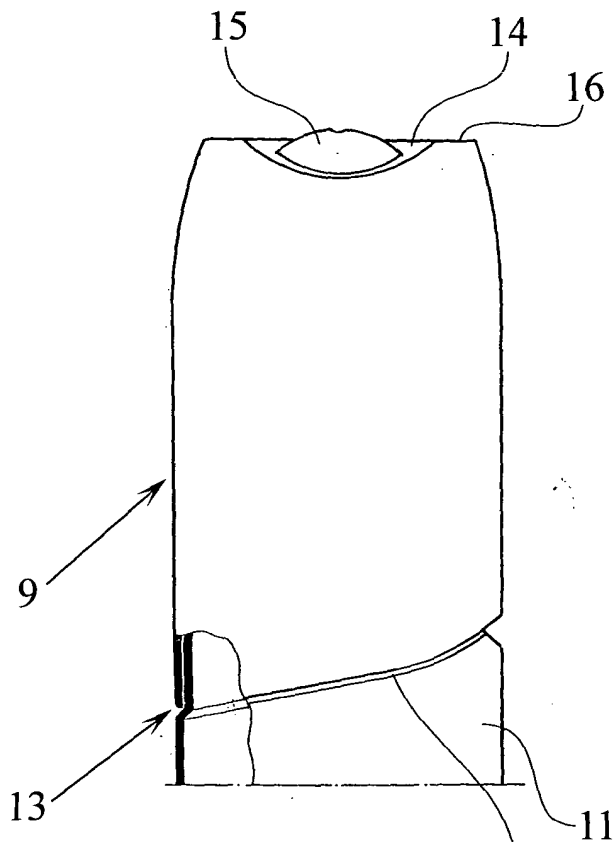


FIG. 7

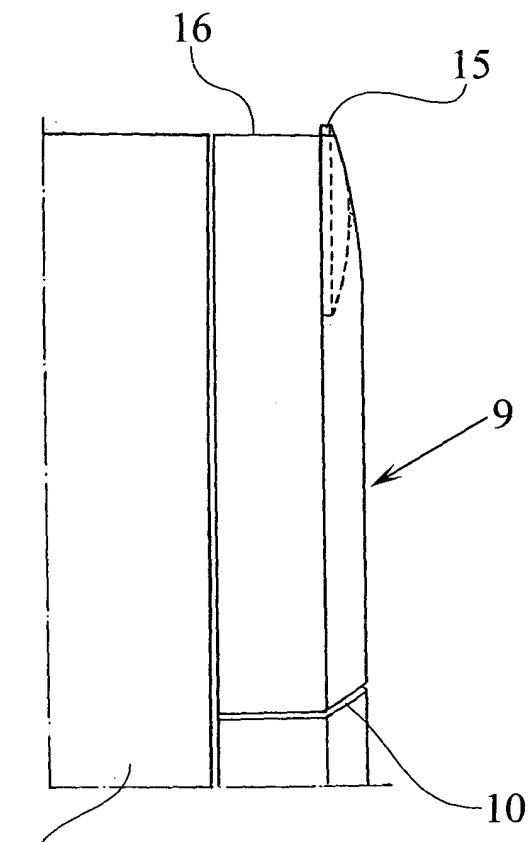


FIG. 8

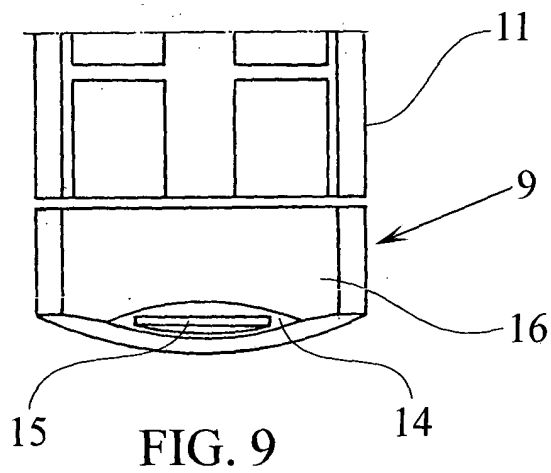


FIG. 9