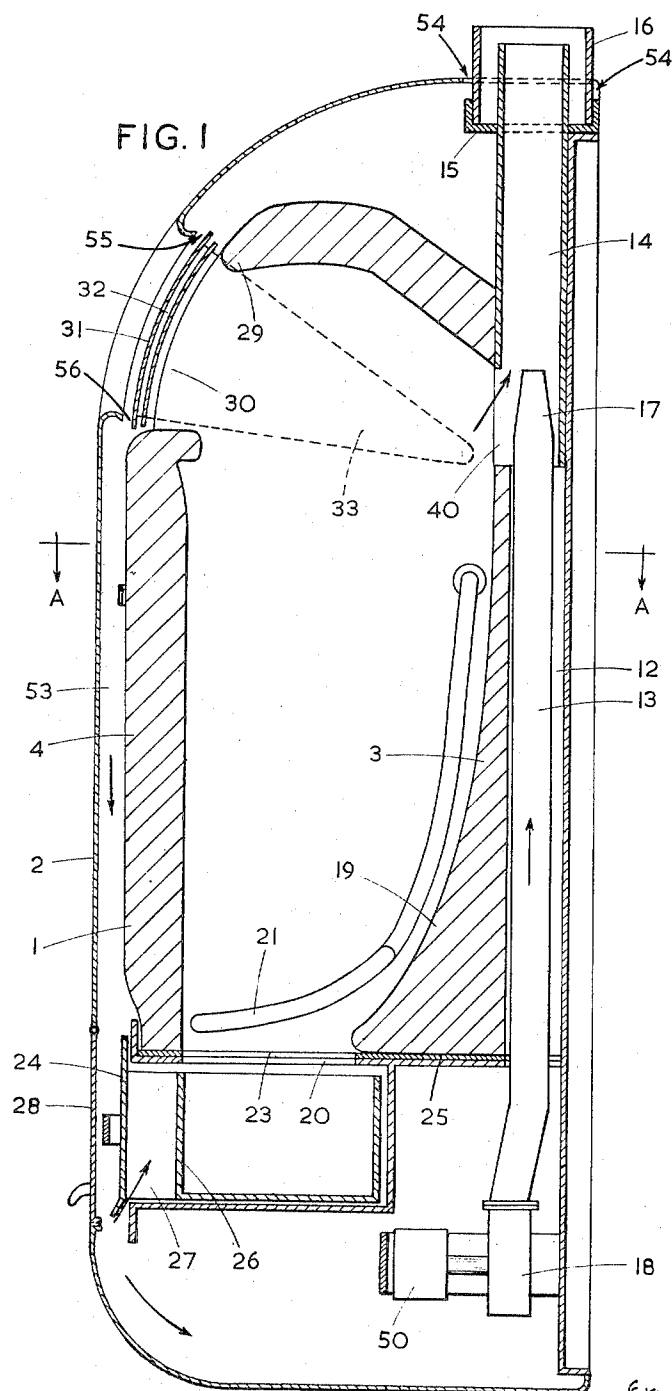


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INCINERATOR

5 Sheets-Sheet 1



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5 Sheets-Sheet 2

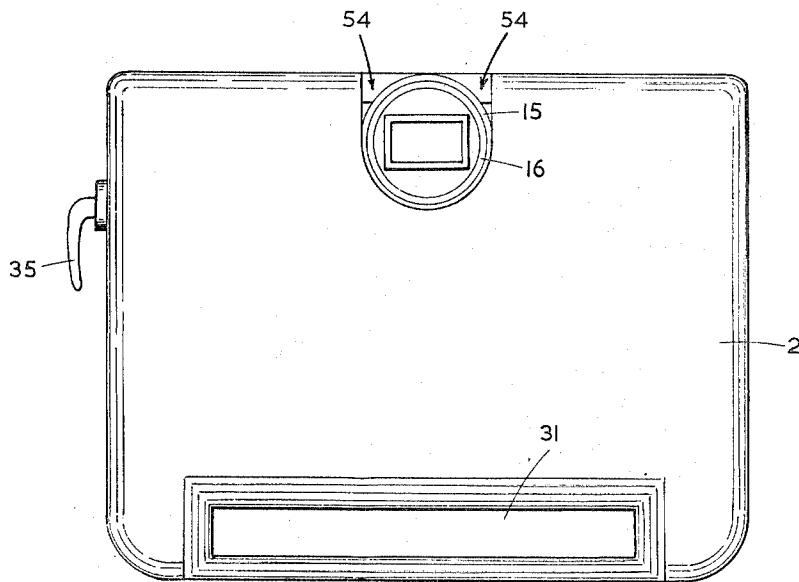


FIG. 2

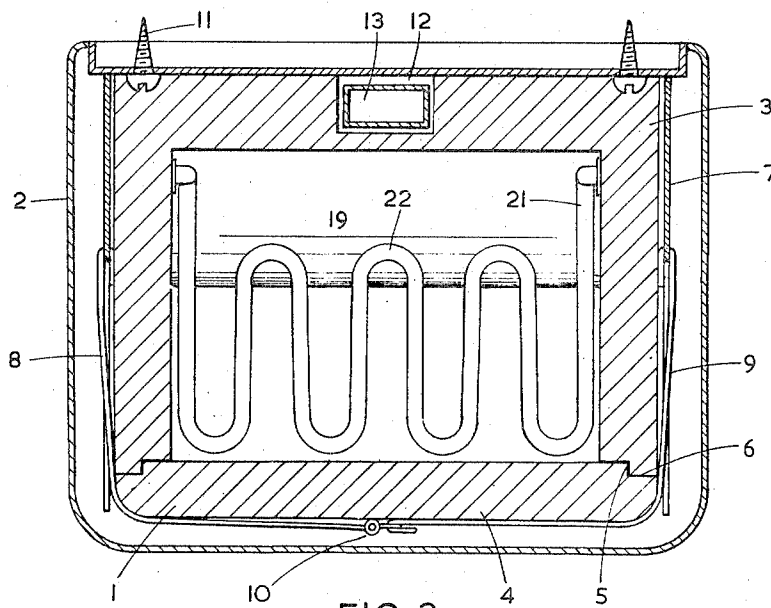


FIG. 3

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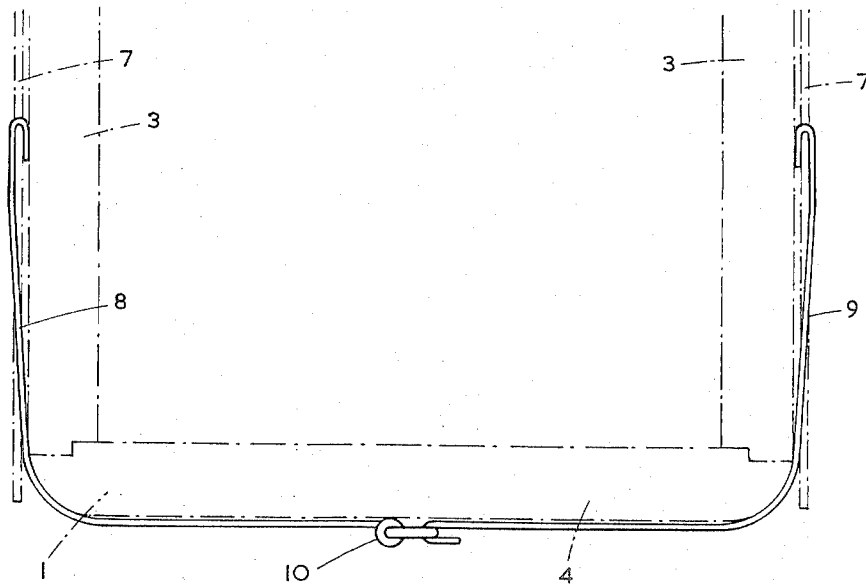


FIG. 4

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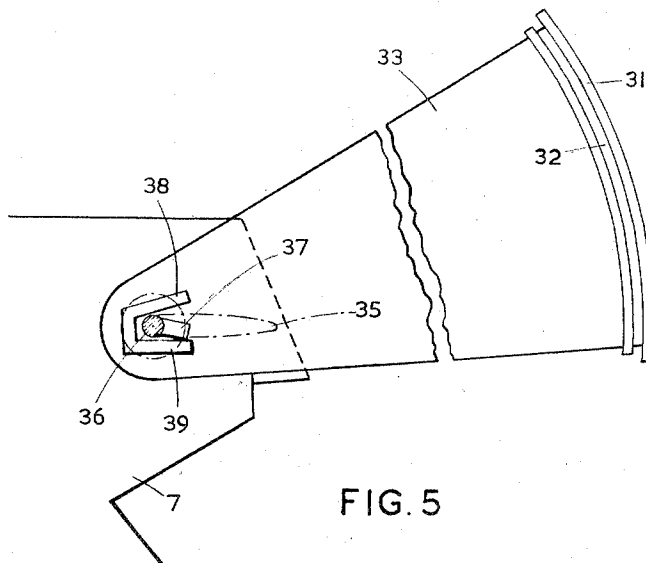


FIG. 5

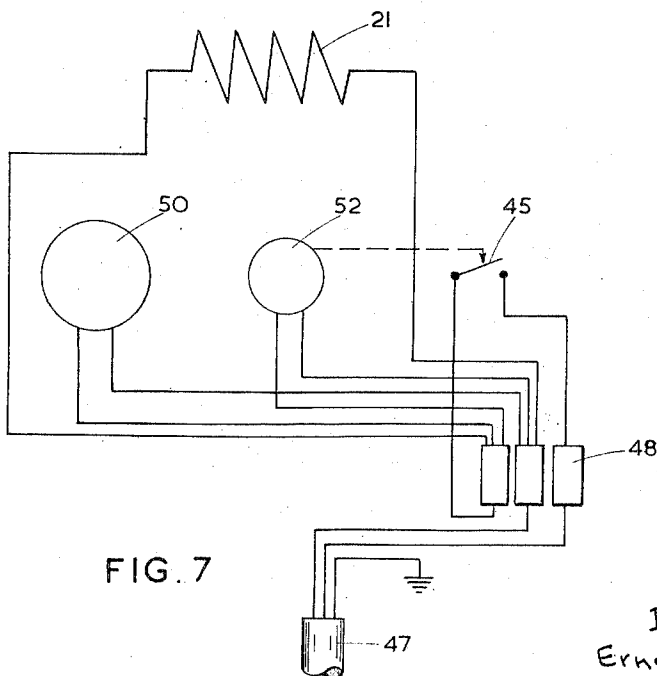


FIG. 7

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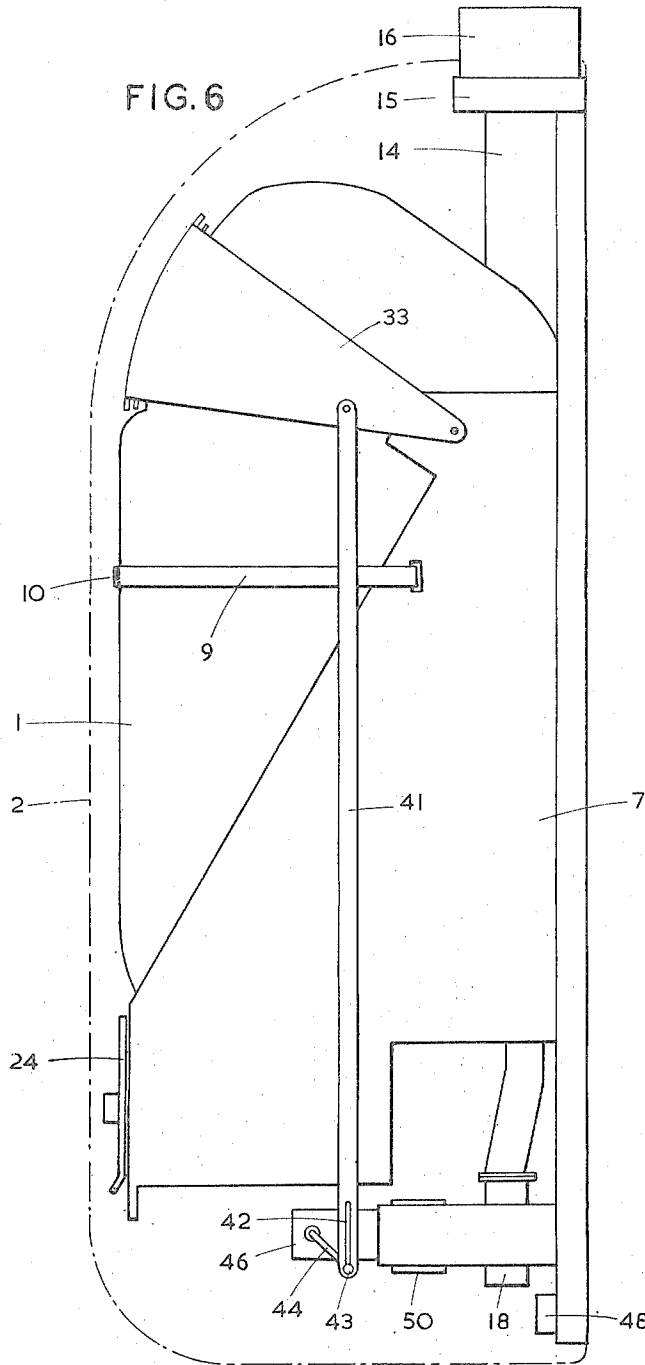
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5 Sheets-Sheet 5



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INCINERATOR

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Claims priority, application Great Britain August 24, 1953

5 Claims. (Cl. 219—19)

This invention relates to incinerators, and more particularly to incinerators adapted to be used indoors for the destruction of hospital refuse, such as catamenial appliances, bandages, dressings, swabs, and the like.

One of the main drawbacks of the heretofore used incinerators is that they often emit smoke and unpleasant fumes and odors through openings therein. Another disadvantage of many of the presently used incinerators is that there is inefficient thermal insulation between the combustion chamber and the outer chamber thus increasing the danger of burning on coming into contact with said casing.

This invention has among its objects the provision of a novel incinerator which does not have the above set forth disadvantages of the heretofore known incinerators.

In accordance with this invention, there is provided a novel incinerator which includes a heat-insulated, electrically fired combustion chamber having an opening through which material to be burnt is projected. The opening of the furnace is covered by a movable lid. The combustion chamber or furnace is surrounded by a casing in such a manner to leave an air space between the furnace and casing. Both the furnace and the casing are provided with an air inlet and an air outlet. Mounted within said casing and in electrical communication with one another are a heating element, a fan, an electrical motor driving said fan and a clock motor. There is also provided switching means operable to close a switch on opening of the lid of the furnace to complete a circuit to cause operation of the heating element and of the motor driving the fan to draw air through the air space into said furnace and to extract combustion gases from the furnace through the outlet.

The single fan is mounted in the lower part of the casing and is effective in cooling the outer casing by causing circulation of cooling air between the furnace and the surrounding casing, and also effectuated withdrawal of gases of combustion from the furnace. More particularly, the fan mounted within the incinerator casing serves to force air through a Venturi fitting provided at the rear of the furnace and in communication with a flue pipe located adjacent the furnace outlet. Upon actuation of the fan, air is drawn from the furnace chamber so that no fumes can emanate from the furnace. Moreover, this construction also affords two more advantages: (1) cooling of the incinerator casing is enhanced, since the combustion temperature is reduced; (2) combustion is accelerated, since the fan is operable upon opening the furnace lid.

The invention is diagrammatically illustrated by way of example in the accompanying drawings in which

Figure 1 is a sectional side elevation on a median line of an incinerator constructed according to the invention;

Figure 2 is a corresponding plan;

Figure 3 is a section on the line A—A of Figure 1;

Figure 4 is a plan of a detail of Figure 3;

Figure 5 is a sectional elevation of the closure or sliding lid showing the method of operation;

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Figure 6 is a side elevation of the incinerator according to the invention, with the outer casing removed;

Figure 7 is a diagram of the electrical connections.

In carrying the invention into effect according to the construction illustrated in the drawings, the incinerator comprises essentially a furnace 1 mounted in spaced relation in a casing 2.

The furnace 1 is made of a ceramic or like substance moulded in two parts 3, 4. The rear and sides of the furnace are formed by the part 3 to a channel section (Figure 3) and the front part by the flat wall 4, which is provided at the ends with shoulders 5 to engage in corresponding shoulders 6 formed on the ends of the side walls of the part 3.

The furnace is supported in a vertical position in a metal frame part 7 formed to the shape of an arm-chair, and receiving the furnace between the arms and supporting it on the seat portion. The furnace is held in position in the frame part 7 by means of loop members 8, 9 which are connected to the ends of the frame part 7 and secured together at the front of the furnace at 10.

The rear of the frame part 7 is adapted to be secured as by screws 11, or in any other suitable manner, to a wall or the like.

At a midposition in the rear or base part of the part 3 of the furnace is provided a lengthwise cavity 12 to receive a vertical pipe 13 which projects into a pipe 14 of increased diameter. The pipe 14 extends through a fitting 15 which serves to support a flue pipe 16. The pipe 13 is tapered at the upper top part at 17, and at the bottom is connected to the outlet of a fan 18 secured in any convenient manner to the rear wall of the frame part 7.

The inner surface of the rear wall of the furnace is moulded to curve inwardly from the top downwardly at 19 to facilitate the movement of the ashes to the bottom of the furnace 20. A heating element 21 which is formed of a number of loops 22 (Figure 3) extends at the forward positions of the loops up to the front wall 4 of the furnace to serve as a grate to support the material being incinerated which, after burning, falls in the form of ashes through the spaces between the convolutions of the element and through an opening 23 formed in the bottom of the furnace at the forward part.

The lower part of the frame 7 is formed as a framework to support a sliding rectangular container 24 for the ashes. The bottom of the furnace is resiliently supported on the frame 7 by means of a rectangular resilient seating member 25 which is formed with a hole 26 coinciding with the hole 23 to dimensions to be received and immovably located on the lower part of the frame 7.

The forward part of the container 24 is divided from the rear part which receives the ashes by a vertical partition 26 to leave a space 27 for the passage of air upwardly into the combustion space in the furnace. The container 24 is adapted to be withdrawn horizontally for disposal of the ashes through a pivoted door 28 formed in the lower part of the casing 2.

The furnace at the upper forward part at 29 is curved rearwardly, and in the curved part an opening 30 is formed, through which opening the material to be burnt can be projected into the furnace. The opening 30 is closed by a curved lid 31 formed into a double wall to leave a space 32 for the flow of air from one edge of the lid to the other, as hereinafter described.

The lid 31 is supported on two parallel side members 33 of triangular shape pivoted at the apices to the upper parts of the side walls of the frame 7, and adapted to be moved upwardly by means of a handle 35 mounted for rotation in bearings in the side of the casing 2. The handle 35 projects outside the casing 2 for movement in a vertical plane, and the spindle 36 engages through a

crank portion 37 formed at the free end, between two arms 38, 39, secured at an angle relatively to each other to the side of one of the members 33, whereby movement of the handle 34 in the vertical plane moves the lid 31 upwardly to reveal the opening 30.

At a position in the rear wall of the furnace at the top in a position substantially opposite the opening 30, is provided an opening 40 for the volatile products of combustion from the furnace, which are drawn upwardly by the Venturi effect of the pipe 13, the tapered head 17 of which lies adjacent to the opening 40.

Pivotally connected to one of the side members 33 is a rod 41 which at the lower end is slotted at 42 for a determined distance, to receive a pin 43 carried by an arm 44 of a switch 45 of an electric circuit.

As illustrated a cable 47 carrying current is passed into the casing 2 at the bottom and is electrically connected through a 3-way terminal 48 mounted on the frame 7 respectively to the switch 45, the heating element 21, the fan motor 50 driving the fan 18 and a clock motor 52 mounted in the casing 46, which is operative to open the switch 45 after a predetermined interval of time.

Between the outer surface of the furnace and the casing 2 is left a space 53 through which air is continuously drawn by the fan while the furnace is in operation, to insulate the casing against the heat of the furnace and to prevent the fumes from escaping from the furnace. The air is drawn into the casing by the fan through the inlets left at the joints of the casing at 54, 55 and 56, and passes completely around the front and sides of the furnace as indicated by the arrows in the drawing. Part of the circulating air is drawn into the furnace space through the opening 27 in the container 24 and is drawn outwardly by the Venturi effect of the tapered end 17 of the pipe 13 adjacent the opening 40 in the rear wall of the furnace.

In operation when the handle 35 is pressed upwardly the lid 31 is caused to move upwardly to enable the material to be burnt to be thrown through the opening 30. This upward movement draws the rod 41 upwardly which in turn raises the arm 44 closing the switch 45 and completing the electrical circuit causing current to flow through the circuit thus simultaneously causing heat to be evolved through the heating element, the fan motor to be started to rotate the fan to draw the volatile products of combustion out through the flue, and the clock motor to start. The clock motor is set to operate for a predetermined interval of time—for example three minutes, and then operates to open the switch—which, due to the pin and slot connection, is unaffected by the lowering of the rod—to cut off the fan motor and to stop the supply of current of the heating element.

I claim:

1. An incinerator comprising a furnace made of ceramic substance, said furnace having an opening through which material to be burnt is projected, said opening being covered by a movable lid, a casing surrounding said furnace to leave an air space between said furnace and said casing, an air inlet and an air outlet to said furnace and to said casing, a heating element, a fan, an electric motor driving said fan and a clock motor, all mounted within said casing and all in electrical communication with one another, switching means operable to close a switch on opening the lid of said furnace to complete a circuit to cause operation of the heating element and of said motor driving the fan to draw air through said air space into said furnace and to extract combustion gases from said furnace through said outlet.

2. An incinerator comprising a furnace made of a ceramic substance, said furnace having an opening through which material to be burnt is projected, said opening being covered by a movable lid, a casing surrounding said furnace to leave an air space between said furnace and said casing, an air inlet and an air outlet to said casing and to said furnace, a heating element, a fan, an electric

motor driving said fan and a clock motor, all mounted within said casing and all in electrical communication with one another, switching means operable to close a switch on opening the lid of said furnace to complete a circuit to cause operation of said heating element and of said motor driving the fan to draw air through said air space and to extract gases of combustion from said furnace through said outlet, said clock motor being adapted to be set to open said switch after the lapse of a predetermined time interval after the closing of said switch.

3. An incinerator comprising a furnace made of a ceramic substance, said furnace having an opening through which material to be burnt is projected, said opening being covered by a movable lid, an air inlet and an air outlet to said furnace, a vertical pipe in the rear wall of said furnace and in communication with a flue pipe and tapered at its upper end which is located adjacent to said air outlet at the top of the rear wall of said furnace, a casing surrounding said furnace to leave an air space between said furnace and said casing, a heating element, a fan, an electric motor driving said fan and a clock motor, all mounted within said casing and all in electrical communication with one another, switching means operable to close a switch on opening the lid of said furnace to complete a circuit to cause operation of said heating element and of said motor driving the fan to draw air through said air space and to force air through said vertical pipe to extract gases of combustion from said furnace through said outlet.

4. An incinerator comprising a furnace made of a ceramic substance and resiliently mounted on a frame part in a casing surrounding said furnace so as to leave an air space between said furnace and said casing, said furnace having an opening through which material to be burnt is projected, said opening being covered by a movable lid, said frame part being formed at its base to a box shape open at the front to support with sliding fit a container for combustion ashes, a channel formed in the front part of said container for the passage of air from said air space into said furnace, an air outlet to said furnace, an air inlet and an air outlet to said casing, a heating element, a fan, a motor driving said fan, and a clock motor, all mounted within said casing and all in electrical communication with one another, switching means operable to close a switch on opening the lid of said furnace to complete the circuit to cause operation of said heating element and of said motor driving the fan to draw air through said air space into said furnace and to extract gases of combustion from said furnace through said outlet.

5. An incinerator comprising a furnace made of a ceramic substance, a casing surrounding said furnace to leave an air space between said furnace and said casing, said furnace having an opening through which material to be burnt is projected, a movable lid covering said opening, said lid being formed with a double wall to present a passage for the flow of air between said furnace and said casing, an air inlet and an air outlet to said casing and to said furnace, a heating element, a fan, a motor driving said fan, and a clock motor, all mounted within said casing and all in electrical communication with one another, switching means comprising a switch connected by a linkage including pin and slot connection to said furnace lid and operable on opening of said furnace lid to complete a circuit to cause operation of said heating element and of said motor driving the fan to draw air through said air space into said furnace and to extract gases of combustion from said furnace through said outlet.

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