

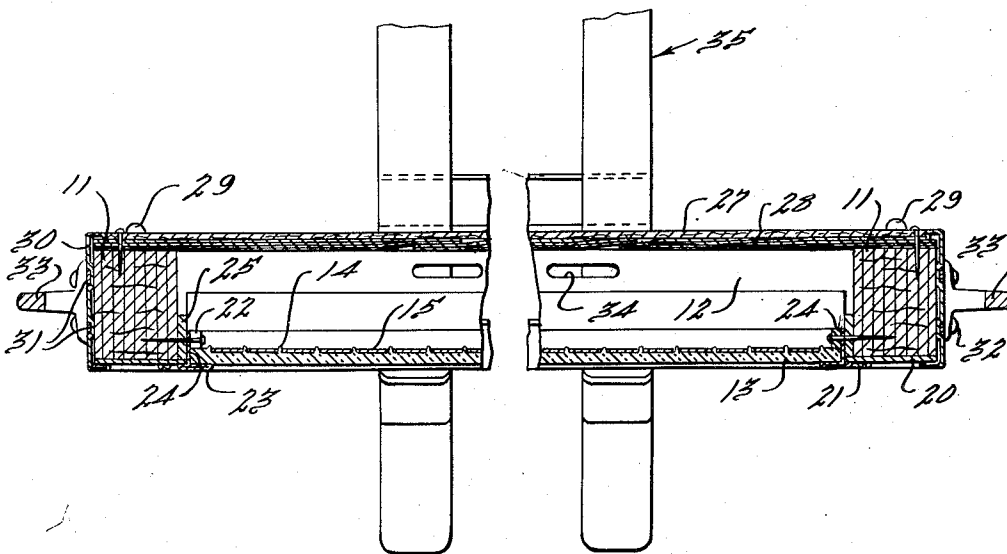
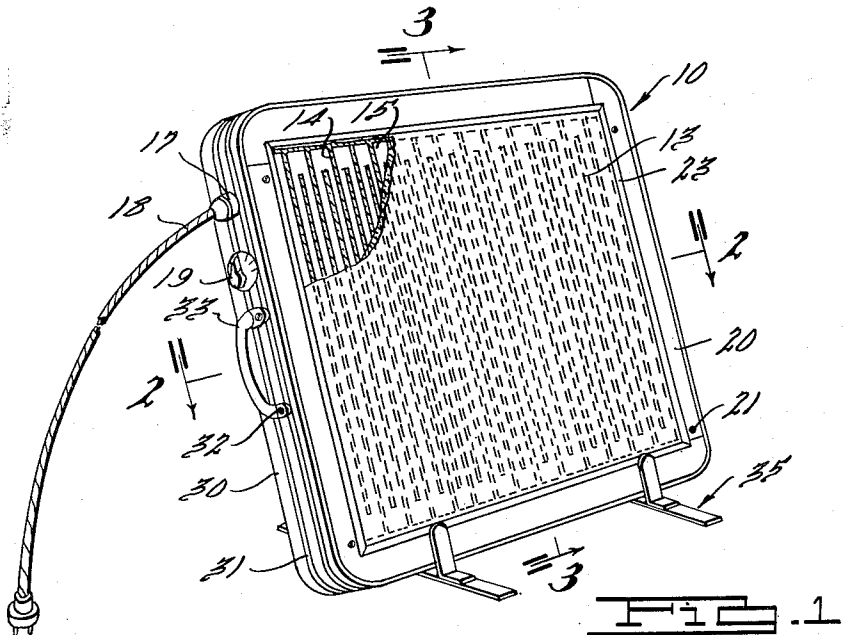
Oct. 7, 1952

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RADIANT HEATER AND TRAY

2,613,308

Filed March 16, 1950

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

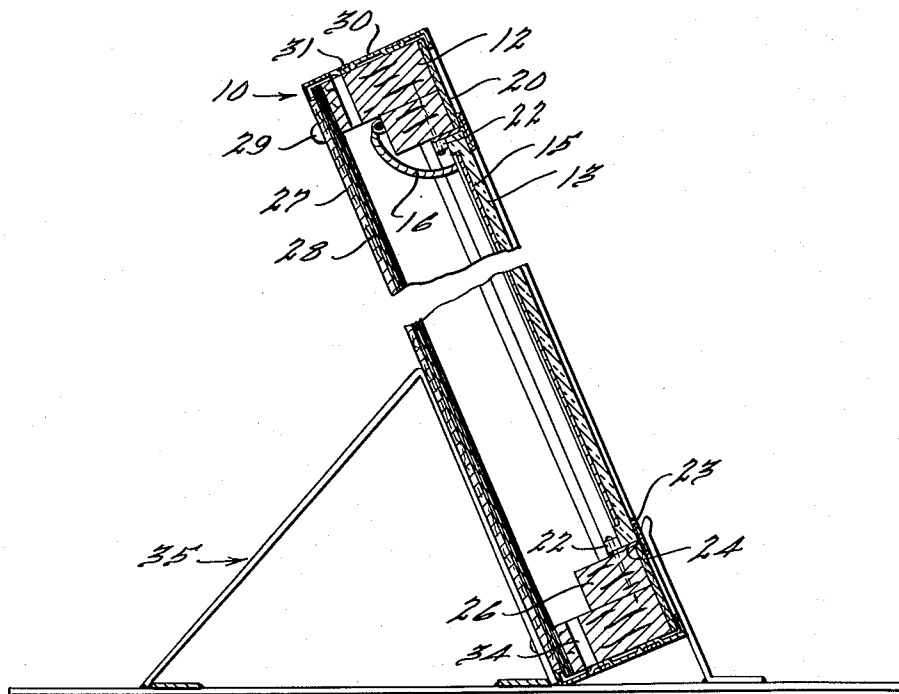


FIG. 3

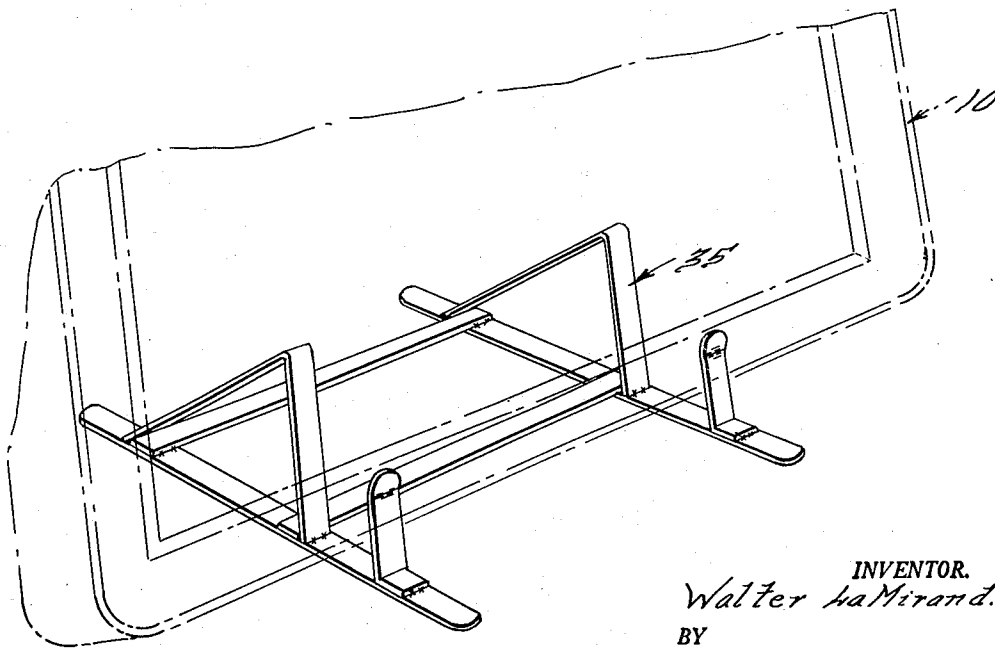


FIG. 4.

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RADIANT HEATER AND TRAY

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2. Claims. (Cl. 219-19)

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This invention relates to a radiant heater and tray.

It particularly relates to a device of this type wherein the heating element used consists of a glass plate with a continuous meandering ribbon of metal alloy fused on one side thereof such that when the metallic ribbon is connected across a source of electrical potential, infra-red rays are emitted from the glass. While I prefer to use this type of heating element, other types of sheet-like heating elements may be used, such as rubber, asbestos with resistance wire imbedded therein, etc.

While devices of the type herein described and claimed have appeared on the market prior to my invention, they have all been heavy in construction, awkward to handle and costly to build. My improved tray and heater is light in weight, easy to handle even by a child, and economical to construct.

For a preferred embodiment of my invention, reference is made to the following description and accompanying drawings.

In the drawings:

Fig. 1 is a perspective view of the device showing it in normal position for storage or for use as a radiant heater.

Fig. 2 is a horizontal section taken along the line 2-2 of Fig. 1.

Fig. 3 is a vertical section taken along the line 3-3 of Fig. 1, and

Fig. 4 is a perspective view of the supporting stand for the tray, the latter being shown in broken lines.

As can be seen from the figures, my combined tray and heater 10 comprises a rectangular frame, preferably constructed of wood. The frame has end pieces 11 and side pieces 12 secured together in the form of a rectangle by any suitable fastening means, such as glue, screws or nails. Any type of solid, well-seasoned wood may be used, either solid or laminated, provided it is not too heavy and will not expand and contract unduly with temperature change.

The heating element 13 consists of a sheet of glass having ridges 14 formed on its rear surface. Between these ridges, a continuous meandering ribbon of metal alloy, preferably aluminum or silver alloy, is disposed. This ribbon is preferably deposited on the glass by spraying while the alloy is in molten condition under such conditions that the alloy become fused to the glass. However, the specific construction of the heating element forms no part of my invention and will not therefore be described in detail.

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The ribbon is connected by soldering with a conductor 16 which terminates in a socket 17 positioned on the outside of tray at one end (Fig. 3). A flexible cord 18 of conventional design with plugs at each end may be used to connect the socket 17 to a source of electrical current. Between the heating element 13 and the socket 17, I prefer to connect a rheostat for adjusting the voltage across the plate and consequently the temperature thereof. This rheostat is preferably mounted in one of the end members 11 and provided with a dial knob 19 for adjusting and indicating the degree of heat. If preferred, a tap type or other type of voltage regulator may be utilized in place of a rheostat.

The frame is covered on the front or top side of the tray with a trim of decorative material, preferably plastic. This plastic trim is in the form of flat strips 20 and the strips are fastened to the wood frame by means of screws 21.

The glass plate 13 is mounted flush with the front surface of the tray and is retained in position by a simple mounting means. This means comprises nailing strips 22 which support the plate at its rear marginal edge and moldings 23 which overlie the top or front marginal edge thereof. As can be seen from the drawing, the molding 23 is of metal, chrome-plated, painted or anodized, and is fastened by welding or otherwise to angle section strips 24. The latter are inserted between the edge of the plate and the frame at each of the four sides and are provided with holes through which the nails or screws holding the strips 22 may pass.

The strips 22 may be of wood or heat insulating material or of refractory material. Preferably a spacer strip 25 of similar material is provided at the ends of the tray adjacent the frame members 11, but this is not absolutely necessary. At the sides, a relatively thick spacer 26 is provided if laminated wood is not used.

It may be seen, therefore, that the glass sheet is securely retained in the frame by its engagement with the strips 22 at the bottom thereof and by the angle strips 24 which overlies the sheet around its front marginal edge. The decorative molding 23 overlies both the angle 24 and the trim 20 thus concealing the joint at this point and making an extremely neat appearance.

The back of the tray is closed by a rectangular sheet 27 of any suitable material, such as wood, metal fibre, heavy paperboard or the like. A sheet of insulation 28 is disposed on the inside surface of the back 27 and the laminated assembly thus formed is fastened by nails or screws to the frame

members 11, 12 as shown in Fig. 1. Rubber feet 29 are carried by the back 27 on which the device rests when used in horizontal position as a warming tray.

The insulating layer 28 may be of any commercially obtainable type. I prefer to use a combination paper and metal foil lamination which has proven satisfactory and effectively prevents the heat radiated from the back of the glass plate from damaging the surface on which the tray may be placed. In addition, a metal foil backing reflects heat rays emitted from the back of the glass element and substantially increases the amount of heat radiated from the front surface thereof.

In order to strengthen the structure and enhance the appearance of the tray, I have provided a peripheral molding 30 therefor. In the example, shown, the moulding is formed of plated metal with alternating strips 31 of colored plastic which are depressed in the metal. The molding is continuous and has a mating joint at one end. Screws 32 secure the molding to the frame members 11 and also secure the handles 33 which are provided for handling the tray.

Ventilating openings 34 are provided at intervals in the frame for permitting circulation of air between the back of the plate 13 and the insulating sheet 28. I have found that the construction described makes an extremely useful article for use as a buffet warming or cooking tray. Because of the insulating and ventilating means provided, the tray handles and outer molding do not become hot even when the heating plate is operated at 200° Fahrenheit for extended periods of time. It is thus possible for the tray to be moved about for serving purposes and it may rest on a polished furniture surface without damage thereto.

My tray is also extremely useful when used as a portable radiant heater, particularly when used for therapeutic purposes, the infra-red rays emitted therefrom being beneficial therefor.

To facilitate its use as a portable heater, I have provided a supporting rack 35. This rack may be constructed of any suitable material, the one shown being of polished aluminum.

It consists of flat strip stock, the pieces thereof being welded together to provide an inclined rest for the tray. The tray may rest on the rack on its side, as illustrated, or on one end. When used in this manner as a heater, it may be placed on a table or floor and the heat rays will travel outwardly and upwardly therefrom.

When used as a tray or heater, the temperature may be regulated by means of the dial knob 19 and when used as a tray, food may be kept warm by being placed thereon or may be cooked by suitably regulating the temperature. If desired, a hood (not shown) may be used on the tray to confine the heat for baking or warming.

It may thus be seen that I have provided an improved versatile household appliance which is of pleasing appearance, economical in construction and light to handle.

While I have shown a specific embodiment of the device for illustrative purposes, it will be apparent to those skilled in the art that changes may be made in the device specifically described without departing from the invention in its broader aspects as set forth in the claims hereafter appended.

I claim:

1. In a heating device adapted for use as a warming tray and portable heater, a rectangular frame, a heating element of sheet form mounted in said frame in substantially flush relationship therewith, means retaining said element in said frame comprising angle sections disposed along the sides of said element, one leg thereof overlapping the top marginal edge of said element and having a trim strip secured thereto overlapping said leg and the adjacent frame portion, the other leg thereof extending along and below the sides of the element, a securing strip disposed along the bottom marginal edge of the element adjacent said other leg, and common fastening means securing said strip and angle section to said frame.

2. The combination set forth in claim 1 wherein the heating element consists of a sheet of glass with a resistance grid carried on one face thereof.

WALTER LA MIRAND.

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