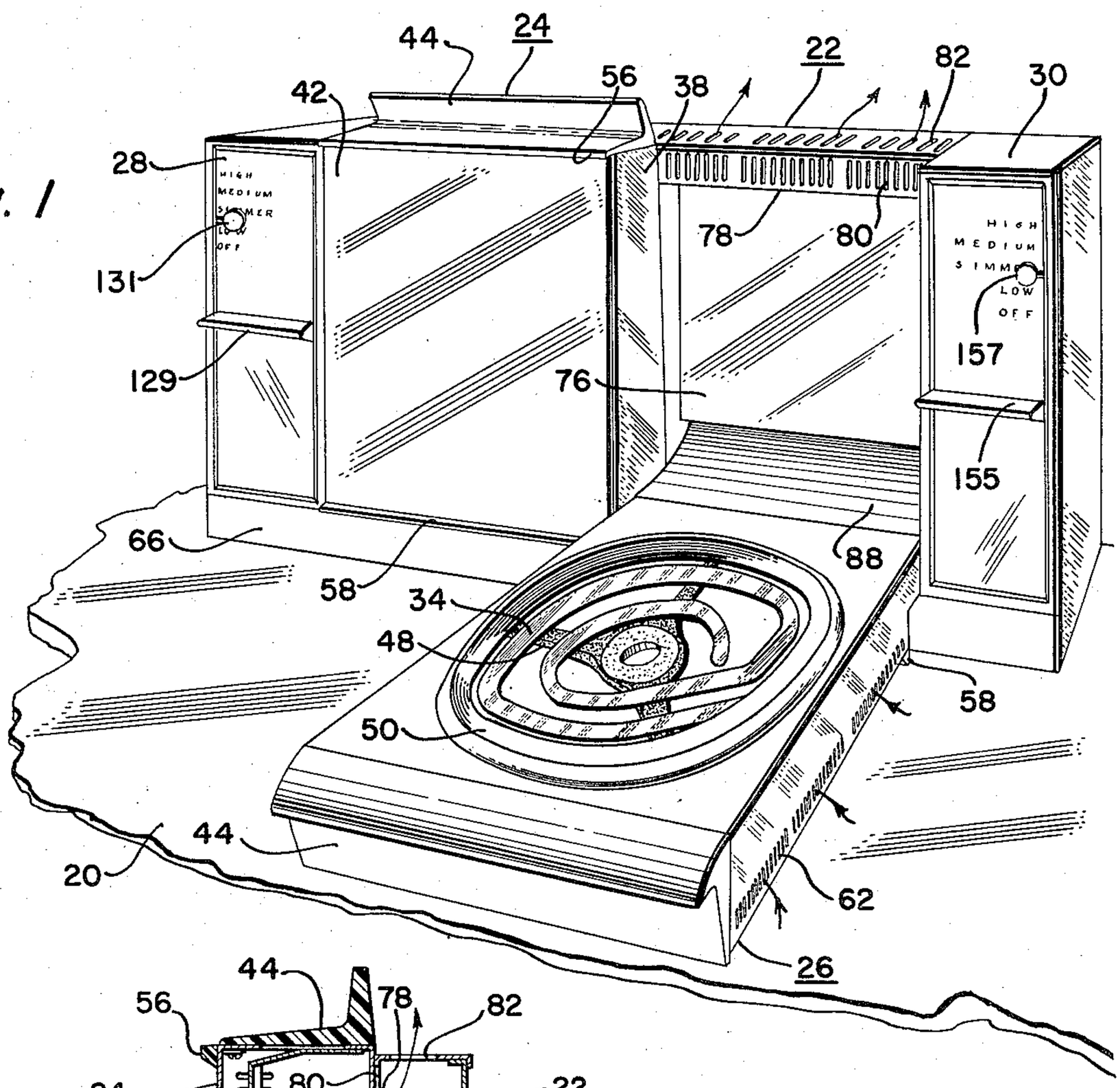
Sept. 2, 1958 F. H. McCORMICK 2,850,613

DOMESTIC APPLIANCE

Filed Feb. 10, 1955 4 Sheets-Sheet 1

Fig. 1



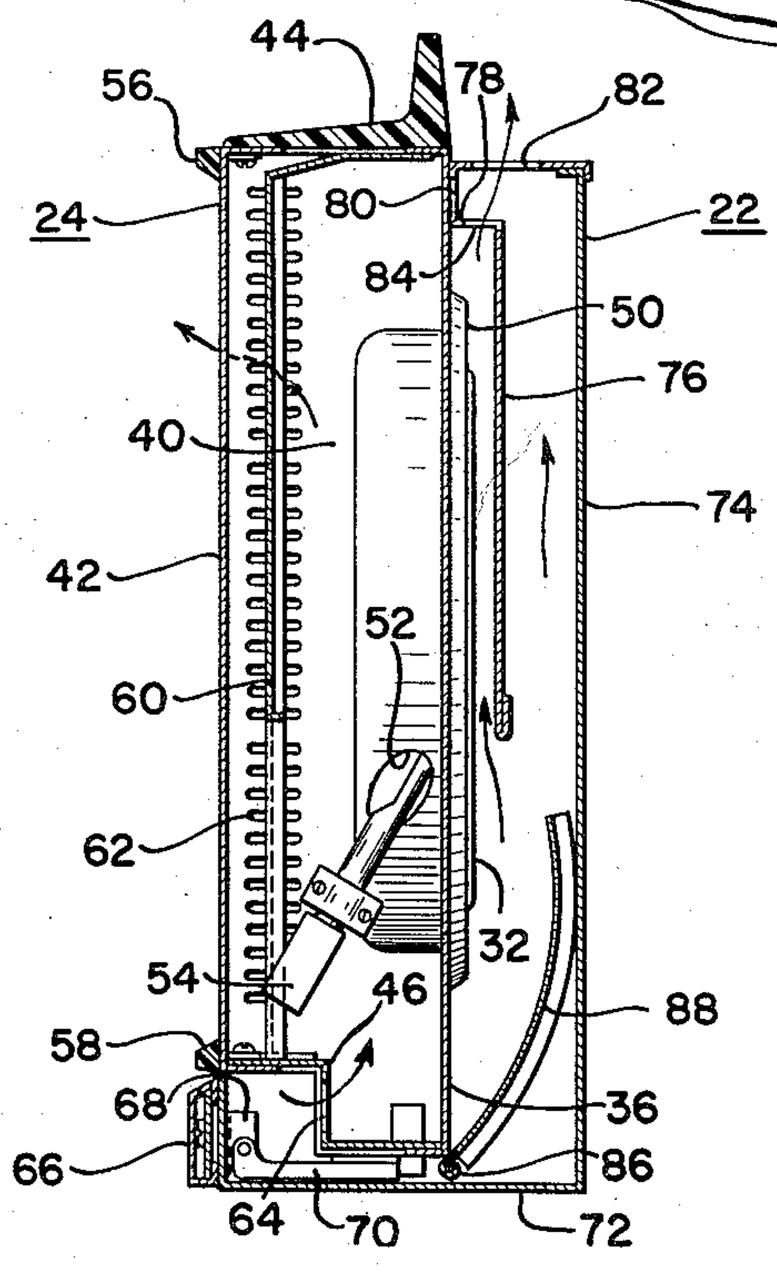


Fig. 4

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DOMESTIC APPLIANCE

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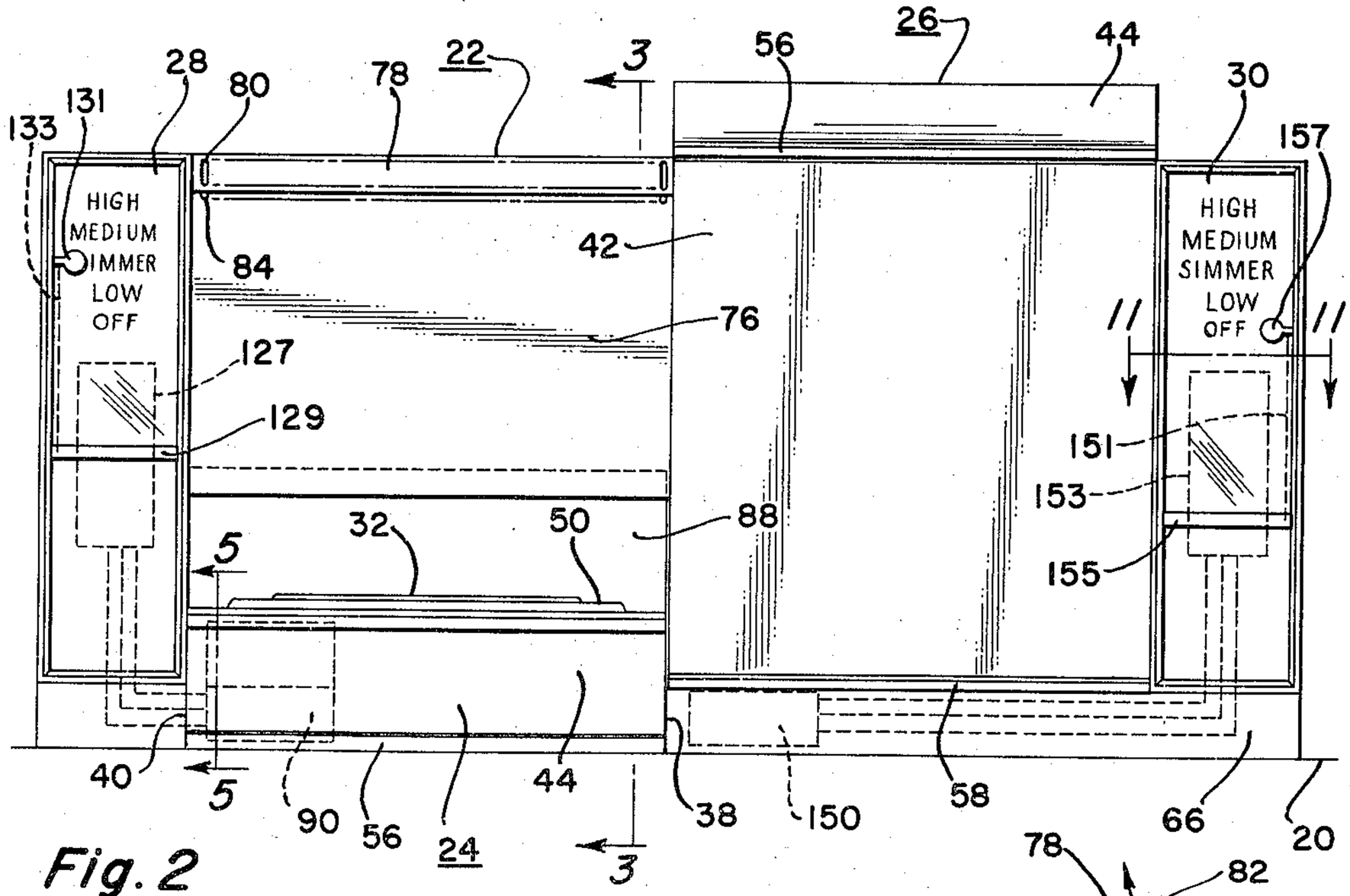

Fig. 2

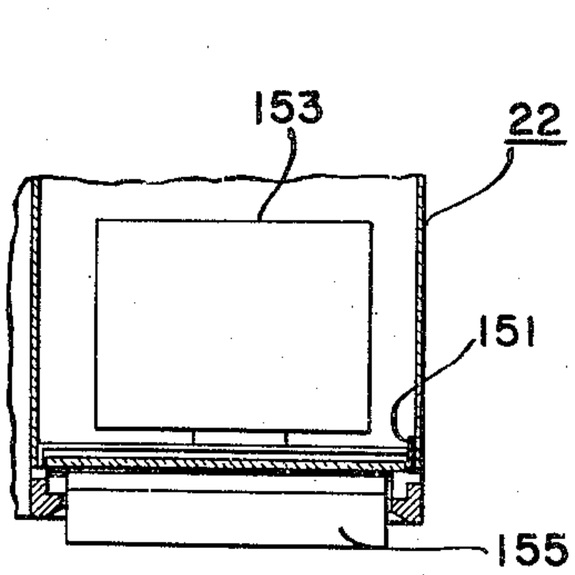

Fig. 11

Fig. 3

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DOMESTIC APPLIANCE

Filed Feb. 10, 1955 4 Sheets-Sheet 3

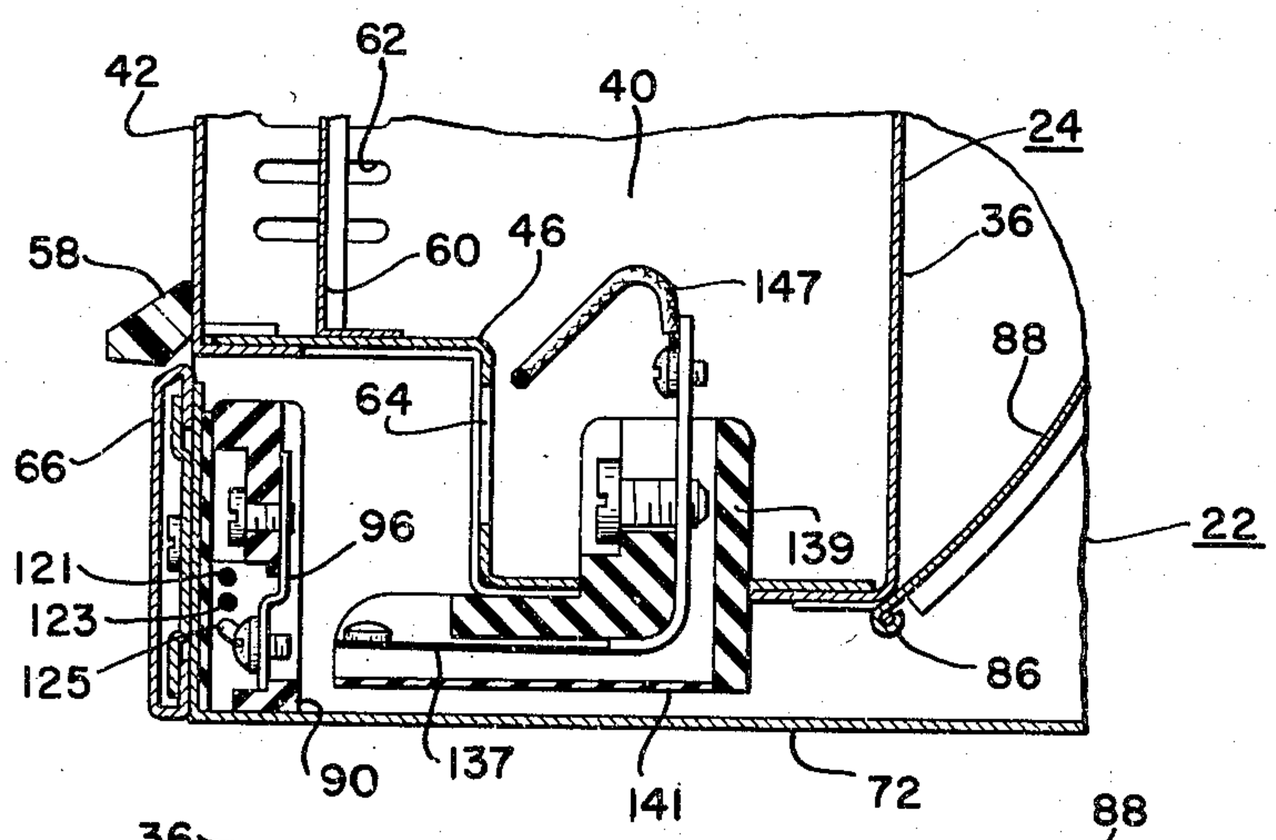

Fig. 6

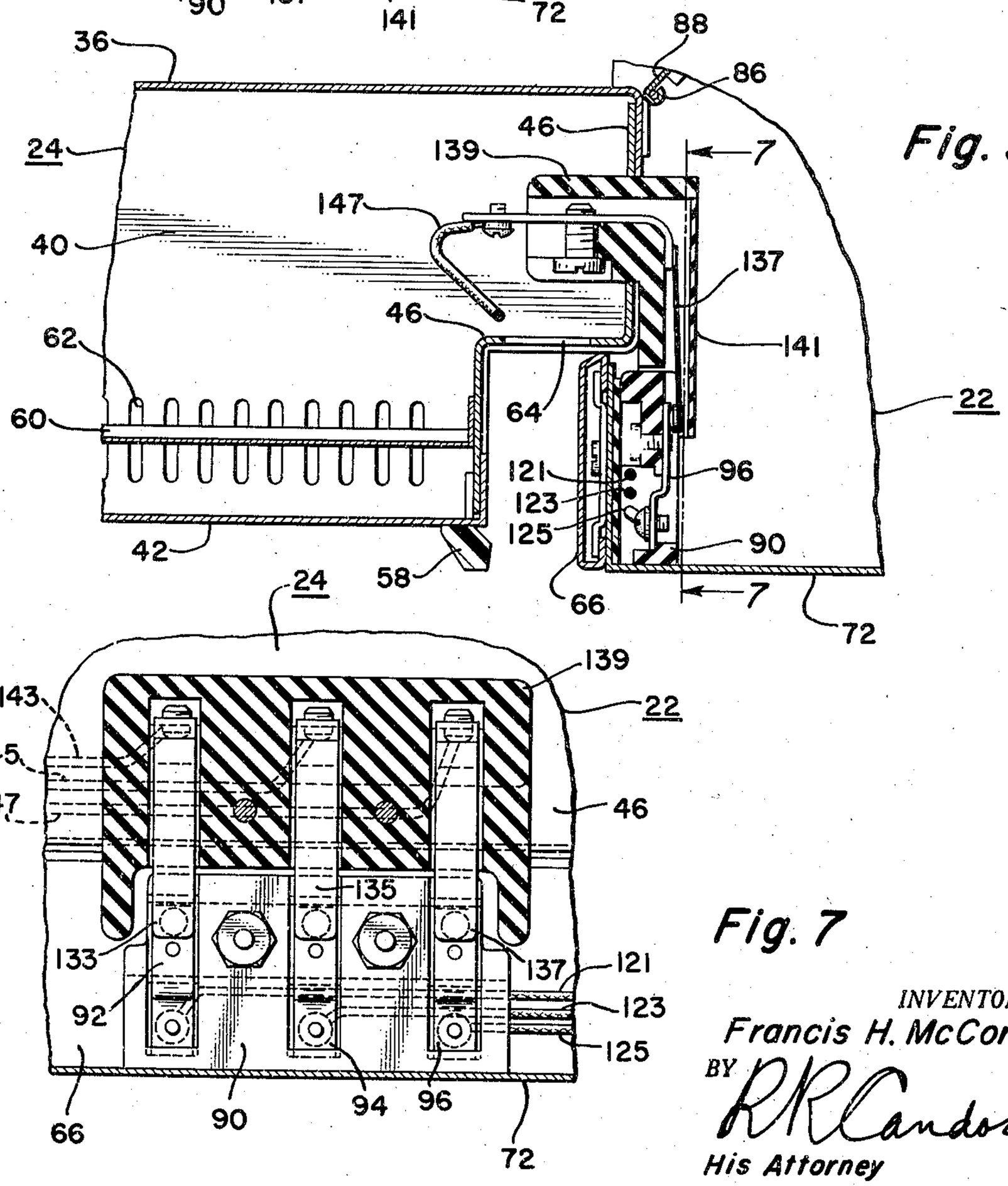

Fig. 5

Fig. 7

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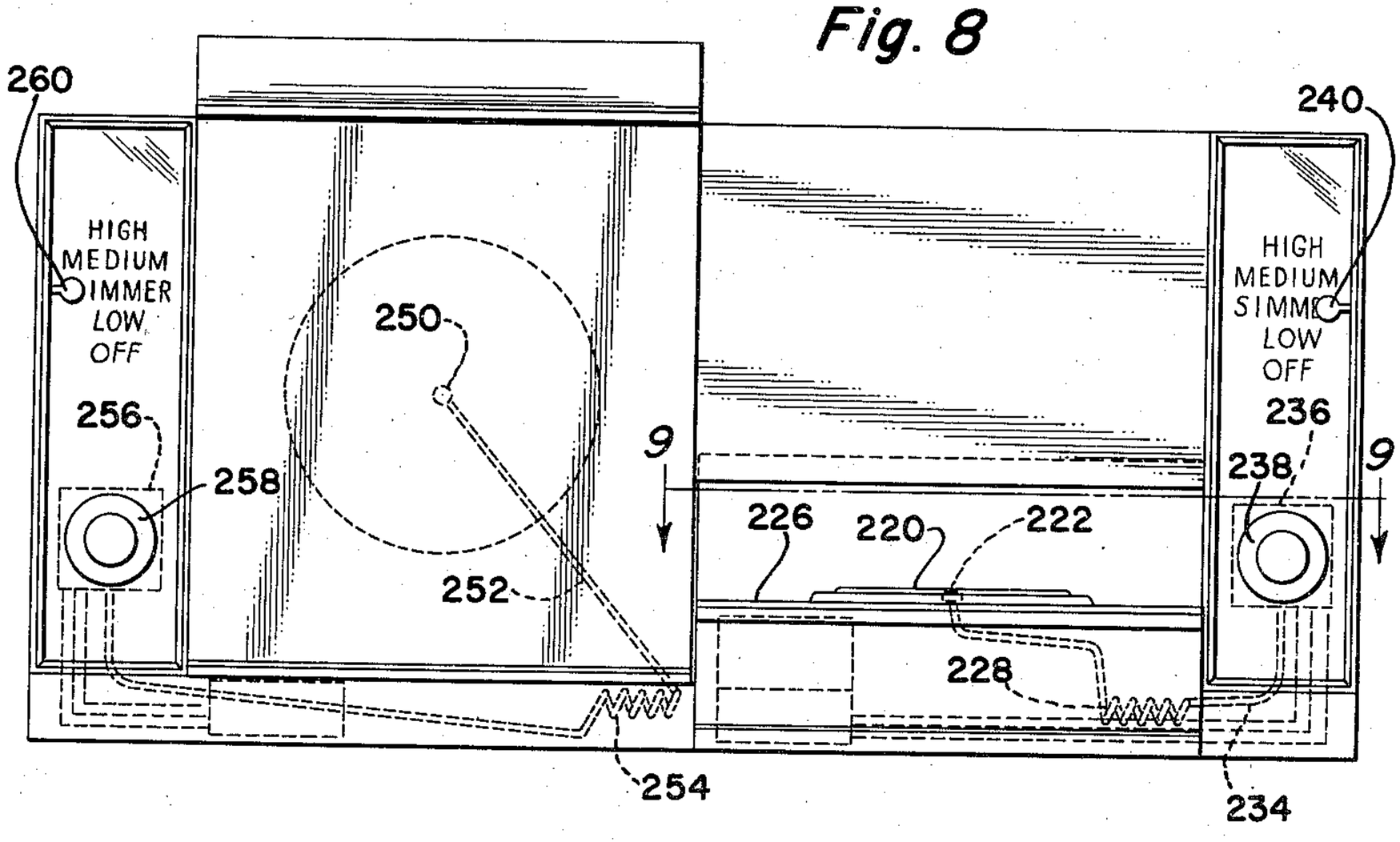
DOMESTIC APPLIANCE

Filed Feb. 10, 1955 4 Sheets-Sheet 4

Fig. 8



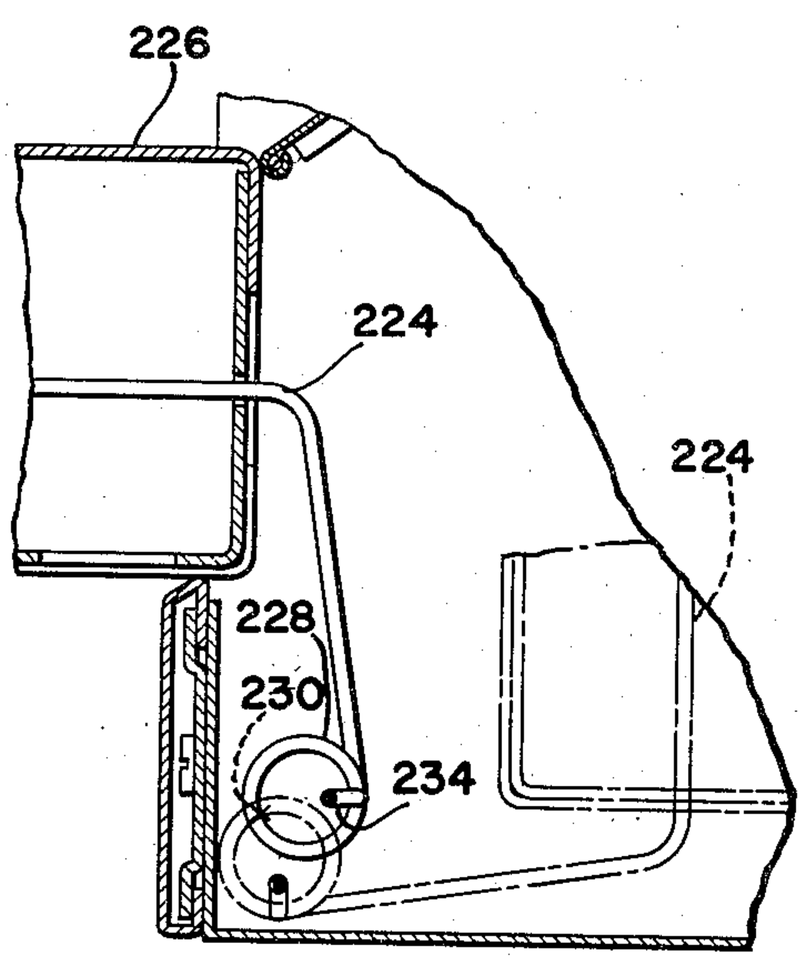


Fig. 10

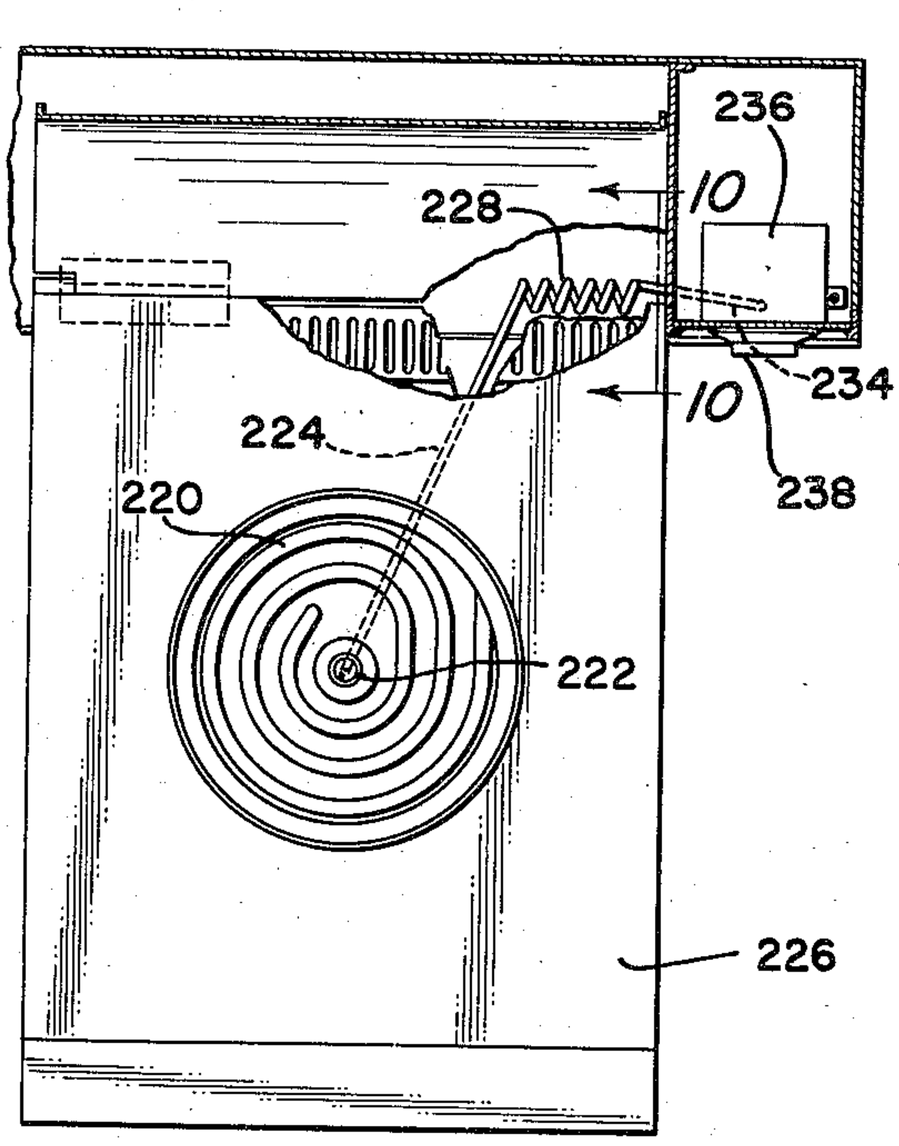


Fig. 9

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2,850,613

Patented Sept. 2, 1958

2,850,613

DOMESTIC APPLIANCE

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Application February 10, 1955, Serial No. 487,356

6 Claims. (Cl. 219—37)

This invention relates to a domestic appliance and more particularly to built-in type surface heaters for table top cabinets and counters in kitchens.

It is an object of this invention to provide an attractive convenient properly cooled and protected unit containing hinged surface heaters folding back against a wall when not in use and folding down onto a table top when in use.

It is another object of this invention to provide for such a unit an arrangement for preventing heating of the wall and particularly and arrangement for preventing operation of the heaters when folded back against the wall.

It is another object of this invention to provide for such a unit an arrangement for preventing damage to the wall when a hot surface heater is folded back against the wall.

It is another object of this invention to provide an attractive convenient unit containing an ornamental wall section suitably protected against heat and provided with a plurality of hinged surface heaters connected to an ornamental control unit located at each end of the section.

It is another object of this invention to provide an arrangement for preventing the table top from becoming heated or scorched when surface heaters are folded down onto a table top.

It is another object of this invention to provide a shield preventing particles and foreign matter from gaining access to the pivoting region of a pivoted surface heater.

These and other objects are obtained in the form shown in which a hollow upwardly extending wall section is provided with a ventilating flue. Pivotally connected to the lower portion of the section is a surface heater unit suitably baffled and ventilated and provided with spacing means which spaces the unit from the table top or counter when folded down therewith. The ends of the section are each provided with a control unit. The control unit is connected through a switch mechanism operated to closed position by the folding down of the surface heater to provide a connection with the surface heater. The rear of the surface heater unit has hinged to it a curved shield extending upwardly into the flue of the wall section for preventing crumbs, particles and other foreign matter from entering the space between the rear of the unit and the adjacent portion of the wall section.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Figure 1 is a perspective view of a surface heater unit upon a table top in a kitchen;

Figure 2 is a front view of the unit shown in Figure 1;

Figure 3 is a sectional view taken along the line 3—3 with the unit folded down onto the table top;

Figure 4 is a similar sectional view with the surface heater folded back against the wall section;

Figure 5 is a section taken through the cut off switch connection with the heater folded down;

Figure 6 is a similar sectional view with the heater folded up or back against the wall section;

Figure 7 is a fragmentary sectional view taken along the line 7—7 of Figure 5;

Figure 8 is a front elevation similar to Figure 2 showing a heater provided with a thermostatic control;

Figure 9 is a top view of a part showing the wall unit in a section of surface heater folded down onto the table top taken substantially along the line 9—9 of Figure 8;

Figure 10 is a fragmentary enlarged sectional view taken along the line 10—10 of Figure 9; and

Figure 11 is a fragmentary enlarged horizontal sectional view taken along the line 11—11 of Figure 2.

Referring now to the drawings and more particularly to Figure 1 there is shown a table or counter top 20 of any suitable type as may be found in a modern kitchen. This top may be of wood or metal or it may have a surface of linoleum or a plastic material. Mounted upon the rear portion of this table top 20 is a wall unit 22 having pivotally connected at its lower edge two surface heater units 24 and 26 located side by side. The wall unit 22 at each end is provided with a control unit, one being designated by the reference character 28 provided for controlling the heater unit 24 and the other designated by the reference character 30 being provided for controlling the heater unit 26.

The surface heater units 24 and 26 may be identical except that it may be desired to provide the unit 24 with a standard six inch surface heater 32 while the unit 26 may be provided with a standard eight inch surface heater 34. Taking the surface heater unit 24 as an example, it is constructed by forming a hollow metal shell having sheet metal portions on the top 36, the sides 38 and 40 and the bottom 42. These portions 36 to 42 are provided with inturned flanges at the front and rear. To these inturned flanges at the front is connected an ornamental handle 44 of a suitable non-metallic material generally in the shape of an inverter L. The enclosure is completed by a metal step shaped rear wall 46 likewise fastened to the inturned flanges of the portions 36 to 42.

The surface heaters 32 and 34 are each supported by a three armed support 48 located within the flange drip pan 50 having its flange resting upon the edges of an opening in the top portion 36. The bottom portion of the pan 50 extends into the interior of the sheet metal enclosure 36 to 42. The side walls of the pan 50 are provided with an aperture 52 through which extends the terminal portion 54 of the surface heater 32. The front and rear lower edges of the unit are provided with spacer strips 56 and 58 which rest upon the top of the table 20. When the units 24 and 26 are folded down these spacers 56 and 58 provide an air space between the bottom portion 42 and the table top 20.

The interior of the units 24 and 26 are each provided with a horizontal baffle 60 provided with narrow upturned flanges at the sides and supporting flanges at the front and rear connecting in suitable supporting arrangement. The side portions 38 and 40 are each provided with a series 62 of vertical slots extending from below the baffle 60 to above the baffle 60. The rear wall portion 46 is also provided with horizontal slots 64. These slots 62 and 64 allow air circulation within the units 24 and 26 both below and above the baffle 60 so as to keep the unit cool so that its bottom surface will not become hot enough to damage or to heat excessively the top of the table 20.

The wall unit 22 is provided with a front lower horizontal strip 66 extending from one end to the other. To

the rear of this strip 66 there is connected one element 68 of a hinge. This element 68 is connected by a hinge pin to the second element 70 of the hinge which is fastened to the step shaped rear wall portion 46 behind and above the slots 64. This arrangement conceals the hinge behind the units and behind the strip 66 at all times so that a desirable ornamental appearance is maintained.

Connected to the front lower strip 66 is a bottom portion 72 and a rear upwardly extending portion 74 which may or may not be against a vertical wall. The wall unit is made hollow by a front sheet 76 connected to the top of the rear wall 74 and formed with a forwardly extending square projection 78. This projection 78 is provided with a row of slots 80 across the front, a second row of slots 82 across the top and a third row of slots 84 across the bottom.

Hinged to the rear of the portion 36 by a concealed hinge 86 is a curved shield 88 which curves upwardly and extends into contact with the rear wall 74 just above the bottom of the front shield 76. This shield 88 prevents crumbs, particles and any foreign matter from falling into the space behind the units 24 and 26. One shield is provided for each unit.

The rear wall 74 and the front shield 76 form an upwardly extending flue for carrying heat away from the surface heaters 32 and 34 when they are in either the horizontal or the vertical positions. The movement of the air is indicated by suitable arrows. When the units 24 and 26 are folded up the shield 88 moves to the position shown in Figure 4 but remains against the rear wall 74. The surface heater 32 is cooled by air circulating upwardly between the rear wall 74 and the shield 76. Since the entire structure is made of a suitable metal such as stainless steel, the units 24 and 26 may be folded up even when quite hot. The wall unit is ventilated sufficiently that it will not become too hot for any wall against which it may be placed. The units 24 and 26 are also ventilated internally allowing air to flow in through the slots 64 near the hinge as well as the side slots 62. This air will flow upwardly on either side of the baffle 60 between the portions 36 and 42.

To provide a means for insuring that the surface heaters 32 and 34 are shut off before being folded against the wall unit, I provide a multiple pole switch unit including an insulated member 90 fastened to the rear of the strip 66 and provided with separated upwardly extending contact members 92, 94 and 96. These contact members 92, 94 and 96 are connected by conductors 121, 123 and 125 with a sliding type of surface heater control 127 provided within the control box 28. This sliding type surface heater control 127 is operated by a vertically slidable bar 129 provided at the front of the control box 28. The bar 129 is connected to the operating mechanism of the sliding type switch means 127. The bar 129 is also connected to the sliding type indicator 131 by the connector 133. The movement of the bar 129 up and down provides different surface heating rates for the surface heater 32. The control 127 is connected to a suitable source of power.

When in the horizontal position shown in Figure 5, the contacts 92, 94 and 96 are engaged by the spring finger contacts 133, 135 and 137 which are mounted upon the insulating member 139 fastened to the rear portion 46 of each unit as shown in Figures 5 to 7. These spring finger contacts 133 to 137 are covered by a removable insulating member 141. The finger contacts 133, 135 and 137 are connected by conductors 143, 145 and 147 to the terminal 54 of the surface heater unit 32. With this arrangement when the units, such as the unit 24, are folded down onto the table top 20, the finger contacts 133 to 137 will be in contact with the stationary contacts 92 to 96 as is best shown in Figures 5 and 7. However when the units 24 and 26 are lifted up, the finger contacts 133 to 137 move downwardly about the pivot point away from the

stationary contacts 92 to 96 as shown in Figure 6 so that the surface heater 32 is cut off from its source of electric energy. While these contact members serve a very useful safety function as a switch, they also serve as a connection between the stationary control 127 and its conductors with the movable surface heater 32 in a way that eliminates the need for special flexible connections which might otherwise be required because of the relative movement.

The unit 26 is similarly hinged, ventilated and similarly provided with a concealed switch mechanism 150 which is similarly connected to a slidable multiple control switch 153 which is also similarly provided with a slide bar 155 connected to a suitable indicator 157. Thus my unit is adequately protected from hazards and may be folded back out of the way when not in use.

In Figures 8 and 10 there is shown a unit which is similar in all respects to the units shown in Figures 1 to 7 provided in its center with a resiliently supported thermostat bulb 222. This thermostat bulb 222 is connected to a flexible capillary tube 224 within the unit 226. This capillary tube 224 is provided with a coiled portion 228 in the vicinity of the hinge pin 230. From the coiled portion 228 the capillary tube has a portion 234 connecting with a thermostatic control switch 236 which may be adjusted and controlled by a knob 238. This thermostatic control system may be like that adjusted and disclosed in S. N. 407,642, filed February 2, 1954, now Patent Number 2,816,998. The knob 238 preferably is operably connected by a sprocket and chain or other movable connection to the sliding type indicator 240. The coiled portion 228 is located in such a relation to the hinge pin that the bending stress upon the capillary tube due to the relative movement of the bulb 222 relative to the control 236 is taken up uniformly and absorbed by the coiling and uncoiling of the coiled portion 228 so as to prevent any fatigue breakage of the capillary tube. The second unit may similarly be provided with a thermostat bulb 250, the capillary tube 252 having a coiled portion 254 adjacent the pivot pin with a continuing portion connecting to a second control switch 256. This second control switch 256 is controlled by a knob 258 which is connected to and moves the sliding type indicator 260. Each control switch 236 and 256 is connected to a multiple pole type of switch such as is shown in Figures 5 to 7 through which it is connected to the surface heater 220.

Both forms of units can be readily manufactured and assembled as units with the ease of an ordinary electric range. Since it is not necessary to cut in to the table top, insulation difficulties are minimized. When not in use all units fold back against the wall unit leaving the front portion of the table top unit 20 free for other purposes. If desired the unit shown in Figures 1 and 2 may be placed side by side with the unit shown in Figure 8. This provides four surface heaters which is the same number provided upon most stoves and ranges.

In accordance with the provisions of Rule 78*a* reference is made to the following prior filed application: S. N. 407,642 filed February 2, 1954 now Patent Number 2,816,998.

While the form of embodiment of the invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, as may come within the scope of the claims which follow.

What is claimed is as follows:

1. A heating appliance in the form of a separate construction adapted to rest upon a counter top including an upwardly extending rear sheet structure, a second upwardly extending sheet structure having its major portion spaced from the upper portion of said rear sheet structure to form an air space therebetween, a surface heater unit pivotally connected adjacent its rear to the lower portion of one of said structures and pivoting to a horizontal position for use and to an upright position against the upper portion of one of said structures for storage

when not in use, a shield pivotally connected adjacent one edge to the rear of said unit upon an axis substantially parallel to but above the pivoting axis of said unit, said shield extending substantially to one of said structures beneath said air space, the upper end of said shield being free to move forwardly of said second sheet structure to provide access to the space at the rear of said unit.

2. A heating appliance in the form of a separate construction adapted to rest upon a counter top including an upwardly extending rear sheet structure and upwardly extending side walls, a second sheet structure having its major portion spaced from the upper portion of said rear sheet structure to form an air space therebetween, a surface heater unit pivotally connected adjacent its rear to the lower portion of one of said structures and pivoting to a horizontal position for use and to an upright position between said side walls and against the upper portion of one of said structures for storage when not in use, the upper edges of said side walls being substantially flush with the upper side of said unit when in the upright position and the forward edges of said side walls being substantially flush with the forward side walls of said unit when in the upright position, the upper portions of said structures being connected and provided with a forwardly extending portion in the path of the upward pivoting movement of said unit to serve as a stop for holding the unit upright and holding the unit spaced from the remaining upper portions of said structures.

3. A heating appliance in the form of a separate construction adapted to rest upon a counter top including a stationary assembly comprising an upwardly extending rear sheet structure, a second sheet structure having its major portion spaced forwardly from the upper portion of said rear sheet structure to form an air space therebetween, a movable assembly comprising surface heater unit pivotally connected adjacent its rear to the lower portion of said stationary assembly and pivoting to a horizontal position for use and to an upright position against the upper portion of one of said structures for storage when not in use, one of said assemblies having vent openings for the escape of heated air from the upper portion thereof when the heater unit is in an upright position, a shield pivotally connected adjacent one edge to the rear of said unit upon an axis substantially parallel to but above the pivoting axis of said unit, said shield extending substantially to one of said structures beneath said air space, and being slidably mounted relative to said one structure at a level above said pivoting axis.

4. A heating appliance in the form of a separate construction adapted to rest upon a counter top including an upwardly extending structure, a surface heater unit pivotally connected adjacent its rear to the lower portion of said structure, for movement to and from horizontal and upright positions, spring contact blades mounted upon said structure adjacent said pivotal connection, a cooperating set of spring contact blades mounted upon said unit adjacent said pivotal connection and extending into contact with the spring contact blades mounted upon said structure when said unit is in the horizontal position.

5. A heating applicance in the form of a separate construction adapted to rest upon a counter top including an upwardly extending sheet structure, a structure pivotally connected adjacent its rear to the lower portion of said upward sheet structure, said pivotally connected structure having a substantially horizontal pivoting axis and being provided with a surface heater and a thermostat bulb within the surface heater, a fluid motor and a switch mechanism mounted upon said upwardly extending structure, and a capillary tube extending from said thermostat bulb to said fluid motor and having a long intermediate portion adjacent to and substantially parallel to the pivoting axis of said pivotally connected structure.

6. A heating applicance in the form of a separate construction adapted to rest upon a counter top including an upwardly extending sheet structure, a structure pivotally connected adjacent its rear to the lower portion of said upward sheet structure, said pivotally connected structure having a substantially horizontal pivoting axis and being provided with a surface heater and a thermostat bulb within the surface heater, a fluid motor and a switch mechanism mounted upon said upwardly extending structure, and a capillary tube extending from said thermostat bulb to said fluid motor and having a long intermediate portion coiled substantially into a helix having its axis adjacent to and parallel to the pivoting axis of said pivotally connected structure.

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