

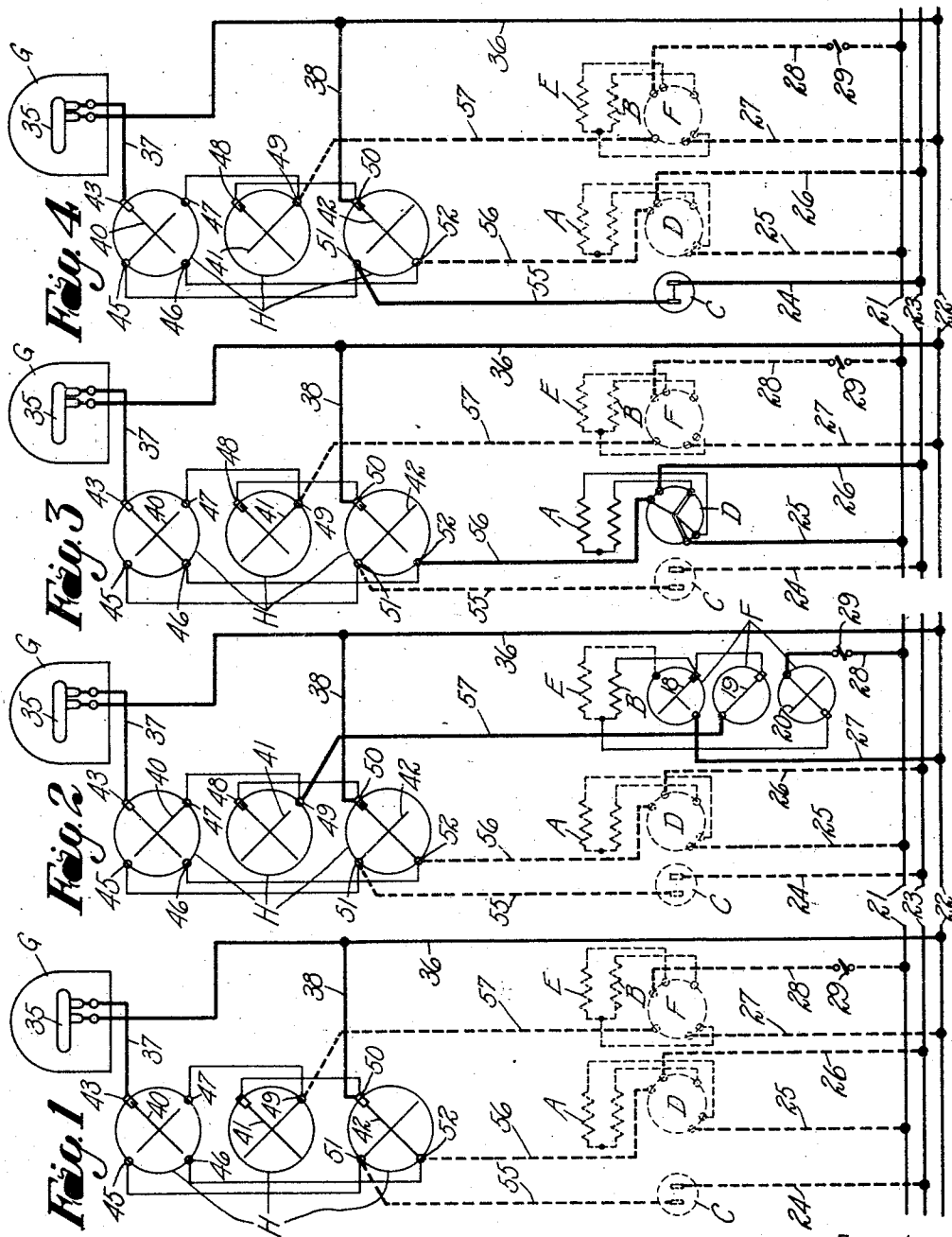
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SYSTEM OF CONTROL FOR ELECTRIC RANGES

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SYSTEM OF CONTROL FOR ELECTRIC RANGES

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This invention relates to electric ranges and has particular reference to an improved system of control whereby several of the electrical elements with which the range is provided may be selectively associated with a timing device to permit the current to be automatically thrown onto and off of the selected element at a predetermined time.

The aim of the invention is to provide an improved, simplified and economical system of this sort which may be easily installed and by means of which the several elements may be selectively associated with the time controlling device in a very ready and convenient manner.

The invention contemplates generally the provision of a single switch which may be termed, for convenience, a clock selector switch associated on the one hand with the time controlling device and, on the other hand, with a plurality of electrical elements of the range, such as the heating unit of a hot plate, the heating unit of an oven, and a convenience outlet or receptacle, the clock selector switch being so constructed and associated with the several instrumentalities that any one of the selected electrical elements may be placed under the control of the clock, and the elements which are not under the control of the clock may be independently connected to the source of electrical current. With this arrangement, in order to place any one of the selected elements under the control of the clock, it is merely necessary to move the clock selector switch to the desired position and, in which position, the other of the elements are manually controllable in the usual manner through appropriate switches.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

In the accompanying drawing, wherein is shown, for illustrative purposes, one of the many embodiments which the present invention may take:

Figure 1 is a diagrammatic or schematic view illustrating the system with the selector switch in the position where the three electrical elements of the range are divorced from the timing mechanism;

Fig. 2 is a view similar to Fig. 1 but showing the selector switch in a position for associating

the "bake" unit of the oven with the timing mechanism;

Fig. 3 is a like view showing the hot plate as being under the control of the timing mechanism; and

Fig. 4 is a like view showing the clock selector switch in a position wherein the convenience outlet is under the control of the timing mechanism.

In the present illustrative disclosure, there is schematically shown in the drawing a system wherein three electrical elements of a range are selectively associated with the timing mechanism through the clock selector switch, these elements being a heating unit A of a hot plate, a heating unit B of an oven, and a convenience outlet or receptacle C. Obviously, the range may be provided with other electrical elements, for example three additional hot plates. The hot plate unit A may, as usual, be divided into two parts. There may be associated with the unit a manually operable switch D of a type for selectively connecting the parts of the unit to the power lines in such manner as to produce "high", "medium", and "low" heats, the switch also having an "off" position. The specific construction of the switch is not illustrated as it may be of any suitable kind; for example, it may be constructed in accordance with the switch shown in the patent to Blakesley No. 1,626,221. The heating unit B may be located adjacent the bottom of the oven and is herein termed, for convenience, as a "bake" unit. Provided in the top of the oven may be another unit E, here referred to as a "broil" unit. The oven units B and E are under the manual control of a switch F which may be of any suitable construction, it being shown in Fig. 2 as having three levels respectively provided with switch plates 18, 19 and 20. These switch plates and their respective terminals are so arranged and associated that, in one position of the switch, both oven units are "off", in another position both units are "on" so as to give a high heat and thereby preheat the oven, in a third position only the bake unit is "on", and in a fourth position, only the broil unit is "on".

In the present instance, I have shown the source of power as being of the three-wire type but, obviously, my improved system may be employed as well in connection with a two-wire power system. It may be assumed that there may be a potential of 220 volts between the lines 21 and 22 and a potential of 110 volts between the neutral wire 23 and the two main lines. One side of the outlet C is connected to the neutral wire 23 by a lead 24. Two of the terminals of the

switch D are respectively connected to one main line and the neutral by the leads 25 and 26. Two contacts of the switch F are respectively connected by leads 27 and 28 to the two main lines 21 and 22, respectively. Interposed in the lead 28 may be a thermostatically operated switch 29 of any suitable construction, this thermostatic control being effective in all positions of the clock selector switch.

The timing mechanism for automatically controlling the times at which current is thrown onto and off of the selected unit may be of any suitable construction, mechanisms of this sort usually having a clock or recorder movement and a switch controlled thereby. In the present illustrative disclosure, this mechanism is schematically shown as the particular construction thereof forms no part of the present invention. It is designated generally by the letter G and is shown as having a clock controlled mercury switch 35. One side of the mercury switch is connected to the line 22 by a lead 36. The other side of the mercury switch 35 is connected to the selector switch by a lead or wire 37. Leading from the lead 36 to the selector switch is also a shunt wire or connection 38 through which the current may pass to the several units without passing through the mercury switch where it is desired that the particular units be not under the control of the timing mechanism.

Referring now to the selector switch designated generally by the letter H, the same is interposed between the timing mechanism and the several elements to be controlled thereby and, in part, is interposed between one of the lines and those elements, in shunt relation to the timing mechanism. This selector switch may be of any suitable construction, but it is here shown as having three levels respectively provided with switch plates 40, 41 and 42. The upper level has a terminal 43 connected to the mercury switch, and terminals 45, 46 and 47. The middle level has contacts 48 and 49, and the lower level has contacts 50, 51 and 52. The contact 50 is connected to the shunt wire 38 and to the terminal 48. The terminal 52 is connected to the terminal 46, the terminal 51 to terminal 45, and terminal 49 to terminal 47. The upper switch plate 40 is arranged so as to selectively connect the terminal 43 with the several terminals 45, 46 and 47 in the several positions of the switch, and to contact with the terminal 43 only when the switch is in the "off" position shown in Fig. 1. The middle switch plate 41 is adapted to connect the terminals 48 and 49 in all positions of the switch except that shown in Fig. 2. The lower switch plate 42 is adapted to connect all of the terminals 50, 51 and 52 in two positions of the switch, the terminals 50 and 51 in another position, and the terminals 50 and 52 in a last position. It is to be understood that this selector switch is located at any convenient position on the range, and the several switch plates are all carried by a single spindle having an operating member, such as a handle.

The operation is briefly as follows: The full lines show those units which are under clock or automatic control, and the dotted lines show the units which are under manual control when the other unit is being automatically controlled. When the selector switch is in the position shown in Fig. 1, none of the electrical elements are under the control of the clock or timing mechanism. In this case, the upper switch plate 40 breaks the connections, and the lower switch

plate connects the line 22 through the shunt 38 to the wires or intermediate connections 55 and 56 leading respectively to the convenience outlet and the switch D. The middle switch plate 41 connects the switch F to the line 22. In this position of the selector switch, the unit A may be manually controlled in the usual manner by the switch D, and the oven units B and E may be controlled by the switch F; also, current will pass through the electrical appliance plugged into the convenience outlet.

When the switch is turned to the position shown in Fig. 2, the bake unit B is placed under the automatic control of the timing mechanism without affecting the normal operation of the convenience outlet and the hot plate unit A. In this case, current will flow from the line 22 through the lead 36, mercury switch 35, the upper switch plate 40 of the clock selector switch, the wire or intermediate 57 and the middle switch plate of the switch F, through the bake unit B, the lower switch plate of the switch F and the lead 28 to the line 21.

In the next position of the clock selector switch shown in Fig. 3, the hot plate unit A is under the control of the timing mechanism while the receptacle and the oven unit are under manual control. The upper switch plate 40 connects the wire 56 to the time controlled mercury switch, the middle switch plate 41 connects the switch F to the shunt 38, and the lower switch plate connects the shunt to the wire 55.

In the fourth and last position of the clock selector switch, the convenience outlet is under the automatic control of the timing mechanism, and the hot plate unit and oven plate units are under the manual control of the switches D and F, respectively. In this position of the switch, the upper switch plate 40 connects the outlet receptacle to the mercury switch, the middle switch plate 41 connects the shunt wire 38 to the switch F, and the lower switch plate 42 connects the shunt wire 38 to the switch D.

It will be seen from the foregoing description, taken in connection with the accompanying drawing, that by means of a single clock selector switch any one of several units may be selectively thrown under the control of the timing mechanism without affecting the manual control of that particular unit or the manual control of the elements which are not under the control of the timing mechanism at that particular time. It will be understood, of course, that the arrangement may be modified so that more than one of the units may be connected at the same time through the selector switch, thus placing them simultaneously under the control of the timing mechanism, the other unit or units being under manual control only. As previously stated, the manually operable switches may be of any suitable sort and, if desired, they may be of a type having means for throwing the current on and off and thermostatically controlled means for maintaining the instrumentality at the predetermined desired heat.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover

all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. In an electric range, a plurality of electrical elements, lines for supplying current to said elements, a time controlled switch connected to one of said lines, a selector device comprising a single switch interposed between said time controlled switch and the elements and having an "off" position and a plurality of operative positions for selectively placing said elements under the control of said time controlled switch, and a connection between said mentioned line and said selector switch device in shunt relation to said time controlled switch, said selector switch device being so constructed and arranged as to enable a supply of current to flow therethrough independently of said time controlled switch to the elements which at any one time are not under automatic control.

2. In an electric range, a plurality of electrical elements, lines for supplying current to said elements, a time controlled switch connected to one of said lines, a selector switch device interposed between said time controlled switch and the elements and having an "off" position and a plurality of operative positions for selectively placing said elements under the control of said time controlled switch, an individual intermediate connection between said selector switch device and each of said elements, and a connection between said mentioned line and said selector switch device in shunt relation to said time controlled switch, said selector switch device and connections being so arranged that in each operative position of the selector switch device one of said elements is placed under the automatic control of said time controlled switch and the

other elements may be connected to said shunt connection.

3. In an electric range, a plurality of electrical elements, two at least of which comprise electrical heating units, an independent manually operable switch associated with each heating unit, lines for supplying current to said elements, a time controlled switch connected to one of said lines, a selector switch device having a plurality of rotary switch plates and interposed between said time controlled switch and elements, a connection leading from said mentioned line to said selector switch device in shunt relation to said time controlled switch, and an intermediate connection leading from said selector switch device to said elements, said manually operable switches being interposed between said last mentioned connections and electrical units, said selector switch device and connections being so arranged that in "off" position of the selector switch device each of the intermediate connections are connected to said shunt connection and in each operative position of the selector switch device the shunt connection is connected to the intermediate connections except the one leading to the element which is under the automatic control of said time controlled switch.

4. In an electric range, the combination with a plurality of current consuming units, of connections for supplying current to said units comprising manually operable switches for turning the current on and off said units selectively; a time controlled switch operative automatically to close a circuit at a time predeterminable at will and to open said circuit again at a later but predeterminable time, and a single selector switch operable to place any desired one only of said units under the control of said time controlled switch.

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