Jan. 7, 1930. R. H. MacINNES 1,742,660

ELECTRIC RANGE

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Fig. 1

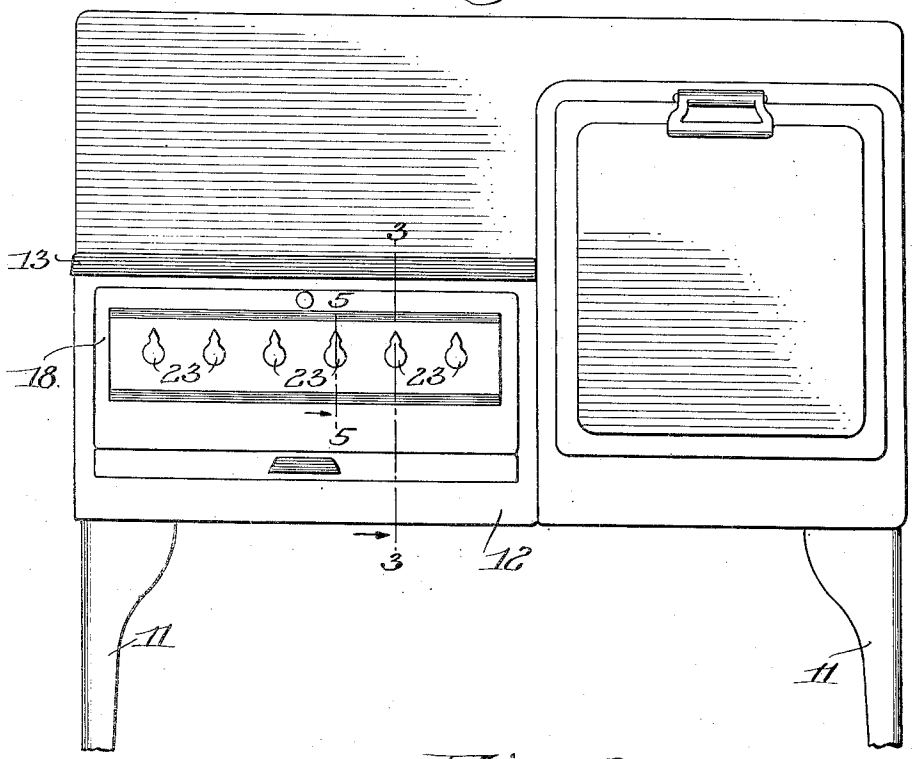
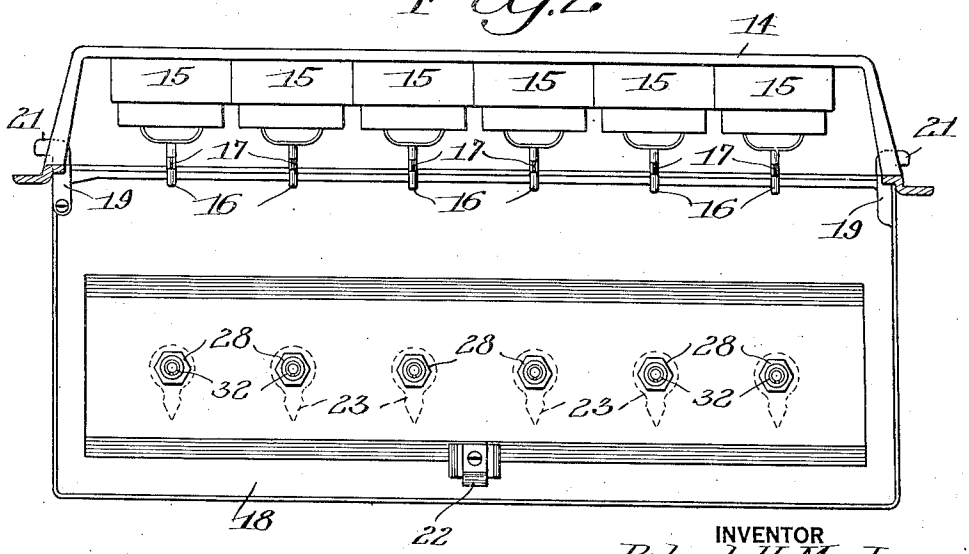


Fig. 2



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Fig. 3

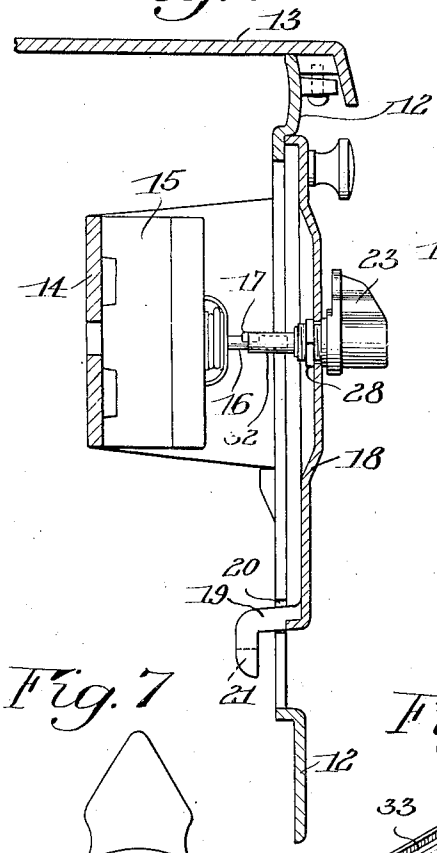


Fig. 4

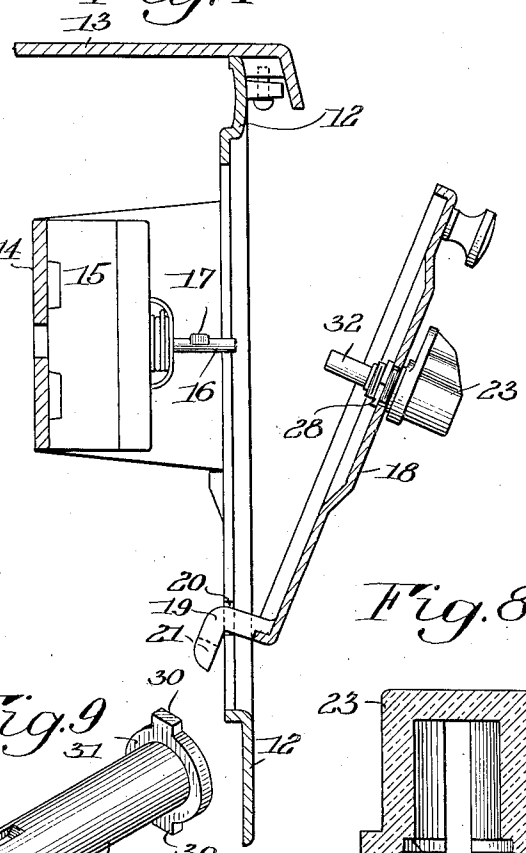


Fig. 8

Fig. 7

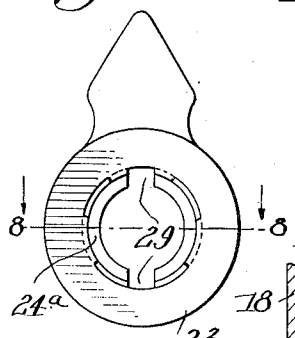


Fig. 9

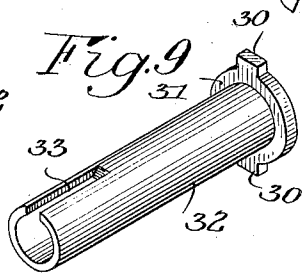


Fig. 5

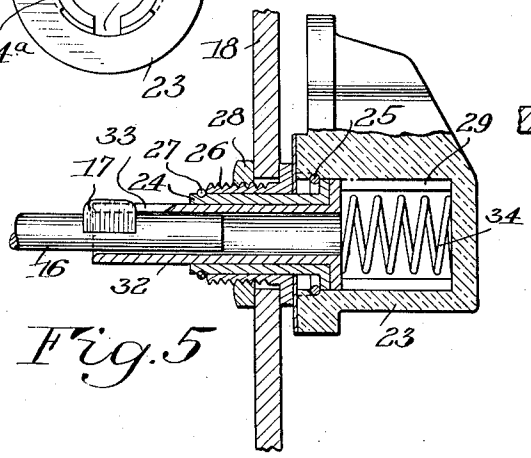
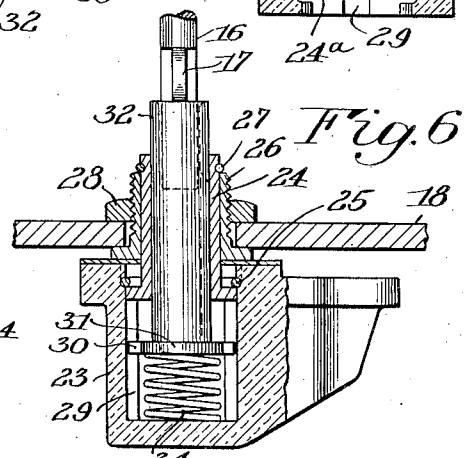


Fig. 6



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UNITED STATES PATENT OFFICE

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ELECTRIC RANGE

Application filed April 15, 1929. Serial No. 355,025.

The invention relates to an electric range, and has for one of its objects the provision of a generally improved and more satisfactory range than those heretofore known.

Another object of the invention is the provision in an electric range or similar appliance of an improved arrangement for operating the electric switches controlling the appliance, such arrangement being designed to permit easy and rapid access to the switches and wiring of the appliance.

A further object is the provision of an improved arrangement of switch handles so that access to the switches may be had easily and quickly without the necessity of tediously unscrewing the handles as has been necessary heretofore.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of this specification.

In the drawings:

Fig. 1 is a front elevation of an electric range showing a preferred embodiment of the invention applied thereto;

Fig. 2 is a horizontal section through a portion of the range, the plane of the section being just above the switches, showing the closure member on which the switch handles are mounted in its open position;

Fig. 3 is a vertical section substantially on the line 3—3 of Fig. 1, showing the closure member on which the handles are mounted in its normal or closed position;

Fig. 4 is a similar view showing the closure member partially opened;

Fig. 5 is a detail sectional view through one of the switch handles, the section being taken substantially on the line 5—5 of Fig. 1;

Fig. 6 is a view somewhat similar to Fig. 5, showing the switch handle and the switch stem in a different relative position;

Fig. 7 is a view of the inner end of a portion of the switch handle;

Fig. 8 is a horizontal section through the same portion, taken substantially on the line 8—8 of Fig. 7, and

Fig. 9 is a perspective view of a sleeve member forming part of the switch handle.

Similar reference numerals throughout the several views indicate the same parts.

Referring now to the drawings, there is shown an electric range supported on legs 11, the range including a front plate 12 and a top plate 13, the latter having the usual burners or heating elements. Within the casing formed in part by the front plate 12 and the top plate 13, there is a frame member 14 on which a number of electric switches 15 are mounted, which switches control the heating elements or burners of the range. Each of these switches has a forwardly extending stem 16 provided with a lug 17 for cooperation with the switch handle so that the switch may be turned to various positions.

The front plate 12 of the range is provided with an opening in front of the switches 15, which opening is of sufficient size to allow ready access to the switches and to the wiring associated therewith for replacement or repairs. This opening has a door or closure member 18, the lower edge of which is provided near its ends with Z-shaped lugs 19 extending through openings 20 in the plate 12 and provided with lateral ears 21. The lugs 19 extend loosely through the openings 20 and provide a sort of hinged joint, while the ears 21 prevent disengagement of the door from the range and act to hold the door in a horizontal position such as that shown in Fig. 2, when it is open. When the door is in its effective or closed position, it may be held closed by a spring latch 22 (Fig. 2) near the upper edge of the door.

Heretofore, in ranges of this type, the switch stems have extended through the doors or closure members, and the switch handles have been screwed on the outer ends of the stems which project outside of the door. When it has been necessary to open the door for inspection, or replacement of the switches or wiring inside the casing, the switch handles have first had to be unscrewed from the stems before the door could be opened, and after the door has been closed these handles have had to be screwed on the stems again. This has been a tedious and time consuming operation, since each handle

must usually be given any where from ten to twenty complete turns to unscrew it and the same number to screw it on again, and there are usually five or six switches. Even though only one switch might need to be repaired, all of the handles have had to be removed in order to permit the door to be opened to obtain access to this switch.

According to the present invention, the switch handles are not screwed on the switch stems 16, but are mounted upon the door 18 and are bodily movable therewith toward and away from the switches when the door is closed or opened. The switch stems and the handles are so constructed that they are automatically interlocked and operatively engaged with each other when the door is closed, and are automatically disconnected when the door is opened. Thus it is not necessary to spend time screwing on or unscrewing the handles or performing any similar operation, since the mere opening and closing of the door automatically disconnects and reconnects the handles to the switches.

A preferred embodiment of the invention, best illustrated in Figs. 5 and 6, comprises handles having operating portions 23 of insulating material such as porcelain, these portions having central openings in which are received tubular members 24 having annular flanges at their inner ends, these annular flanges being seated against seats 24ª (Fig. 8) formed in the member 23 and being held in place by ring-like members 25 which may be sprung into position in grooves in the members 23 in known manner.

These tubular members 24 are each rotatably mounted in externally threaded bushings 26 and are held against longitudinal displacement relative to the bushings by ring-like members 27 sprung into place in circumferential grooves in the tubular members 24 in known manner. The threaded bushings 26 pass through openings in the closure member 18 and are clamped to the closure member by nuts 28. It will be understood that the handles are so placed on the closure member 18 that one of them will be in alignment with each of the switch stems 16 when the closure member is closed.

The main recess in the operating portion 23 of each handle is of cylindrical cross section, but has two grooves extending longitudinally at diametrically opposite points as indicated in Figs. 7 and 8. These grooves are engaged by radial lugs 30 on a cylindrical head 31 of a sleeve 32 which projects through the tubular member 24 and which has an internal diameter slightly greater than the external diameter of the switch stems 16, so that the sleeve may surround the switch stem as shown for example, in Figs. 3 and 5. The lugs 30, engaging the grooves 29 of the member 23, provide a non-rotative connection between the sleeve 32 and the operating member 23, while permitting longitudinal movement of the sleeve relative to the operating member. The sleeve has a notch or groove 33 of sufficient width to receive the lugs 17 of the switch stem 16, so that when the lug is in this notch, rotation of the sleeve 32 is transmitted to the stem 16. A coiled spring 34 within the recess in the member 23 presses outwardly against the head 31 of the sleeve and thus resiliently tends to move the sleeve inwardly with reference to the door 18.

In operation, when the door 18 is opened, the sleeves 32 of the switch handles automatically pull off of the ends of the switch stems 16. Free access may then be obtained to the switches and to the wiring of the range. When the inspection or repairs have been completed, the door 18 is closed and the sleeves 32 automatically slip back on the stems 16 during the closing operation, thus operatively connecting the handles to the switches. The relatively loose hinge connection of the door, provided by the lugs 19 and the openings 20, allows the door to be moved slightly up or down or sideways in order to bring the sleeves 32 into exact alignment with the switch stems so that the sleeves will slip over the stems, although motion of this kind is usually not necessary and the sleeves will usually be found to seat themselves properly upon the mere closing of the door. Making the internal diameter of the sleeves slightly larger than the external diameter of the stems to give some clearance between these parts, and chamfering the ends of the sleeves, aids this seating action.

If neither the switch stems nor the switch handles are rotated, while the door 18 is open, it is obvious that the notches 33 of the switch handles will still be in alignment with the lugs 17 on the stems when the door is closed, so that the parts will immediately assume their normal connected position when the door is closed. If, however, the stems 16 or the handles happen to be rotated while they are disconnected from each other when the door is open, it is apparent that the notches 33 will no longer be in alignment with the lugs 17 when the door is closed. Under these conditions, the end of the sleeve 32 simply abuts against the lug 17 when the door is closed and the sleeve is thus forced into its recess against the tension of the spring 34 as shown in Fig. 6. This telescoping action allows the door to be completely closed notwithstanding the misplacement of one or more of the handles relative to the stems. Upon the next rotation of the misplaced handle, the spring 34 will force the sleeve 32 inwardly into its normal operative position as soon as the notch 33 comes into alignment with the lug 17 during the rotation of the handle. Thus it is not necessary to be sure

that all of the handles are exactly in a given position when the door is closed, and no harm is done even though one or all of the handles is rotated somewhat while it is disconnected from its stem.

While one embodiment of the invention has been disclosed, it is to be understood that the inventive idea may be carried out in a number of ways. This application is therefore not to be limited to the precise details shown, but is intended to cover all variations and modifications thereof falling within the spirit of the invention or the scope of the appended claims.

I claim as my invention:

1. The combination with a frame, of a switch mounted on said frame, a member movable relative to said frame, and a switch handle mounted on and movable bodily with said member, said switch handle being effective to operate said switch when said movable member is in one position and being disconnected from said switch when said member is in another position.

2. The combination with a frame, of a switch mounted on said frame, a closure member movably mounted relative to said frame and shiftable from a closed position extending across said switch to an open position permitting access to said switch, and a switch handle mounted on and movable bodily with said closure member, said switch handle being effective to operate said switch when said closure member is closed and being disconnected from said switch when said member is open.

3. The combination with a frame, of a switch mounted on said frame, a closure member movably mounted relative to said frame and shiftable from a closed position extending across said switch to an open position permitting access to said switch, and a switch handle mounted on said closure member, said switch handle being automatically connected to and disconnected from said switch upon movement of said closure member to and from said closed position.

4. The combination with a frame, of a switch mounted on said frame, a member movably mounted relative to said frame, and a switch handle mounted on said member, said switch handle including a telescoping portion effective to interlock with said switch when said movable member is in one position.

5. The combination with a frame, of a switch mounted on said frame, said switch having a stem and a lug on the stem, a member movably mounted relative to said frame, and a switch handle rotatably mounted on said movable member and bodily movable toward and from said switch when said member is shifted, said switch handle including a portion arranged to fit over said switch stem and having a notch for interlocking engagement with said lug.

6. The combination with a frame, of a switch mounted on said frame, said switch having a stem and a lug on the stem, a member movably mounted relative to said frame, and a switch handle comprising an operating portion rotatably mounted on said movable member, a sleeve portion operatively connected to said operating portion to rotate therewith and longitudinally movable relative to said movable member, and resilient means tending to move said sleeve portion longitudinally in one direction, said sleeve portion having a notch for interlocking engagement with said lug when said movable member is in one position, so that said handle is effective to operate said switch.

7. In an electric range, the combination with a casing, of a plurality of electric switches mounted within said casing, a closure member movably mounted relative to said casing and shiftable from a closed position extending across said switches to an open position permitting access to said switches, and a plurality of switch handles mounted upon and movable bodily with said closure member, said switch handles being effective to operate said switches when said closure member is in closed position.

8. In an electric range, the combination with a casing, of a plurality of electric switches mounted within said casing, a closure member movably mounted relative to said casing and shiftable from a closed position extending across said switches to an open position permitting access to said switches, and a plurality of switch handles mounted upon and movable bodily with said closure member, said handles being automatically connected to said switches and effective to operate the same when said closure member is moved to closed position, and being automatically disconnected from said switches upon movement of said closure member to open position.

9. In an electric range, the combination with a casing, of a plurality of electric switches mounted within said casing, a closure member movably mounted relative to said casing and shiftable from a closed position extending across said switches to an open position permitting access to said switches, and a plurality of switch handles mounted upon and movable bodily with said closure member toward and away from said switches, said switches and switch handles including cooperating interlocking portions, certain of said interlocking portions being resiliently mounted so that said closure member may be closed notwithstanding misplacement of certain interlocking portions.

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