

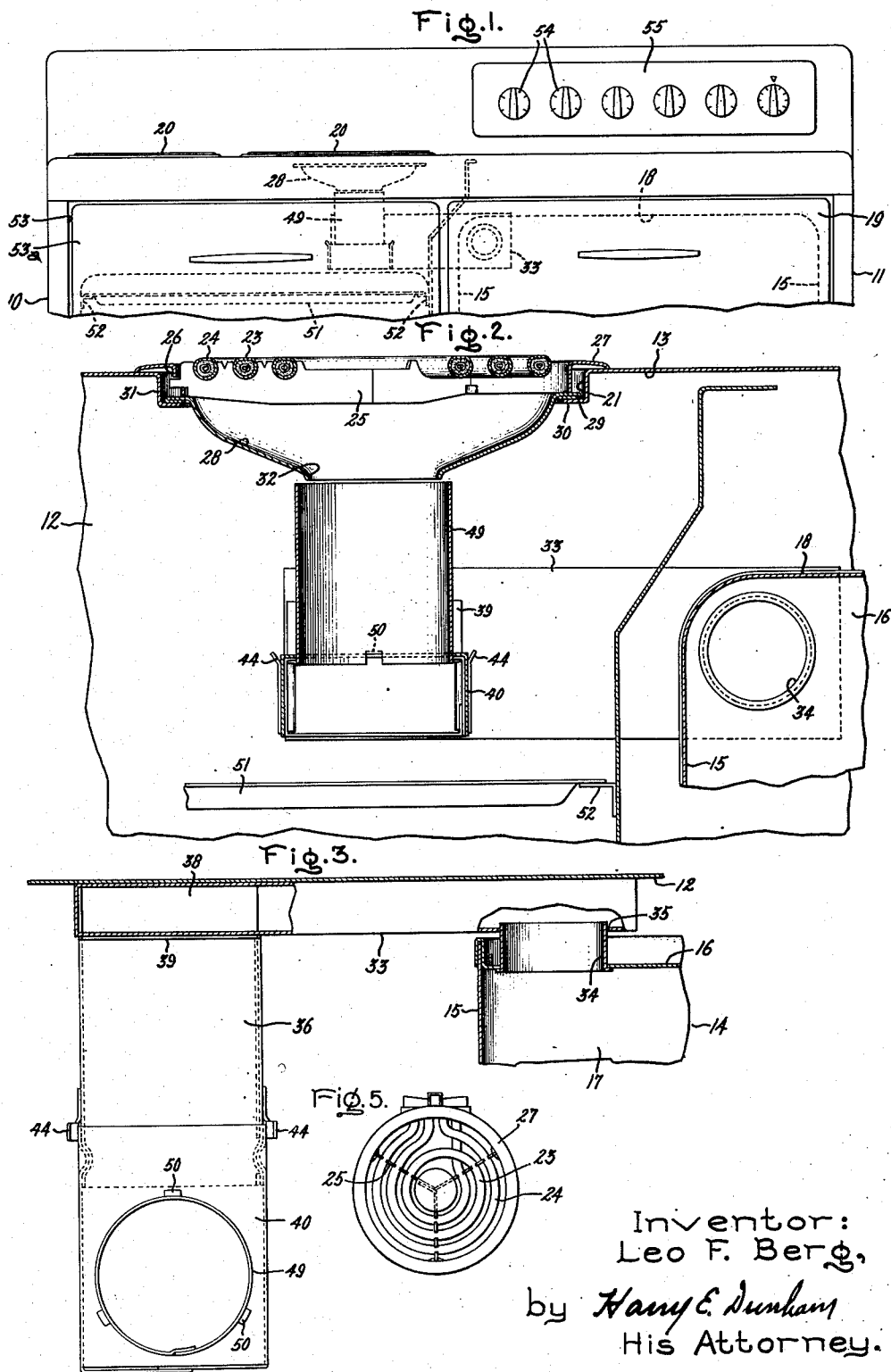
Oct. 10, 1950

L. F. BERG
VENT STRUCTURE

2,525,062

Filed June 9, 1944

2 Sheets-Sheet 1



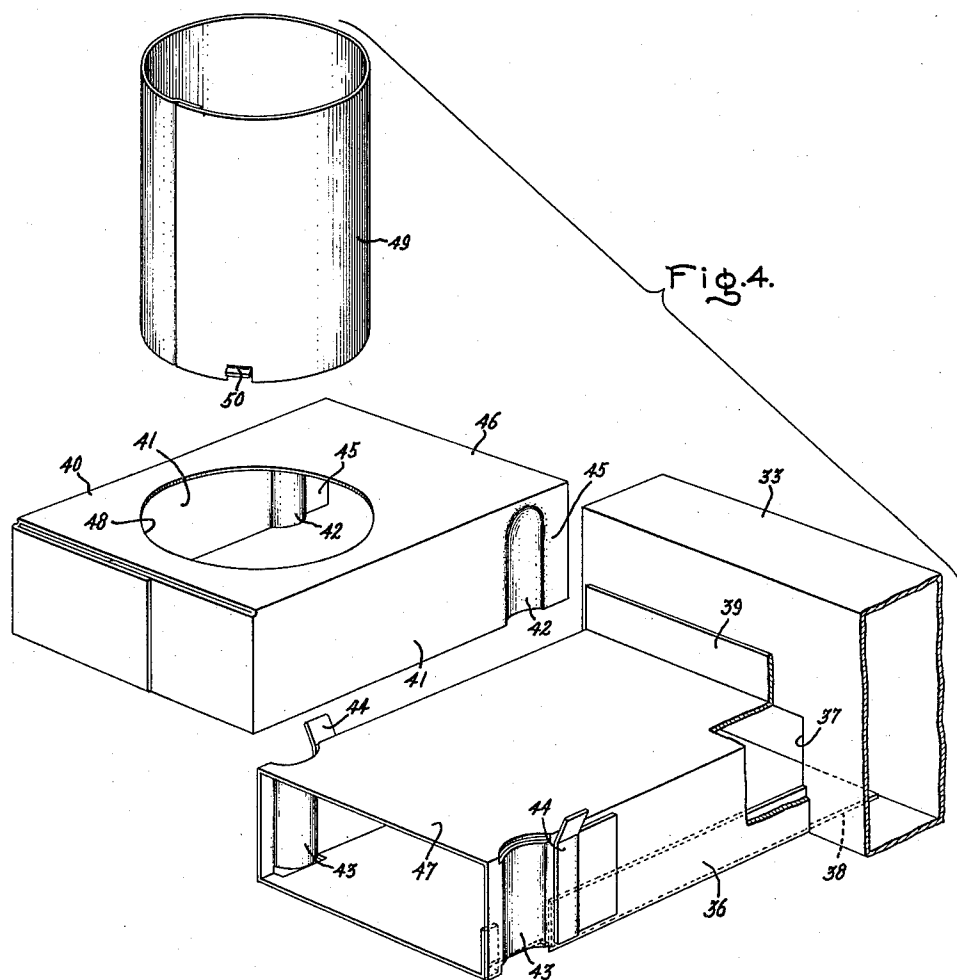
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2,525,062

VENT STRUCTURE

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2 Claims. (Cl. 126—21)

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This invention relates to a vent structure, more particularly to a vent structure for the bake oven of a range, and it has for its object the provision of an improved vent structure of this character which is efficient in its operation, which has an improved and inexpensive construction, and also one which is concealed from view.

This invention contemplates the provision of an improved vent structure for an oven which is easily removable for cleansing, and easily replaceable after cleansing.

It further contemplates a vent structure which is provide with an improved discharge opening organization which includes a protective grille which may be heated in order to burn off greases and the like which may have become deposited thereon, and in order to vaporize moisture condensation deposited upon it.

The grille in one form of this invention is one of the surface units, the unit constituting the outlet vent, and further functioning to conceal the vent structure.

In accordance with this invention in one form thereof, I utilize as the final discharge vent opening the opening that is provided in the surface unit cooking top for receiving one of the surface heating elements. That is, I cause the oven discharge vapors and gases to pass out through this opening. The heating element, which has the additional function in my vent structure of acting as a protective and concealing grille, is of the tubular coil type so that the oven vapors may freely pass through the opening between the turns of the element. This heater, of course, may be energized at the time the oven is used so as to prevent the deposit of moisture and greases upon it, or it may be de-energized at the time the oven is operating and later energized in order to cleanse itself of deposits.

In addition to this, the vent structure comprises a riser vent section which conducts the oven vapors up to the surface unit discharge opening. This section is readily removable from its associated vent structure, and it is contemplated that this section may be elevated directly through the surface unit opening for cleaning, and replaced through the opening after cleaning.

For a more complete understanding of this invention, reference should be had to the accompanying drawings in which Fig. 1 is a fragmentary front elevation of an electric range provided with an oven that has vent structure arranged in accordance with this invention; Fig. 2 is a

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vertical sectional view taken through a portion of the range shown in Fig. 1, this view being drawn to a materially larger scale than is Fig. 1; Fig. 3 is a horizontal sectional view taken through a portion of the range of Fig. 1, this view being drawn to the same scale as Fig. 2; Fig. 4 is a perspective expanded view illustrating various elements of the vent structure, but shown dis-assembled; and Fig. 5 is a plan view of the vent outlet construction, the figure being drawn to a small scale.

Referring to the drawings, this invention has been shown in one form as applied to an electric range. The electric range comprises a suitable base supporting structure, which as will be understood by those skilled in the art, comprises side walls 10 and 11, a rear wall 12, and a cooking top 13. Located below the top wall 13 and in spaced relation to it and to the back and side walls is an oven 14. It will be understood that this oven comprises a pair of side walls 15, a rear wall 16, a bottom wall 17 and a top wall 18. At the front the oven is closed by means of a door 19.

The top wall 13 constitutes a cooking top heating surface in which are mounted a plurality of spaced surface heating units 20. The surface heating units 20 are mounted in openings 21 provided for them in that part of the top wall 13 that is located to the left of the oven, as viewed in Fig. 1. As shown, each of these surface heating units comprises a plurality of sheathed electrical heating elements 23 and 24 (Fig. 5), the element 23 being of substantially spiral shape, while the element 24 has a curved shape and surrounds the spiral element 23. These two elements are mounted in a grid 25 which in turn is mounted in a ring 26. This ring 26 at its top has an outwardly extending flange 27 which engages the top surface around the opening 21 in order to support the heating element in its cooking position. It will be understood that the heating unit may be elevated merely by lifting the ring 27 from the top wall 13.

Located below each heating element is a suitable funnel-like reflector member 28. This reflector at its upper edge is provided with an outwardly extending flange 29 which rests upon a flange 30 which extends inwardly from a downwardly extending ring section 31 formed from the top wall 13, as clearly shown in Fig. 2. The reflector 28 has in the center of its bottom an opening 32. And the reflector 28 may be removed from the opening 21 merely by moving it upwardly from the flange 30 after the heating unit has been elevated.

While the heating units just described, including the heating elements 23 and 24 and their reflector 28, actually are the surface heating units of the range, one of them also functions as an integral part of the oven venting structure, as arranged in accordance with this invention.

This venting structure further comprises a box-like rectangular vent tube 33 attached to the rear wall 12 of the oven frame in any suitable way, as by welding. This box-like structure extends laterally from a point at the rear of the oven out under the cooking top surface to a point under the section which supports the surface unit heating elements. The section of this vent tube back of the oven is in communication with the upper left-hand corner of the oven, as shown in Fig. 2, by means of a circular tube 34 which is rigidly attached to the rear wall 16 of the oven and which projects through an opening 35 provided for it in the tube 33.

At its other end, the vent tube 33 has attached thereto a second box-like vent tube 36 which is positioned at right angles to the longitudinal dimension of the tube 33 and which is in communication with this tube at the bottom thereof through a rectangular opening 37 formed in the tube. The bottom wall of the section 36 is provided with a rear extension 38 which is welded to the bottom of the section 33, and its top wall is provided with an upwardly extending flange 39 which is welded to the section 33.

In addition, the tube structure comprises another box-like section 40 which constitutes an extension of the section 33, as shown in Fig. 3. The side walls 41 of the section 40 are provided with depressed arcuate sections 42 which are arranged to be inserted in complementary arcuate sections 43 provided for them in the ends of the side walls of the vent section 36 so as to detachably fasten the two parts together. In order to further detachably secure the parts, the section 36 is provided at its sides with a pair of upright spring clips 44 which receive the two flat end sections 45 of the two side walls 41 of the tube section 40, as shown more clearly in Figs. 2 and 3—the arcuate sections 42 in the side walls 41 being spaced from the ends of these walls a sufficient distance to provide the flat sections 45. It will be further understood that when the section 40 is fitted to the section 36, as shown in Fig. 3, the top wall 46 of the section 40 rests upon the top wall 47 of the section 36, so as to prevent the section 40 from moving downwardly with reference to the section 36. It will be observed in view of the foregoing that while the section 40 is prevented from dropping downwardly it may be separated from the section 36 by moving it vertically from the section.

The vent section 40, while it is closed at the sides and at the front, is open at the bottom for the purpose of draining spillage and condensate, as will be pointed out in greater detail hereinafter.

Also in the top wall 46 of section 40 is a circular opening 48 which constitutes a vapor discharge opening from the vent system. Mounted on this top wall is a riser tube 49 which has its lower end fitted in the opening 48 and which section is rigidly secured to the top wall 46. It may be secured to the top wall by means of a plurality of tabs 50 which extend under the lower surface of the wall and to which surface they are secured in any suitable way, as by welding. This tube extends upwardly so that its upper

end is directly under the opening 32 provided in the reflector 28.

Positioned under the surface units 20 is a drip pan 51 mounted upon suitable supports 52. This drip pan functions to collect spillage from the surface units; the pan may be removed for cleaning through a front opening 53 normally closed by a door 53a.

In the operation of the oven, it will be understood that the vapors from the oven will discharge through the tube 34 and will flow through the vent section 33 and into the vent sections 36 and 40. The vapors will rise through the riser section 49 and through the reflector pan 28 which members act as a chimney in order to cause the hot gases to flow upwardly through the grille at the top formed by the heating elements 23 and 24. The vapors which condense upon the walls of the riser section 49 and the reflector 28 gravitate down these walls and drop through the open bottom of the vent section 40 onto the drip pan 51. If during the oven operation the grille formed by the heating elements 23 and 24 be deenergized, then some of the greases and moisture may condense upon the grille. However, the heater elements may be energized at any time which will cleanse any deposits—the grille when energized vaporizing the moisture and burning off the grease. If, of course, the grille be energized at the time that the oven is operating then the moisture and grease cannot deposit upon the hot surfaces, but will be vaporized and burned before they can deposit on the grille.

Spillage from surface unit cooking drains through the opening 32 in the reflector 28, through the riser section 49, and thence through the tube section 40 to the drip pan 51.

It will be understood that the various surface heaters, as well as the oven heaters (not shown) will be provided with any suitable energy controlling means, such as the switches 54 of switch bank 55.

It will be observed that an essential part of the range—the heating element—functions to completely conceal the vent structure so that it cannot be seen from outside of the range.

It will be understood that if it be desired to remove the funnel-like reflector 28 and the riser tube 49 for cleaning, it is merely necessary to elevate the heating unit 20, lift out the reflector 28 and then vertically slide the section 40 from the section 36, the complementary parts 42 and 43 of the sections 40 and 36 respectively providing for this upward sliding motion of the riser tube 49. To reassemble, the riser tube section 49 first will be replaced, and this may be accomplished by inserting it through the opening 21 and sliding the recesses 42 into their seats 43. Then the reflector 28 may be placed upon its supporting flange 30, and finally the heating unit 20 lowered to its cooking position on the top wall 13.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made, and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a range having an oven and a cooking top surface at one side of the oven, vent structure for said oven comprising, a fixed substantially horizontal tube supported in position un-

der said top surface and independently thereof and in communication with said oven and extending laterally therefrom, a second substantially horizontal tube normally supported by and in communication with said first tube, the walls of the two tubes having complementary inter-fitting vertical guide sections which are adapted to be moved into registry with each other by moving said second tube downwardly relative to the first and when thus moved into registry interlock the sections to secure the two tubes together, and said sections being adapted to be moved out of registry to release the second tube when the latter is moved vertically upwardly from the first, and a vent riser tube fixed to said second tube and rising upwardly therefrom toward said cooking top surface, and said cooking top surface having a vent opening therein over the upper end of said riser tube having a size sufficiently large to provide for the withdrawal and reinsertion of the riser tube and said second tube as a unit therethrough.

2. In a range provided with an oven and a cooking top surface, said top surface having therein an opening for a surface heating unit, and a heating unit in said top surface opening shaped to define a grille substantially filling said top surface opening, means mounting said unit in said top surface opening so that it may be lifted to uncover said top surface opening, a vent conduit system for said oven including a substantially horizontal fixed first tube section supported in position under said top surface and independently thereof and in communication with said oven, a second substantially horizontal tube section normally carried by said first section, detachable securing means attaching said second section to said first section so that the second section is removable from the first by a vertical motion imparted to the second including complementary vertical arcuate shaped parts in said first and second tube sections respectively and which interfit to secure said sections together, but which permit said second section to be moved vertically away from the first to release them,

a substantially vertical riser tube fixed to said second section extending upwardly toward said top surface opening but having its upper discharge end spaced below said top surface opening, said top surface opening being sufficiently large to permit said riser tube and said second section attached to it to be lifted therethrough as a unitary structure, a funnel-like discharge member normally supported by said top surface in said top surface opening and filling the space between said upper discharge end and said top surface opening and having a lower opening in communication with said upper discharge end and of substantially the same size as said discharge end, and said funnel flaring outwardly and upwardly and terminating in an upper opening having substantially the same size as said top surface opening and communicating with it, whereby oven gases venting from said riser tube spread out and are distributed over substantially the entire area of said heating unit, and means detachably mounting said funnel-like member so that it may be removed upwardly through said top surface opening to provide for the removal of the assembly of said riser tube and said second section therethrough.

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