

March 21, 1950

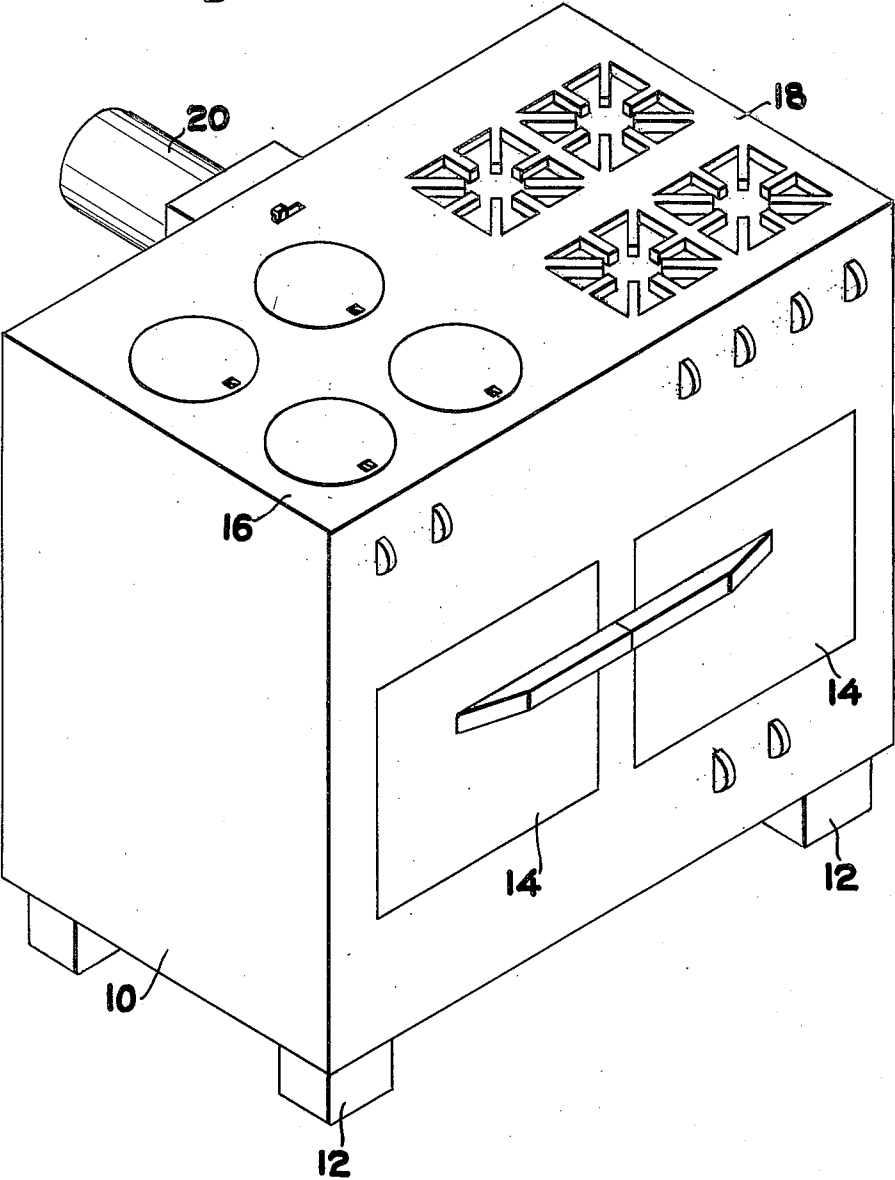
L. J. HAINES
COMBINATION RANGE

2,500,943

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2 Sheets-Sheet 1

Fig. 1



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2 Sheets-Sheet 2

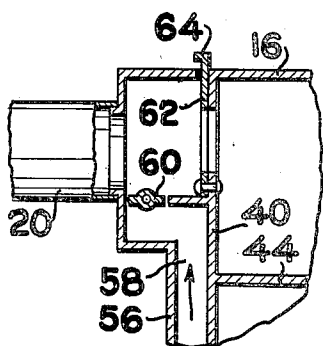


Fig. 3

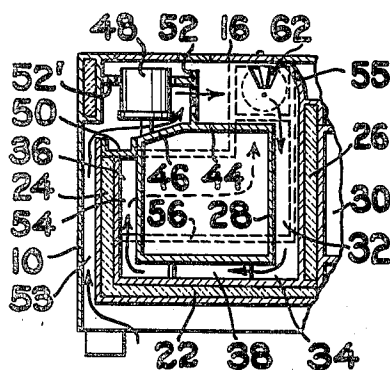


Fig. 4

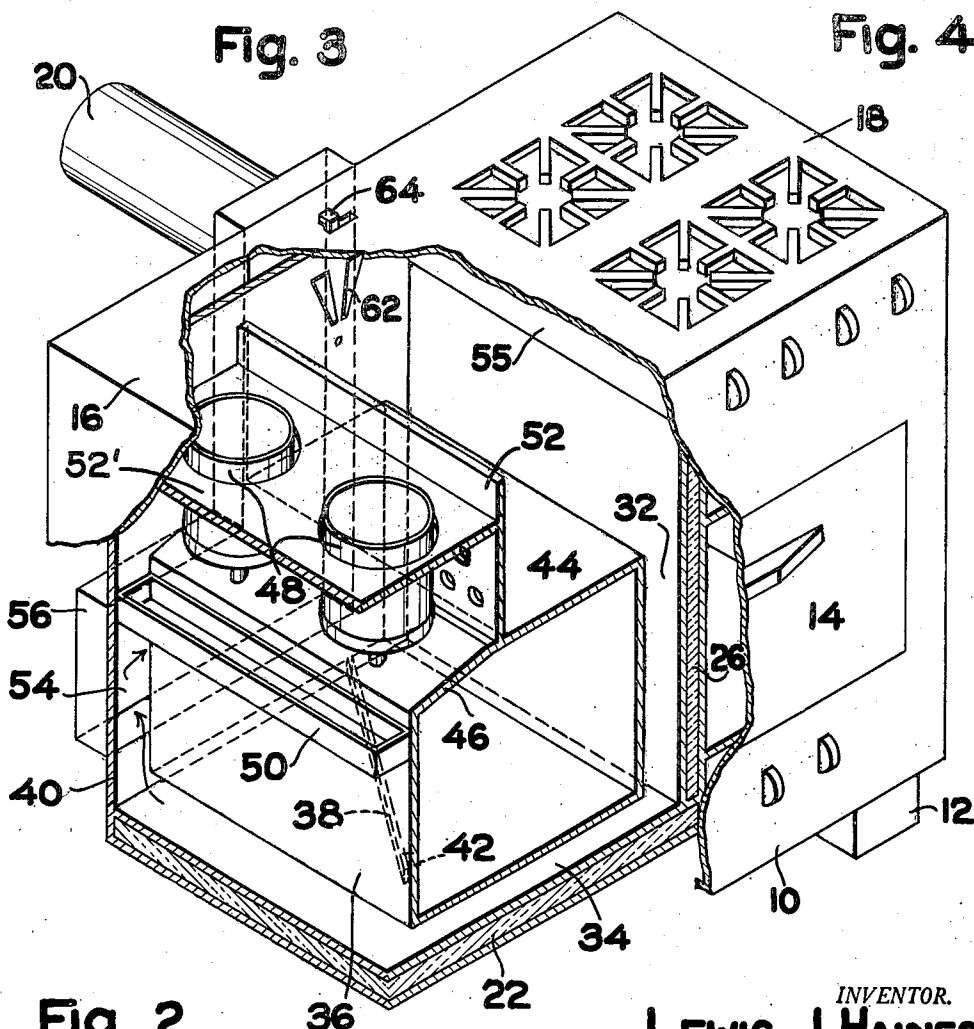


Fig. 2

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UNITED STATES PATENT OFFICE

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COMBINATION RANGE

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2 Claims. (Cl. 126-44)

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This invention relates to combination ranges in which maximum compactness, ease of operation, and efficiency are obtained by novel oven construction and novel positioning of a burner or burners in which the latter are located high enough, i. e., close enough to the cooking top of the range, to provide for efficiency in top cooking and at the same time, the construction is such that the burner or burners provide continuous heat substantially completely enveloping the oven at the top, the bottom, the sides, and at the back, so as to provide an oven and burner in which the maximum oven heat of approximately 510° is obtainable within a short period of time and is maintained as long as the fuel is burning; and including the provision of a combination range in which the fuel gases are not wasted as in the conventional range, the novel construction providing a passage around the oven as above stated and in which said gases are utilized for maintaining a constant temperature in a companion oven ordinarily heated by a different fuel such as gas or electricity, for the purpose of warming; and by the provision of an inclined corner support for the burner or burners for maximum efficiency in top cooking and oven heat, allowing the oven itself to be high enough from the floor so that baking processes can be observed without bending or stooping to too great a degree and so that neither oven baking nor top cooking is interfered with; and the provision of a passage for the fuel gases as above stated and including a perforated baffle plate on the top of the oven adjacent the burners.

Further objects of the invention include the provision of a combination range embodying an oilburner or burners and another unit using a different fuel and including a continuous passage for the fuel gases from the oilburners completely around and at the rear of the oilburning oven and embodying a pair of dampers, one located adjacent the oilburners for starting or directing the heat directly into the flue without heating the oven; and the other damper located adjacent the flue at the termination of the passage for the fuel gases after they have passed around the oven for the purpose of retarding or increasing the velocity of flow of the fuel gases.

Still further objects of the invention include the provision of an inclined and preferably curved baffle plate directing the fuel gases into the passage above stated, and a positioned baffle plate in the passage and located under the oven to more evenly distribute the heat and to retard the flow of the fuel gases.

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A still further object of the invention lies in the provision of a sump under the oilburner located adjacent the inclined corner over which the burners are located so that possible fuel overflow from the burners must run down into the sump, the latter being sealed to prevent leakage therefrom and providing a safety feature.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a perspective view of the combination range embodying the present invention and illustrating the compactness thereof;

Fig. 2 is a view similar to Fig. 1 but cut away to illustrate the construction thereof;

Fig. 3 is a section thru the rear of the stove showing the two dampers; and

Fig. 4 is a vertical section on a reduced scale thru the oilburning part of the range.

In domestic use of a range, it is important that the oven be located at a certain distance from the floor so that the contents of the oven may be observed without inconvenient bending or stooping, but at the same time, it is also important that the burners be located within a certain specified distance from the top cooking plate so as to provide for efficient top cooking. Conventional construction makes it necessary to set the burners so low that either oven baking or top cooking is seriously interfered with and the efficiency is impaired. Also, oilburning ranges of the prior art are generally constructed so as to allow the hazard of overflow of fuel which runs down to the floor or saturates the insulation material and thus creates a fire hazard.

This invention overcomes the difficulties mentioned and at the same time increases the efficiency of a combination range to a marked degree. As shown in Fig. 1, the combination range of the present invention embodies an outside casing 10 which may be mounted on legs or similar supports 12 so that the casing is somewhat elevated from the floor. There are a pair of oven doors 14 and a pair of ovens, one of which is directly associated with the top cooking member 16 and the other of which is located beneath the top cooking section 18. The section at 16 is to be heated for example as by oil, and the section 18 may be heated by gas, electricity, or any desired fuel. A flue pipe 20 may lead into a chimney.

As shown in Figs. 2 and 4, the range is provided with an interior bottom element 22 which is insulated as shown and which extends upwardly at 24 in a manner spaced from a side wall

of the housing 10 (see Fig. 4). This insulation also extends upwardly as at 26 and provides insulation between an oven 28 opened by the left-hand door 14 and another oven 30 which is opened by the right-hand door. Oven 28 is arranged in spaced relation from the insulation 22, 24, and 26 forming a continuous passage around the oven as indicated at 32, 34, and 36. A diagonally arranged baffle plate 38 extends from the rear plate 40 to a point spaced from the front of the oven and terminating at 42 (see Fig. 2). The oven 28 is provided with a top member 44 spaced from the top cooking plate 16 to form a chamber and provided with an inclined corner at 46.

In the illustration, there are shown a pair of oilburners 48 which may be of conventional type and are adapted to be mounted over the inclined corner 46, thus providing that the oilburners may be mounted close to the oven and with a certain close spacing from the top plate 16 so that the top plate is efficiently heated and also providing sufficient spacing for accommodation of these burners. The inclined corner 46 provides an apron and any fuel overflowing will pass down the apron into an open topped container 50 which acts as a sump and catches and holds the overflow of oil, if present. This sump rests on the insulation construction 24 and is secured to the oven and to the rear plate body as shown in Fig. 2 so that the escape of the overflow is not possible unless a drain pipe is provided.

A perforated plate 52 is located in a vertical position to the right of the oilburners and provides a compartment to assist in retaining much of the heat, while at the same time providing a passage for gases issuing from the fuel burners. A solid horizontal plate 52¹ is supported by plate 52 and is located just below the tops of the burners 48 and in spaced relation thereto. Plates 52 and 52¹ retard the passage of cold air until sufficiently heated. Cold air rises from the bottom of the range up a passage 53 to plate 52 and the hot gases will pass in the direction of the arrows in Fig. 4 through the perforated plate across the top of the oven, to be deflected by a curved baffle 55 down the right hand side thereof, and under the bottom to be deflected by the baffle 38 which crowds the gases toward the front of the oven where the door is located. From this point the gases rise in passage 36 but are vertically stopped by the sump as clearly shown in Fig. 4.

At the rear of the stove, the back plate 40 is interrupted to form an opening as at 54 and a box or the like 56 is provided which continues the fuel gas passage across the back of the oven horizontally and draws the gases upwardly (see dotted arrow in Fig. 4) toward a passage 58, shown in Fig. 3, formed by a vertical extension of the box 56. This passage leads to the flue 20 for final escape of the gases into the chimney, but a damper 60 is provided which may be operated by any kind of handle desired to open or close passage 58 for the purpose of varying the speed at which the fuel gases may escape into the flue so that these gases are controlled. By substantially closing this flue, the heat from the gases will be almost completely transferred to the oven prior to escape into the flue 20. A second damper 62 which may be operated by a handle 64 is provided in the rear wall of the oven so that if desired, the fuel gases may escape directly to the flue without passing around the oven in cases where it is desired not to heat the oven and also for ease in starting the burners.

It will be seen that this invention comprises a construction in which the oven is quickly and evenly heated and in which the heat is maintained therein due to the fact that the fuel gases pass completely around the oven on all sides except the front where the door is located, the interior of the oven of course being sealed off from the passage 32, 34, and 36 so that the oven is quickly heated to baking temperature in an efficient manner and at the same time top cooking is efficiently accomplished because of the high position of the burners in the range. Also, all fire hazards are fully prevented.

The oven 30 may be heated by any desired fuel and in so doing, the heat from oven 30 will leak thru insulation 26 to passage 32 and thence into oven 28. It is assumed that the heat in oven 30 will be slightly hotter than the heat in passage 32 so that if the oven 30 is being used, the heat therefrom must pass thru the additional space 32 prior to entry into oven 28. On the other hand, heat from the passage 32 must pass only thru insulation 26 to warm oven 30. This part of the construction may be arranged to provide, for instance, a heat of 100° Fahrenheit in the oven not being used so that regardless of which oven is used for warming purposes, the temperature will be the same.

The above described invention provides a new accomplishment in two-oven ranges, by controlling the heat in the oven not being directly heated, for warming, preheating and drying purposes. The direct higher temperature in the gas or electric oven makes it possible to transmit the correct amount of heat and no more, to the oilburner oven by locating the passage 32 and the insulation 26 as above described. This construction is equally important in dual oven ranges, for oil, gas, or electricity. The damper 60 makes it possible to maintain maximum oven temperature without draft fluctuations and loss of heat, and due to the construction of the passages and the flue gases, maximum top cooking and oven temperatures are made possible.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. A range comprising a top, bottom, sides and rear, means forming a top cooking surface above the oven top and in spaced relation thereto forming a chamber therebetween, heating means disposed in the chamber for heating the oven and said top cooking surface, insulated wall members parallel to and spaced horizontally from the oven sides and an insulated bottom member parallel to and vertically downwardly spaced from the oven bottom, said insulated members being in effect continuous and forming a U-shaped continuous passage about the sides and bottom of the oven, one end of the passage at one side communicating with the heating chamber and means terminating the passage adjacent the chamber at the end thereof at the other side of the oven, means forming a closed passage across the entire back of the oven and communicating with the U-shaped passage adjacent the passage terminating means, a damper for the closed back passage leading to the flue, a panel extending from the means forming the top cooking surface vertically downward, said panel forming an exterior casing part for the range and being parallel to but horizontally spaced from the next adjacent side wall insulated member, the latter and the panel together forming a vertical cool air inlet passage.

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from the bottom of the oven, and means forming an air passage over the top end of the said next adjacent side wall insulated member from the air inlet passage to the heating chamber, the said heating means being located at the end of said chamber adjacent said passage forming means and remote from the said one end of the U-shaped passage, so that hot gases from the heating means that pass over the oven, down around the same, back up adjacent the heating means and across the back of the oven, are insulated from the cool incoming air.

2. A range comprising a top, bottom, sides and rear, means forming a top cooking surface above the oven top and in spaced relation thereto forming a chamber therebetween, heating means disposed in the chamber for heating the oven and said top cooking surface, insulated wall members parallel to and spaced horizontally from the oven sides and an insulated bottom member parallel to and vertically downwardly spaced from the oven bottom, said insulated members being in effect continuous and forming a U-shaped continuous passage about the sides and bottom of the oven, one end of the passage at one side communicating with the heating chamber and means terminating the passage adjacent the chamber at the end thereof at the other side of the oven, means forming a closed passage across the entire back of the oven and communicating with the U-shaped passage adjacent the passage terminating means, a damper for the closed back passage leading to the flue, a panel extending from the means forming the top cooking surface vertically downward, said panel forming an exterior casing part for the range and being parallel to but horizontally spaced from the next adjacent side wall insulated member, the latter and the panel together forming a vertical cool air inlet passage from the bottom of the oven, and means forming an air passage over the top end of the said next adjacent side wall insulated member from the air inlet passage to the heating chamber,

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the said heating means being located at the end of said chamber adjacent said passage forming means and remote from the said one end of the U-shaped passage, so that hot gases from the heating means that pass over the oven, down around the same, back up adjacent the heating means, and across the back of the oven, are insulated from the cool incoming air, the oven top having a downwardly inclined corner, the heating means being located thereon to reduce requisite height of the heating chamber, and a perforated plate at the side of the heating means opposite the cool air passage to allow slow passage of the hot gases through the U-shaped passage, the perforations insuring even flow of the hot gases through the plate for even heating thereby of the top of the oven.

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