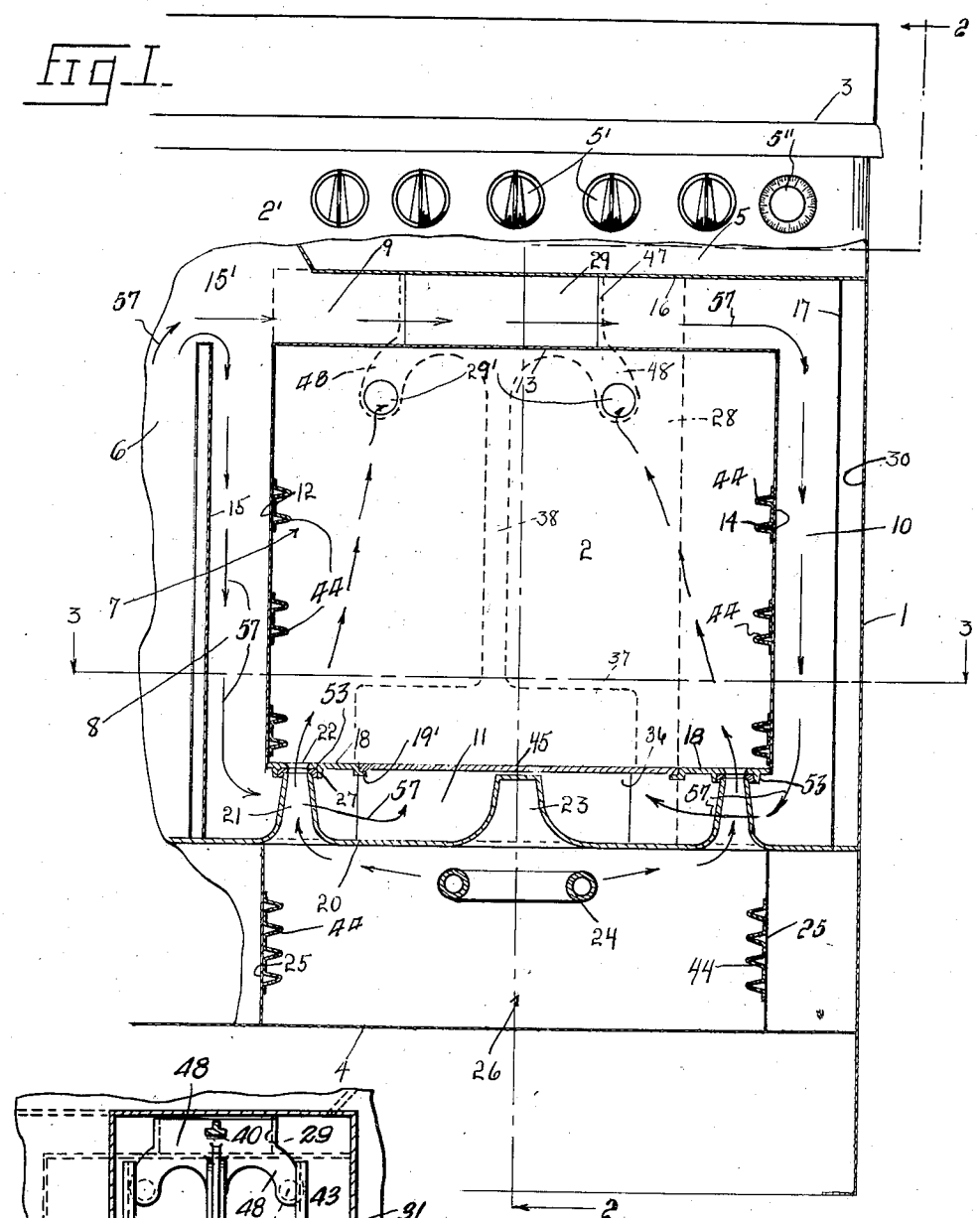
Oct. 6, 1942. J. C. BROOME 2,298,103

COMBINATION RANGE

Filed Dec. 19, 1940 3 Sheets-Sheet 1

Fig. I.



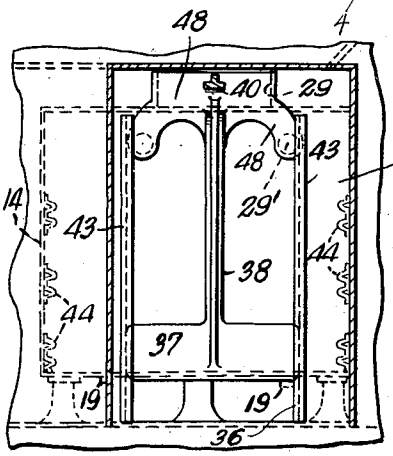


Fig. V.

John le Broome

INVENTOR.

BY X. T. Fauvell

ATTORNEY.

Oct. 6, 1942. J. C. BROOME 2,298,103

COMBINATION RANGE

Filed Dec. 19, 1940 3 Sheets-Sheet 2

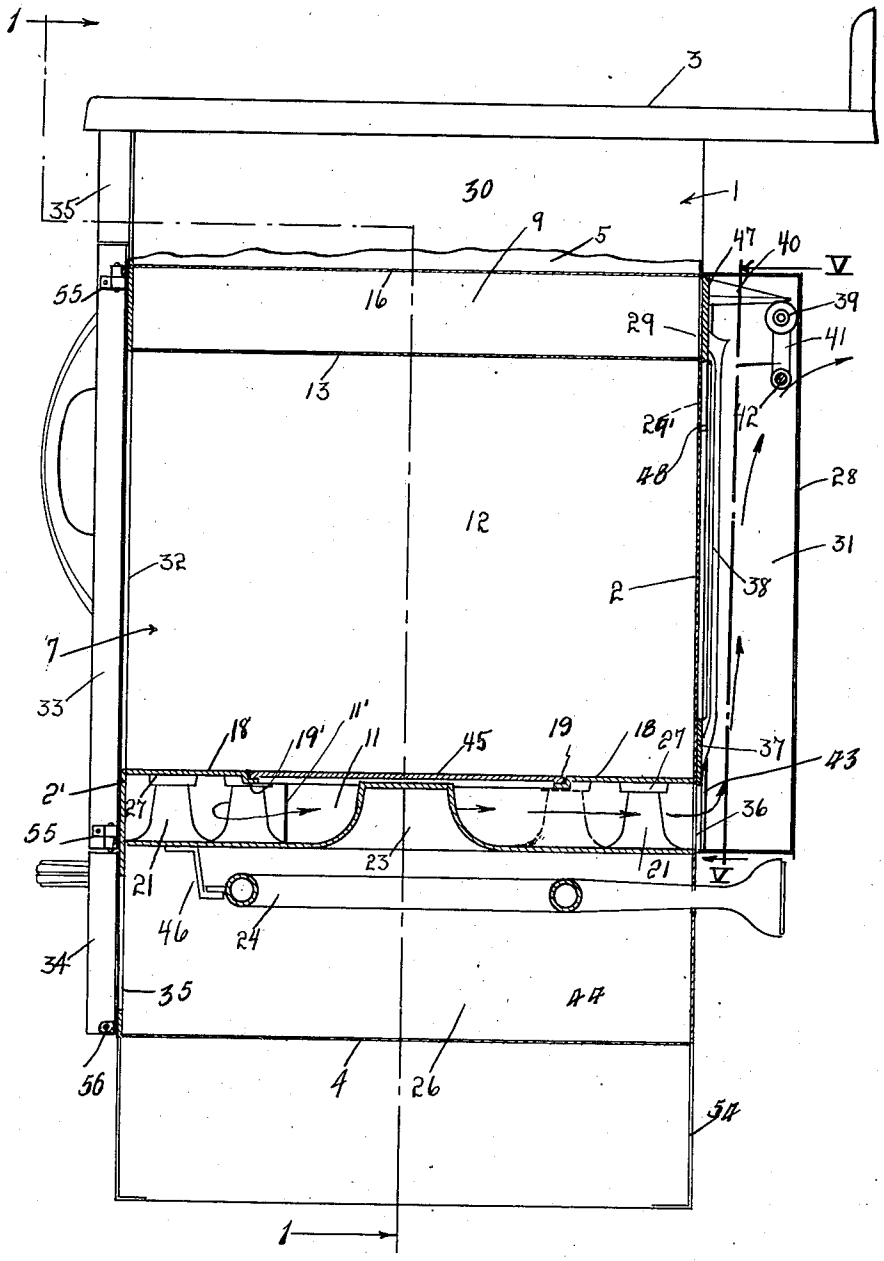


FIG. II.

John C. Broome

INVENTOR.

BY

ATTORNEY.

Oct. 6, 1942. J. C. BROOME 2,298,103

COMBINATION RANGE

Filed Dec. 19, 1940 3 Sheets-Sheet 3

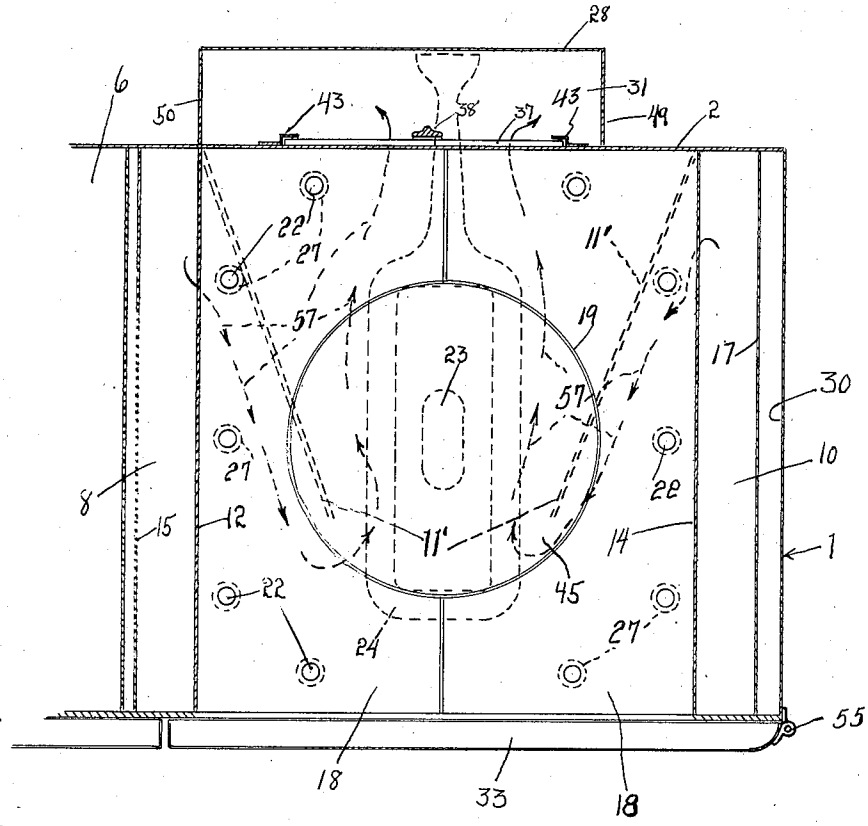


FIG. III.

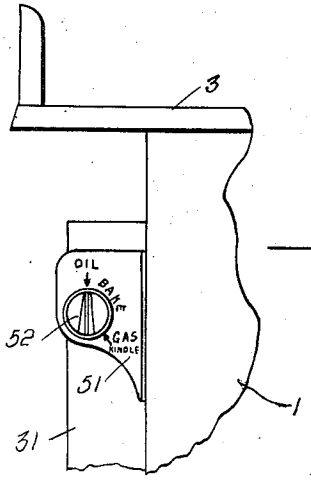


FIG. IV.

John C. Broome

INVENTOR.

BY L. F. Randolph

ATTORNEY.

Patented Oct. 6, 1942 2,298,103

UNITED STATES PATENT OFFICE

2,298,103

COMBINATION RANGE

John C. Broome, Columbia, Pa., assignor to The Keeley Stove Company, Columbia, Pa., a corporation

Application December 19, 1940, Serial No. 370,866

4 Claims. (Cl. 126—39)

This invention relates to a dual or combination range and more particularly to an improved construction of range having two independent heating means which may be used for heating the oven thereof and which may be employed without the use of a baffle plate, thus simplifying changing over from one form of heating means to another, and also permitting simultaneous use of both of the forms of heating means.

More particularly, it is an aim of the invention to provide an improved combination range having a compartment containing a fire box adapted to be heated by and contain either an oil burner or suitable means for containing a coal fire, the other compartment of the range being provided with an oven having flues extending around the oven and connecting with the fire box, and a broiler, disposed beneath the oven and provided with a gas burner and having passages communicating with the oven so that the products of combustion can pass through the oven to permit heating of the oven either by the products of combustion from the fire box or from the gas burner.

Still another aim of the invention is to provide improved damper means for closing or exposing openings to permit the products of combustion from the fire box to pass directly from the range, above the oven, or indirectly from the range, below the oven and after having been directed around the oven for heating the same, and for controlling flue openings through which the heated products of combustion from the gas burner, disposed within the broiler, are exhausted from the oven.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, which illustrate a preferred embodiment thereof, and wherein:

Figure I is a view partly in front elevation and partly in section taken substantially along the plane of the line 1—1 of Figure II,

Figure II is a side elevational view partly in vertical section taken substantially along the plane of the line 2—2 of Figure I,

Figure III is a horizontal sectional view taken substantially along the plane of the line 3—3 of Figure I,

Figure IV is a fragmentary side elevational view of a portion of one end of the range, and

Figure V is a vertical sectional view taken substantially along the plane of the line V—V of Figure II.

Referring more particularly to the drawings, wherein like reference characters designate like or corresponding parts throughout the different views, 1 designates generally the combination or dual range which includes a rear wall 2, top 3 and bottom 4 and which is provided adjacent its top 3 with a gas burner compartment 5, at one end thereof, having a plurality of gas burners, not shown, controlled by the valves or controls 5'. The range 1, at the end opposite to the end thereof which is provided with the gas burner compartment 5, is provided with a compartment 6 forming a fire box in which may be either mounted an oil burner, not shown, or grates, not shown, for a coal fire.

Beneath the gas burner compartment 5, the range 1 is provided with a steel oven 7 having side walls 12 and 14, and a top wall 13. The fire box 6 is separated from the space containing the oven 7 by means of the inner side wall 15 of the fire box 6 which is spaced from the adjacent wall 12 of the oven 7 and which terminates at its top at substantially the level of the top wall 13 of the oven 7 to provide a space 15' between the upper edge of the wall 15 and the top 3 of the range 1, for a purpose which will hereinafter be described. The wall 15 and the wall 12 combine to form a diving flue 8. The gas burner compartment 5 is provided with a bottom wall 16 which combines with the top 13 to form a space 9 above the oven 7. The range 1 is provided with an end wall 30, disposed adjacent the oven 7 and with an inner wall 17, arranged between the wall 30 and the oven wall 14, which combines with said wall 14 to form a diving flue 10, which is disposed on the side of the oven 7 opposite to the flue 8. The front wall 2' of the range 1 and its rear wall 2, also form the front and rear walls, respectively, of the oven 7.

The range 1 is provided with a broiler 26, disposed beneath the oven 7, the rear and front walls of which are formed by the walls 2 and 2', respectively. Broiler 26 is provided with side walls 25 and a top wall formed by the horizontal, sub-bottom 20 of the range 1 which forms a support for the walls 15 and 17. A portion of the sub-bottom 20 is disposed beneath and spaced from the bottom of the oven 7 to form therebetween a space forming the bottom flue 11 which communicates with the lower ends of the diving flues 8 and 10. The bottom of the oven 7 is formed by a pair of sections 18 which combine to form a central clean out opening 19 which is provided with a downwardly offset inwardly projecting flange 19' forming a seat for supporting a clean out plate 45 to removably mount it there-

on for closing the opening 19 and which when in place forms the central portion of the bottom of the oven 7.

The sections 18 are each provided with a plurality of ports or openings 22 which are surrounded by annular flanges 27 which depend from the sections 18 for receiving the upper, restricted ends of conical tubes or passages 21, which are formed integral with the sub-bottom 20 and which open at their lower ends into the broiler 26. The spaces between the upper, open free ends of the tubes 21 and the flanges 27 are closed and sealed by means of stove putty, as indicated by the reference numeral 53. The sub-bottom 20 is also provided with a conical shaped upset recessed portion 23 which is centrally disposed beneath the oven 7 and which terminates just beneath the plate 45.

A gas burner 24, for supplying heat to the broiler 26, is disposed therein beneath and adjacent to the sub-bottom 20. The burner 24 extends through the rear wall 2 and is supported at one end thereby and is supported at its opposite, forward end by means of a bracket 46 which is attached to and depends from the sub-bottom 20.

The range 1 is provided with a smoke box 31 attached to and disposed on the outer side of the rear wall 2 behind, above and below the oven 7 and which includes a rear wall 28 which is spaced from the wall 2. Wall 2 is provided with an opening 29 connecting the smoke box 31 to the flue 9, an opening 36 connecting the smoke box 31 and flue 11 and two spaced openings 29' connecting the smoke box and the oven 7. A pair of shields 11' is disposed between the bottom sections 18 and the sub-bottom 20, said shields extending from the rear wall 2 forwardly of the flue 11 and terminating in spaced apart relationship to the front wall 2'. The shields 11' converge toward their forward, free ends with the opening 36 between the remote, rear ends of the shields 11', for a purpose which will hereinafter become apparent.

A bar 38, as best seen in Figure V, is mounted on the outer side of the wall 2 and within the smoke box 31 and is connected at its lower end with a damper plate 37 and at its upper end with a damper plate 47. Guide members 43 are secured to the outer side of the wall 2 and arranged in pairs for engaging the ends of the plate 37 and the outer edges of extensions 48 for slidably mounting the bar 38 and plates 37 and 47 for perpendicular movement relatively to the range 1. The upper plate 47 is provided adjacent its ends, with the downwardly and outwardly curved extensions 48 for closing the flue openings 29'. When the plates 37 and 47 are in a raised position, as seen in Figure II, the plate 47 closes the opening 29 and the extensions 48 close the openings 29'. When the plates 37 and 47 are moved downwardly to a lowered position, the plate 37 closes the opening 36, which was exposed when said plate was raised, and the plate 47 and its extensions 48 assume a position for exposing the openings 29 and 29'.

A rod or shaft 42 is journaled in the side walls 49 and 50 of the smoke box 31 and has one end thereof, not shown, extending through and journaled in an indicating plate 51, seen in Figure IV, which end is provided with a handle or knob 52 which is keyed thereto for turning the shaft 42. An arm or lever 41 is keyed to and projects from the shaft 42, within the smoke box 31 and is provided with a roller 39 at its free end which is rotatably mounted thereon and which is adapted to engage under a shoulder or extension 40 which is likewise disposed within the smoke box 31 and which projects from the plate 47. The indicator plate 51 is provided with an arrow pointing toward the handle 52 and designated by the word "Oil" and with a second arrow, spaced from the aforementioned arrow and likewise pointing toward the handle 52 and which is designated by the word "Gas." Between the aforementioned arrows, the word "Bake" is inscribed on the plate 51.

The front wall 2' of the range 1 is provided with an opening 32 communicating with the oven 7 and which is adapted to be closed by a door 33 which is vertically hinged by means of the hinges 55. An opening 35 is also formed in the wall 2' and which communicates with the broiler 26 and which is adapted to be closed by means of a door 34 which is horizontally hinged at its bottom by means of the hinges 56. The side walls of the oven and broiler are provided with the inwardly projecting guides 44 for removably and slidably mounting oven and broiler racks, not shown.

The range 1 is supported by depending legs 54. The burner 24 is provided with a valve operator or knob 5'' disposed at the front of the compartment 5 and adjacent to the operators 5'.

Assuming that there is a fire within the fire box 6, produced by either a coal fire therein or by an oil burner, and assuming that it is desired to heat the oven 7 by means of the heat from the fire box 6, the handle 52 is turned to the position, as seen in Figure IV, so that it will be pointing toward the arrow marked "Oil" and so that the arm 41 will be disposed in the position, as seen in Figure II, to cause the damper 38 to be held in a raised position to expose the opening 36 and to close the openings 29 and 29'. The heated products of combustion, as indicated by the arrows 57, as seen in Figures I and III, will pass from the fire box 6 through the passage 15' where they will divide with a portion thereof passing downwardly through the flue 8 and the remainder thereof passing horizontally through the flue 9 and then downwardly through the flue 10. The products of combustion will enter the flue 11 from the lower ends of the flues 8 and 10 and will be directed by the deflector shields 11' toward the front of the range 1 to heat the bottom of the oven 7, tubes 21 and the upset recessed portion 23. The heated products of combustion will flow around the forward, free ends of the shields 11', as illustrated in Figure III, and rearwardly therebetween and through the opening 36 into the smoke box 31 from whence they will be exhausted through a smoke stack, not shown. It will thus be obvious that the top, bottom and sides of the oven 7 will be heated exteriorly by the heated products of combustion from the fire box 6 for heating the interior of the oven and that the products of combustion will be directed around the oven by a circuitous route to obtain the maximum of heat radiation therefrom to the interior of the oven. At the same time, the oven 7 is effectively sealed from the flues 8, 9, 10 and 11 so that none of the products of combustion from the fire box 6 will enter the interior of the oven 7.

In order to bake more rapidly in the oven 7 or for the purpose of broiling, the burner 24 may be lighted and the flame controlled by the knob 5'' and the handle 52 is then turned in a clockwise direction, as seen in Figure IV, so that it will point toward the arrow marked "Gas." This will

cause the shaft 42 and the lever 41 to be turned in a clockwise direction or in a counterclockwise direction, as seen in Figure II, to swing the lever 41 inwardly and downwardly of the range 1 to permit the damper 38 to slide downwardly so that the plate 37 will close the opening 36 and the plate 47 and extensions 48 will be moved to positions for exposing the openings 29 and 29'. The heated products of combustion from the burner 24 will heat the recess 23, disposed thereabove for heating the lower portion of the center of the oven 7 and the products of combustion will also pass upwardly through the tubes 21 and through the oven 7 from where they will pass through flue openings 29' to the smoke box 31 for supplying heat to both the broiler and oven. The oven 7 may thus be heated by the burner 24 and the coal fire or oil burner in the fire box 6 extinguished or if there is a fire in the fire box 6 the heated products of combustion therefrom will pass from the passage 15' directly into the passage 9 and through the opening 29 into the smoke box 31 for heating the top of the oven 7 to further assist the heating of the interior thereof. It will be obvious that the range 1 provides an oven 7 having greater area that can be used for baking, due to the fact that there are no burners disposed therein making the space saved thereby available to be occupied by the articles to be baked.

Various modifications and changes are contemplated and may obviously be resorted to as only a preferred embodiment of the invention has been disclosed.

I claim as my invention:

1. A combination range comprising an upper gas burner compartment, an oven disposed therebeneath and adjacent one end of the range, a broiler disposed beneath and spaced from the oven and provided with passages communicating with the bottom thereof, a gas burner disposed in said broiler, a fire box at the opposite end of said range, flue means for circulating products of combustion from the fire box around the oven, and damper means for regulating the direction of flow of the products of combustion from the fire box relatively to the oven and for permitting the products of combustion from the gas burner to be directed through said passages and through the oven, the top of said broiler forming a sub-bottom of the oven, said sub-bottom being spaced from the oven bottom, said oven bottom being provided with a clean out opening, a cover plate for closing said opening, and said sub-bottom being provided with a centrally disposed raised portion, terminating adjacent the cover plate and adapted to be heated by the gas burner for heating the central portion of the oven.

2. A combination range comprising an upper gas burner compartment, an oven disposed therebeneath and adjacent one end of the range, a broiler disposed beneath and spaced from the oven and provided with passages communicating with the bottom thereof, a gas burner disposed in said broiler, a fire box at the opposite end of said range, flue means for circulating products of combustion from the fire box around the oven, and damper means for regulating the direction of flow of the products of combustion from the fire box relatively to the oven and for permitting the products of combustion from the gas burner to be directed through said passages and through the oven, the rear wall of the range forming the rear wall of the oven, said rear wall having openings above and below the oven, and said damper means being slidably mounted on the outer side of said rear wall and having portions arranged to alternately close the openings in said rear wall whereby the products of combustion from the fire box may pass directly from the range through the opening above the oven or may be directed around the oven and exhausted through the opening therebeneath.

3. A dual range having compartments at the ends thereof connected by a passage adjacent the top thereof, one of said compartments being provided with a fire box, said other compartment containing an oven and a broiler disposed beneath and spaced from the oven, said oven being provided with connecting flues extending around the top, bottom and sides of the oven and communicating with the passage between the compartments, the rear wall of said last mentioned compartment being provided with openings disposed above and below the oven, damper means for controlling said openings for directing the products of combustion either directly from said last mentioned compartment, above the oven, or indirectly therefrom, below the oven, means for independently heating said broiler, and communicating passages between the broiler and oven for conveying the products of combustion from the broiler to the oven for heating the oven by use of said heating means.

4. A combination range having a partition intermediate of its ends dividing the range into end compartments, said partition terminating below the top of the range to provide a connecting passage between the compartments, one of said compartments forming a fire box, an oven in the other of said compartments, a broiler disposed below and spaced from the oven, the walls of the oven being spaced from the range casing, broiler and partition to form a flue around the oven for passage of products of combustion from the fire box, the rear wall of the range casing having openings above and below the oven forming outlets for the products of combustion, a damper for selectively closing said outlets, passages connecting the oven and broiler, heating means in the broiler, and the rear wall of the oven having openings for releasing the products of combustion of said heating means from the oven, said openings being controlled by said damper.

JOHN C. BROOME.