Aug. 10, 1937. F. H. SCHNEIDER 2,089,816

DUAL RANGE

Filed Feb. 21, 1935 3 Sheets-Sheet 1

Fig. 1.

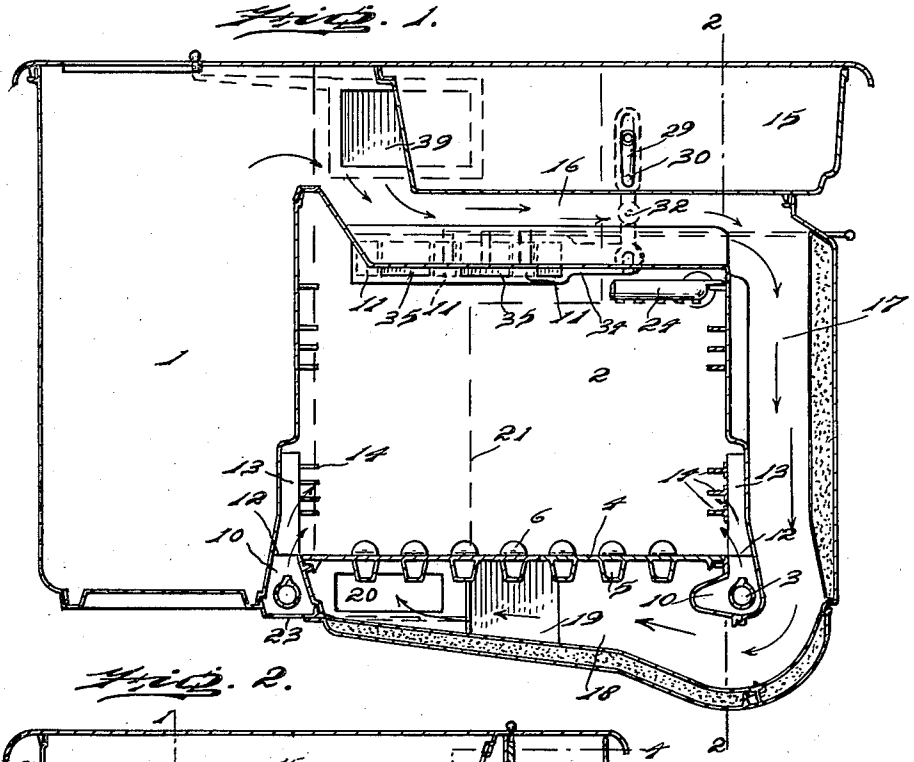
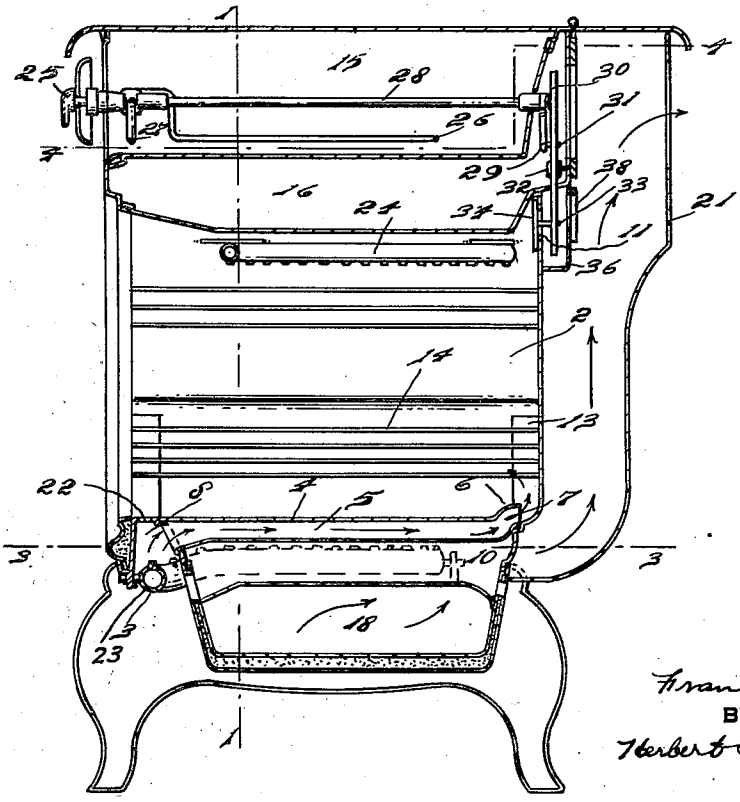


Fig. 2.



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Fig. 3.

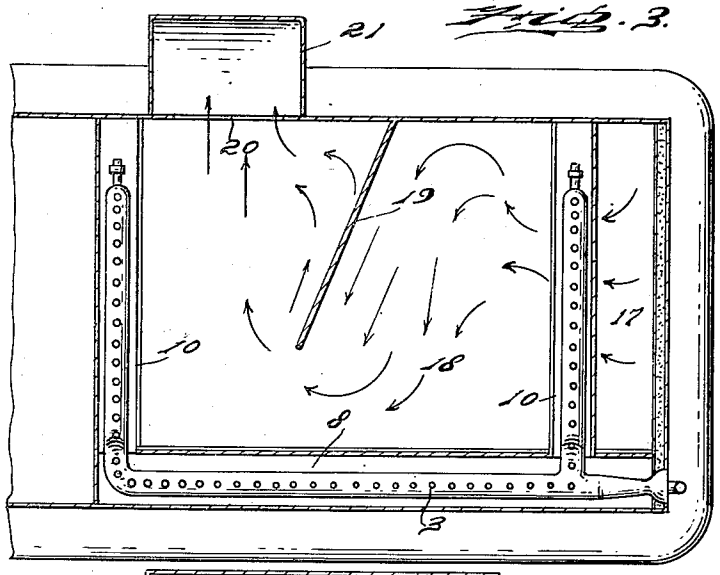


Fig. 4.

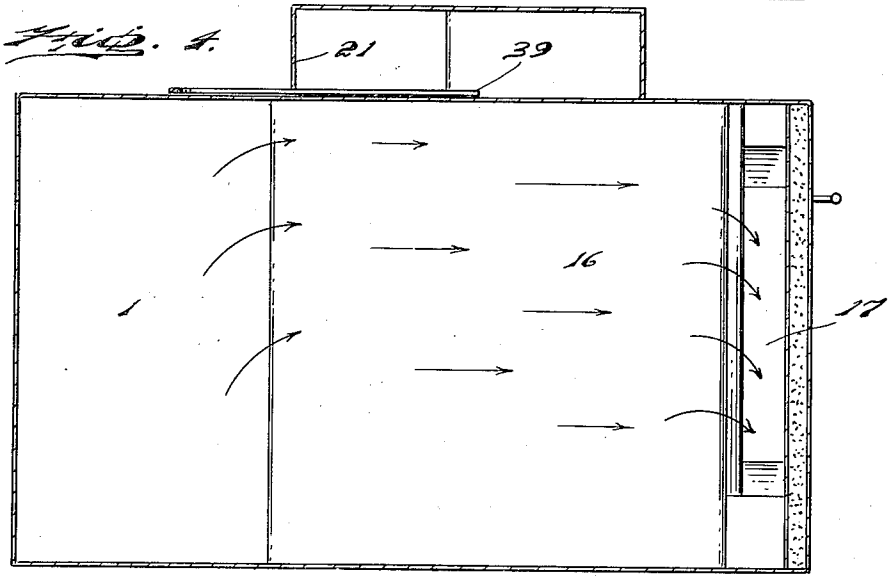
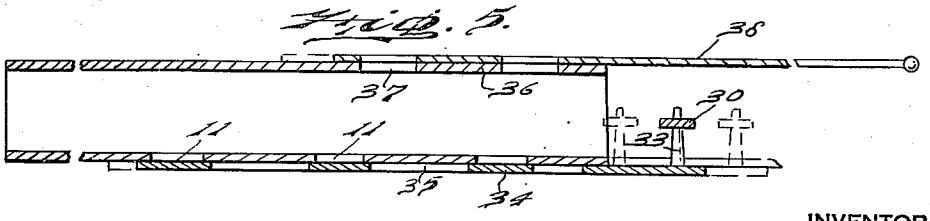


Fig. 5.



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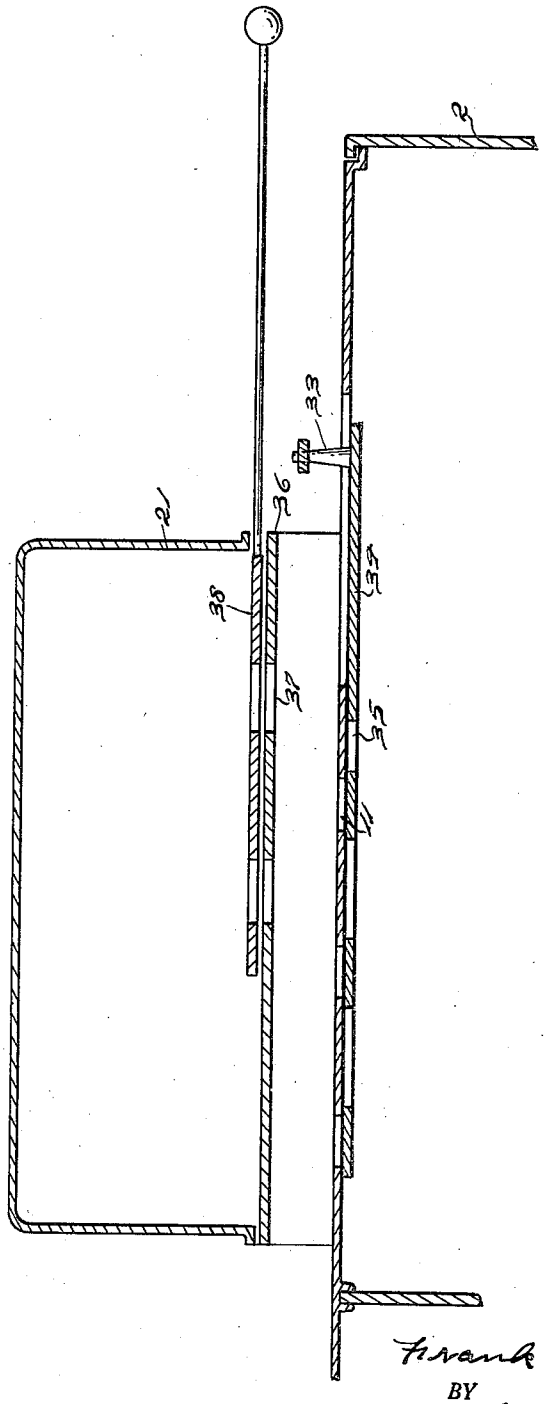


Fig. 6.

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UNITED STATES PATENT OFFICE

2,089,816

DUAL RANGE

Frank H. Schneider, Spring City, Pa., assignor to The Floyd-Wells Company, Royersford, Pa., a corporation of Pennsylvania

Application February 21, 1935, Serial No. 7,465

4 Claims. (Cl. 126—36)

In dual ranges as heretofore manufactured, which employ an oven which can be converted to operate with either coal or gas, the same oven efficiency has not been obtained with the different types of fuels.

A primary object therefore, of this invention is to devise a novel dual range in which substantially the same oven efficiency is obtained with different types of fuel.

The oven can be converted to operate with either coal or gas without the use of baffles. Only one damper is necessary, which can be operated by hand or automatically operated by an attachment from the gas cock.

The oven, when heated with gas, is heated by a burner located at the extreme bottom of the range, and preferably in a channel around the outer edge of the coal flues. This gas burner is preferably U shaped and has its side arms burn upwardly in a channel built integrally with the range and extending across the entire depth of the oven and up into the rear of the range. The bottom of this channel begins at the bottom of the range and ends at the oven bottom level. The front arm of the gas burner supplies heat to the oven bottom through a series of spaced channels preferably running in the same direction as the coal flues from the front bottom of the range to the rear of the oven at which location they open into the oven and are concealed by a baffle sloping over the openings to prevent spillovers lodging in the channels. The side flue gases combine with the front flue gases and pass out a vent opening. The oven is insulated at the right hand side, assuming that the combustion chamber for coal is at the left hand side, since the coal flues pass along the back and bottom of the oven. The construction is such that when operating with coal the air passing through the bottom oven channels is heated to a temperature considerably higher than ever obtained in ovens when heating with coal, and this tends to increase the speed of heating up of the oven, because hot fresh air is passed into the oven, causing a higher bottom oven temperature. The oven is, therefore, not only heated by radiation but also by convection currents of hot fresh air.

If a broiler burner is employed, its operation is fool proof since it is always vented, and there is always an entrainment of secondary air.

With the foregoing and other objects in view, as will hereinafter clearly appear, my invention comprehends a novel dual range.

It further comprehends a novel construction and arrangement of an oven, heating flues, vent openings, and sources of heat.

Other novel features of construction will hereinafter appear in the detailed description and the appended claims.

For the purpose of illustrating the invention, I have shown in the accompanying drawings a typical embodiment of it, which, in practice, will give satisfactory and reliable results. It is, however, to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and my invention is not limited to the exact arrangement and organization of these instrumentalities as herein set forth.

Figure 1 is a sectional elevation of a dual range embodying my invention, the section being taken substantially on line 1—1 of Figure 2.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a section on line 4—4 of Figure 2.

Figure 5 is a sectional view on an enlarged scale of damper arrangements.

Figure 6 is a sectional view on an enlarged scale of the oven venting means.

Similar numerals indicate corresponding parts.

Referring to the drawings:—

The range is provided with a fire pot or combustion chamber 1 for a coal burner or an oil burner, and with an oven 2, which is adapted to be heated in a novel manner by products of combustion from a coal burner or an oil burner in the combustion chamber 1, or by products of combustion from a novel construction and arrangement of a gas burner 3. The oven 2 has a novel construction of a removable bottom 4 which has cast integrally with it spaced tubes or channels 5 which depend from the bottom and extend from the front of the oven to the rear of the oven at which location they are directed upwardly through the oven bottom to discharge into the oven. The rear upper ends of the tubes slope upwardly to form baffles 6 extending over the discharge openings 7 to prevent spillovers lodging in the tubes.

The gas burner 3 is preferably U shaped and located at the extreme bottom of the range, and is preferably mounted in a channel 8 built around the outer edge of the coal flue 18. The two side arms of the burner burn upwardly in channels 10 built integral with the range and extending preferably the entire depth of the oven. The bottoms of these channels 10 are at the bottom of the range and their upper sides terminate at the oven bottom level. The front arm of the burner

supplies heat to the oven bottom preferably in the direction of the series of tubes 5 which carry the heat across the entire depth of the oven and up into the rear of the oven where these flue gases combine with the side flue gases and pass from the oven through oven vents 11.

The side openings 12 in the oven bottom are concealed by strips 13 to which runners 14 are welded for support of oven racks. These runners are spaced apart for the escape of hot gases into the oven. The open ended tubes 5 preferably run from front to back so that they will be in the direction of the coal flue. 15 is a compartment to receive the conventional top gas burners and its wall contributes with the top of the oven to form a top coal flue 16 which leads to the rear vertical coal flue 17 which leads to the bottom coal flue 18 having a baffle 19 around which products of combustion pass to the discharge opening 20 and main discharge flue 21.

The products of combustion in the coal flue 18 pass over and along the tubes or channels 5 which materially increase the radiating surface of the oven bottom 4.

22 is a lighter opening for the burner 3. 23 are air intakes for the burner 3. 24 is the broiler burner which if used is preferably controlled by the same gas cock 25 which controls the burner 3. The gas cock 25 is a two way valve and has pipes 26 and 27 leading to the burners 24 and 3.

A rod 28 fixed to the gas cock 25 has an arm 29 having a pin 31 which rocks a lever 30 on its fulcrum 32. The lever 30 has a bifurcated end to engage the stud 33 on the vent slide damper 34 which has openings 35 and controls the oven vent openings 11. The vent openings 11 open into an open ended casing 36, open ends of which discharge into the room in which the range is located. The casing 36 has discharge openings 37 to the main discharge flue 21 and these openings are controlled by a manually actuated damper 38. 39 is a manually controlled damper controlling the passage of products of combustion from the coal fire directly to the discharge flue 21.

The oven is always ventilated when gas is used for baking or broiling since when the gas cock 25 is turned in one direction for baking or in the opposite direction for broiling, the oven is vented to the room. When coal is used to heat the oven the vent damper is closed.

When using coal, condensation or gases which occur from baking are relieved through the bottom gas flues.

The flue relief holes for the broiler burner act as a secondary air supply for the oven burner.

With my present construction the outer side walls and the bottom wall of the range can be insulated.

In my present invention it is not necessary to supply a removable heat deflecting baffle for operation with either coal or gas fuel.

The arrangement of the dampers is such that the oven can be vented either directly to the room or to the main flue of the range.

The oven damper is adjustable to a position for heating the oven from the coal fire, or to a position for operating with gas, or with coal and gas in combination.

In accordance with this invention when using gas as a fuel, the heat is applied to not less than three sides of the oven and its bottom, and when using coal as a fuel, the heat is applied to not less than five sides of the oven. The top, bottom and side walls of the oven are shown as being of single thickness.

It will now be apparent that I have devised a new and useful dual range, which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment thereof which will give in practice satisfactory and reliable results, it is to be understood that this embodiment is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a dual range having an exit flue, an oven having its top, side, and bottom walls spaced from walls of the range to form a heating flue extending across the top, down the side and across the bottom of the oven to the exit flue, a source of heat for said flue, said oven having bottom and side openings and a channel communicating therewith and out of communication with said heating flue, and a second source of heat comprising a gas burner in said channel having active side members to pass products of combustion to said channel and thereby to said side openings to heat opposite sides of the oven, said burner having a third active member, and said oven bottom having a plurality of spaced open-ended flue means extending across it to receive at one end products of combustion from only said third active member to heat the oven bottom and communicating with said bottom openings to heat a third wall of the oven.

2. In a dual range having an exit flue, an oven having its top, side and bottom walls spaced from walls of the range to form a heating flue extending across the top, down the side and across the bottom of the oven to the exit flue, a source of heat for said flue, said oven having bottom and side openings and a channel communicating therewith and out of communication with said heating flue, a second source of heat comprising a gas burner in said channel having active side members to pass products of combustion to said channel and thereby to said side openings to heat opposite sides of the oven, said burner having a third active member, said oven bottom having a plurality of spaced open-ended flue means extending across it to receive at one end products of combustion from only said third active member to heat the oven bottom and communicating with said bottom openings to heat a third wall of the oven, and means to control the venting of the oven to said exit flue to provide for the heating of the oven independently or simultaneously from said source of heat and said gas burner.

3. In a dual range having an exit flue, an oven having its top, side, and bottom walls spaced from walls of the range to form a heating flue extending across the top, down the side and across the bottom of the oven to the exit flue, a source of heat for said flue, said oven having side openings and a channel communicating with said side openings and out of communication with said heating flue, and a second source of heat comprising a gas burner in said channel having active side members to pass products of combustion to said channel and thereby to said side openings to heat opposite sides of the oven, said burner having a third active member, said oven bottom having a plurality of spaced open-

ended flue means extending across it to receive at one end products of combustion from only said third active member to heat the oven bottom, and said oven bottom between the open-ended flues, and also the walls of the open-ended flues being directly heated by products of combustion from said first source of heat passing through the bottom portion of said heating flue.

4. In a dual range having an exit flue, an oven having its top, side, and bottom walls spaced from walls of the range to form a heating flue extending across the top, down the side and across the bottom of the oven to the exit flue, a source of heat for said heating flue, said oven having side openings and having a channel communicating with said side openings and out of communication with said heating flue, a second source of heat comprising a gas burner in said channel having active side members to pass products of combustion to said side openings, said burner having a third active member, said oven bottom having open-ended flue means extending across it, heated by said first source of heat and receiving at one end products of combustion from only said third active member to heat the oven bottom, a broiler burner for said oven, said channel having an air inlet, all of said burners having a common supply of secondary air from said channel and air inlet, and means to control the venting of the oven to provide for the heating of the oven independently or simultaneously from said first source of heat and said gas burner.

FRANK H. SCHNEIDER.