Aug. 18, 1925. 1,550,096

F. W. ROGERS

GAS RANGE

Filed Aug. 11, 1924

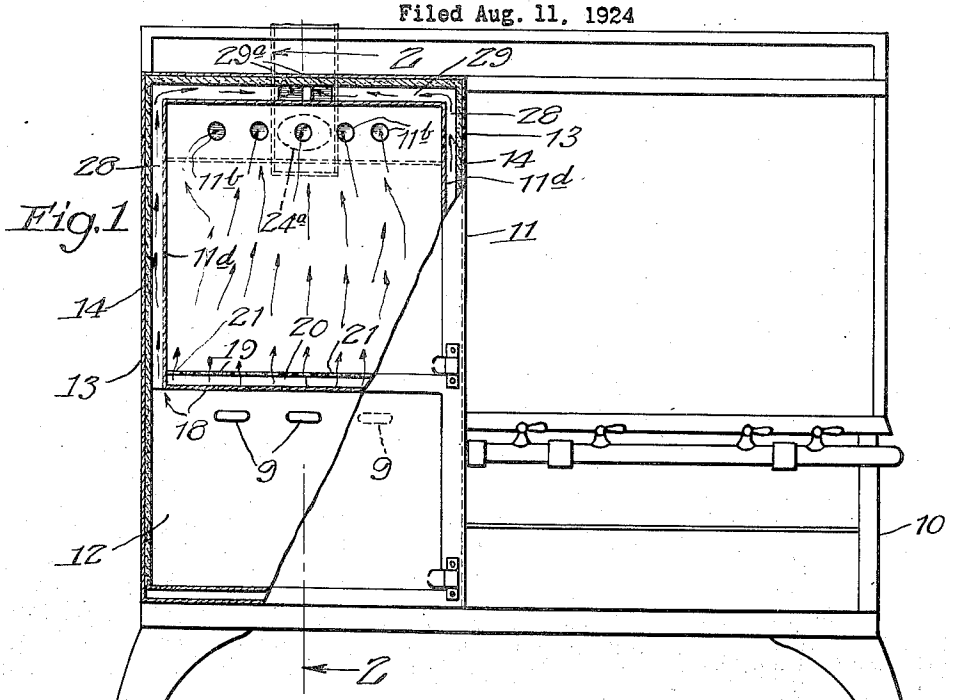

Fig. 1

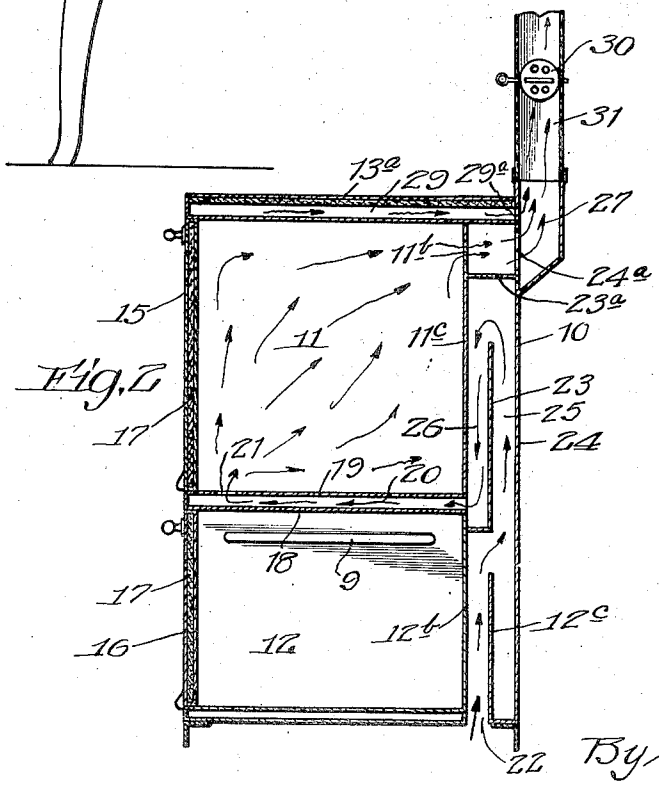

Fig. 2

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UNITED STATES PATENT OFFICE.

FREDERICK W. ROGERS, OF BEAVER DAM, WISCONSIN, ASSIGNOR TO MALLEABLE IRON RANGE COMPANY, A CORPORATION OF WISCONSIN.

GAS RANGE.

Application filed August 11, 1924. Serial No. 731,313.

To all whom it may concern:

Be it known that I, FREDERICK W. ROGERS, a citizen of the United States, residing at Beaver Dam, in the county of Dodge and State of Wisconsin, have invented certain new and useful Improvements in Gas Ranges, of which the following is a specification.

This invention relates to improvements in ranges, and more particularly to ovens therefor.

An object of the invention is to provide an oven which may be heated to and maintained at a desired temperature with the consumption of a minimum quantity of fuel.

A further object relates to the arrangement of flues whereby fresh air only is conducted into the oven; said air being preheated to a relatively high temperature before entering the oven, thus effecting a considerable saving of fuel.

A further object is to provide an oven in which the products of combustion from the combustion chamber are conducted around the oven proper to heat the same without being admitted therein.

Further objects relate to various features of construction and arrangement which will become apparent from a consideration of the following specification and the accompanying drawings, wherein

Fig. 1 is a front elevation, partly in section, of a range showing my oven incorporated therein, and

Fig. 2 is a vertical sectional view taken on line 2—2, Fig. 1.

A range, indicated generally by numeral 10, is shown which is adapted, in the modification illustrated, for burning gas as a fuel. The oven, indicated generally by 11, is shown as conventionally incorporated in the range structure, a combustion chamber 12 being positioned beneath said oven in the usual manner, and having a burner 9, or the like therein. The combustion chamber and the oven may be provided with common outer side walls 13, which are provided with suitable heat insulating material 14, as shown in Fig. 1. The doors 15 and 16 may be of conventional type, preferably hinged at the bottom, as shown, and also provided with suitable heat insulating material 17.

The oven bottom 18, together with the lining 19 form a flue 20 between the oven and the combustion chamber, as shown. Flue 20 communicates through apertures 21 in the oven lining with the interior of the oven. Intake flue 22 opens at its lower end to the atmosphere, and is located at the rear of the combustion chamber and conducts air in proximity to the back wall 12^b of the combustion chamber to initially pre-heat the same, a spacer sheet 12^c being provided to insure that the incoming air passes close to or in contact with the said wall 12^b. Adjacent the top of wall 12^b a division sheet 23 is secured in the relation shown. This sheet, together with the rear flue wall 24 provides an additional heating flue 25 through which the air passes from flue 22. The air rises through flue 25 and passes over the top of division sheet 23 and downwardly through the pre-heating flue 26, thence into the previously described flue 20 and into oven 11. The flues described may preferably be of the same width as the combustion chamber and the oven.

The air is allowed to escape from the oven through vents 11^b provided in the upper portion of rear wall 11^c and passes through aperture 24^a of the rear flue wall 24 and into escape flue 27 whence it may be conducted from the room in the usual manner. The escaping air is prevented from being drawn downwardly into flue 26 by horizontal partition 23^a spaced from the top of sheet 23 and extending between walls 11^c and 24.

As shown in Fig. 1, the side walls 11^d of oven 11 are spaced from the outer insulated walls 13 to form flues 28 through which the products of combustion from burner 9, or the like, may pass in contact with the sides of the oven and into top flue 29, also spaced from the insulated top 13^a. The products of combustion pass from flue 29 through vents 29^a formed in the rear flue wall 24 and thence into escape flue 27.

It will be seen that after the air enters intake flue 22 at the rear and base of the combustion chamber, it will be initially heated as it rises to contact with wall 12^b of chamber 12. A still further heating of the air will occur as it rises upwardly through flue 25 and downwardly through flue 26. When the air has reached apertures 21 of the oven lining 19 it will be heated to a relatively high temperature; in

fact the temperature of the air as it enters the oven will be higher generally than the temperature being maintained in the oven. The effect is thus to increase the temperature of the oven by the admission of the air, making a reduction of fuel consumption possible.

A damper 30, shown in Fig. 2, adapted for closing pipe 31 may be provided whereby the heat may be retained in the oven for a considerable period when desired.

It will be apparent from the above that the invention disclosed provides an oven into which the fumes and products of combustion from the source of heat can not enter or otherwise come into contact with the food being cooked, and that the oven is provided with fresh air only, the quantity of which may be varied as required, and that the air in passing through the various flues described is given a relatively high temperature, partially at least resulting from the absorption of heat which would otherwise be lost, thus effecting a considerable saving of fuel which comparative tests have shown to be as much as fifty percent of the quantity of fuel consumed by standard ranges commonly in use at the present time.

It will be obvious that the modification of the invention described is shown more or less diagrammatically and for the purpose of illustration only, and that changes may be made therein without departing from the spirit thereof. I do not therefore wish to be restricted to the form shown nor to the use of the same with the fuel mentioned, except where limited thereto by the appended claims.

What I claim is:

1. In apparatus of the class described, an oven, a combustion chamber therebeneath, a fresh air flue disposed therebetween; said fresh air flue being in communication with the atmosphere through a vertically arranged flue adapted to carry the incoming air into contact with heated rear walls of said combustion chamber and said oven, said oven being closed against admission of air or gases from said combustion chamber.

2. In apparatus of the class described, an oven, a combustion chamber therefor, flues for conducting the heat from said chamber into contact with said oven on a plurality of sides thereof, said oven being closed against the admission of gases from said chamber, a flue for conducting pre-heated air into said oven, said flue being positioned between the oven and the said chamber, and means for pre-heating the air before entering said flue by causing the same to flow through vertical flues in contact with heated portions of said oven and said combustion chamber.

3. The combination with an oven, of a combustion chamber therefor, and means for conducting fresh air to said oven comprising communicating flues adapted to conduct the air into contact with heated vertical rear walls of said chamber and said oven and between said members into the latter, the heated air and products of combustion from said chamber being conducted into direct contact with other walls of said oven for heating the same, but being excluded from the interior thereof.

4. In apparatus of the class described, the combination with an oven having an air inlet, of a heating chamber beneath said oven, and means for introducing preheated fresh air into said oven, said means comprising flues adapted to conduct the air into contact with the vertical rear walls of said chamber and oven and between said members to said inlet.

5. In apparatus of the class described, the combination with an oven, of a heating chamber therebeneath, flues at the sides and top of said oven adapted to conduct gases and products of combustion from said chamber into contact with the respective walls of said oven to heat the latter, the bottom wall of said oven having an air inlet formed in the forward portion thereof, and flues adapted to conduct air into contact with the rear walls of said chamber and oven and between the latter members to said inlet, whereby preheated fresh air is delivered to said oven.

6. In apparatus of the class described comprising an oven, a combustion chamber therebeneath, a flue at the rear of said chamber adapted to carry fresh air upwardly and into contact with a heated wall of said chamber, additional flues at the rear of said oven to further heat said air, and a horizontally disposed flue adjacent the source of heat of said chamber for finally heating the air and delivering the same to said oven.

7. In apparatus of the class described, an oven, a combustion chamber therebeneath, a fresh air flue disposed therebetween adapted to deliver air directly into said oven, and additional flues adapted to conduct air into contact with heated rear walls of said combustion chamber and said oven and thence into said first mentioned flue.

8. A range having a supporting structure, an oven and combustion chamber carried thereby, means for conducting air into contact with heated rear walls of said chamber and said oven to preheat the same before delivering it to said oven, and means for conducting the products of combustion from said chamber into contact with the sides and top of said oven, said oven being closed against admission thereinto of air or products of combustion from said chamber.

In testimony whereof, I have subscribed my name.

FREDERICK W. ROGERS.