June 27, 1939. C. E. PARKER 2,164,079

GASEOUS FUEL STOVE

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Fig. 1.

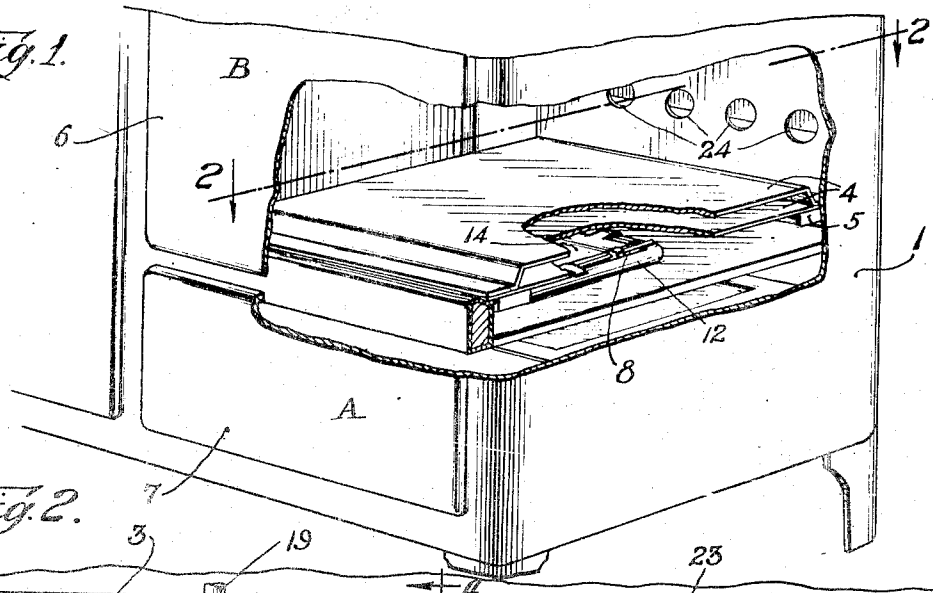
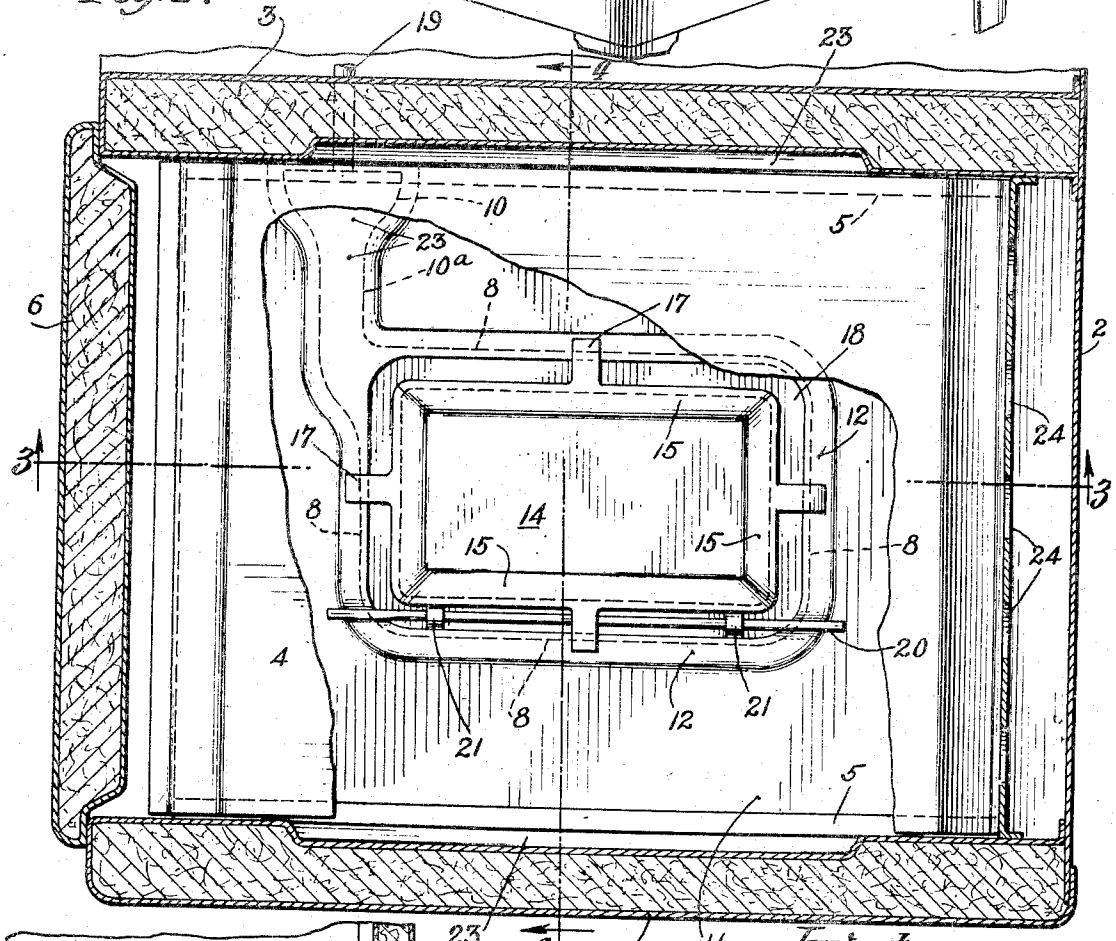


Fig. 2.



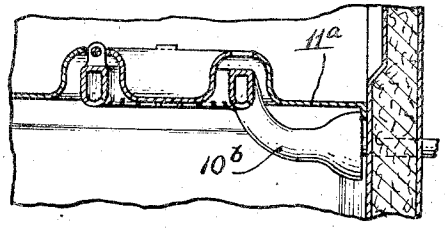


Fig. 6.

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Fig. 3.

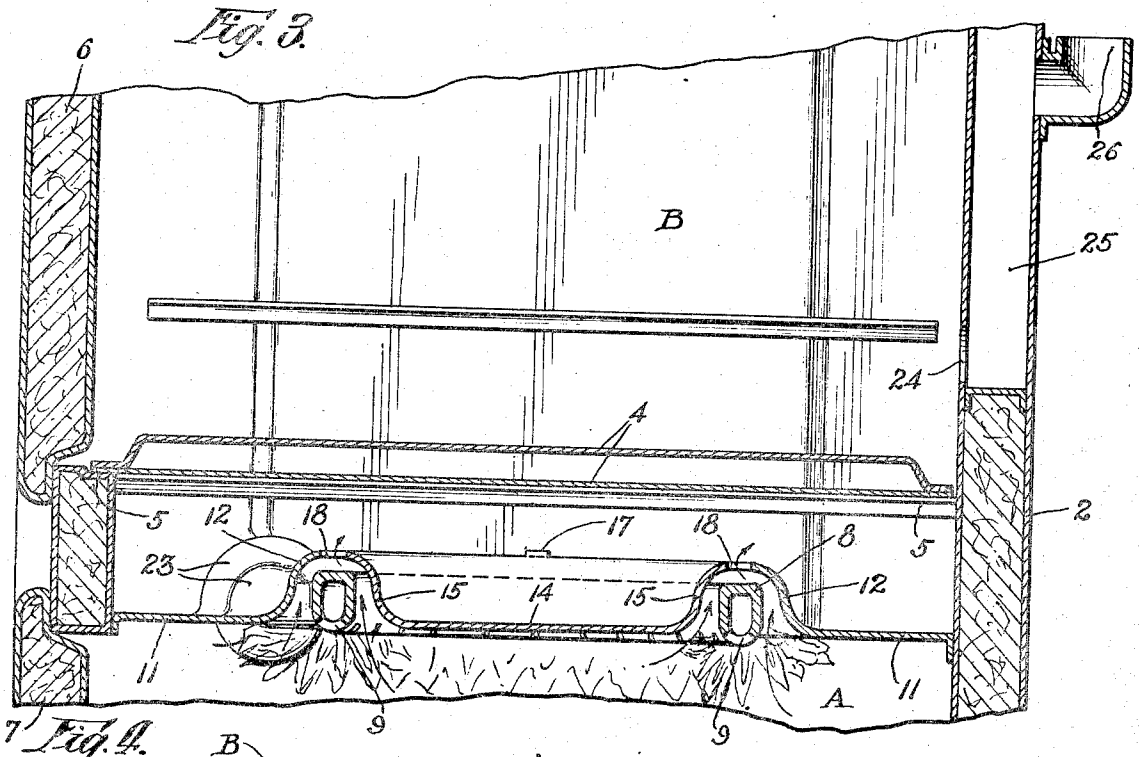


Fig. 4.

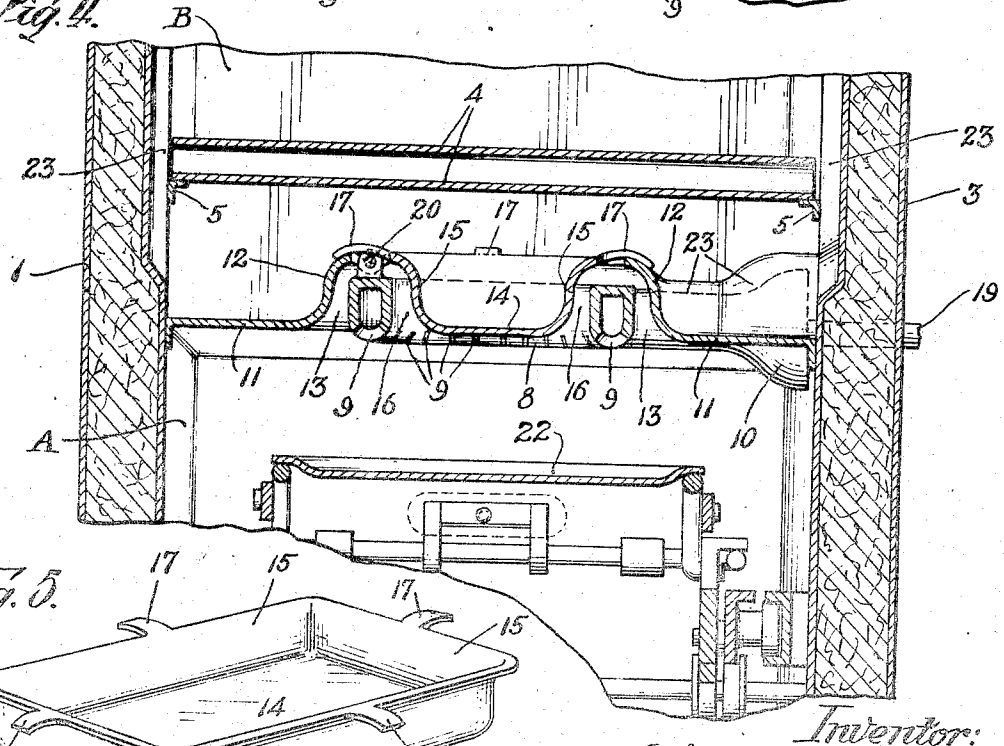


Fig. 5.

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UNITED STATES PATENT OFFICE

2,164,079

GASEOUS FUEL STOVE

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Application January 10, 1936, Serial No. 58,463

9 Claims. (Cl. 126—41)

This invention relates to gaseous fuel stoves and has particular reference to cook stoves of the general type disclosed in my copending applications Serial No. 676,795, filed June 21, 1933, and Serial No. 714,618, filed March 8, 1934.

The general object of the present invention is to improve the operation of gaseous fuel stoves through the provision of baffle means in association with the burner to produce the effectual consumption of gases and combustible products, such as the food vapors produced in broiling meats and the like, by compelling the passage of such gases through a zone of intense heat immediately adjacent the flames of the burner.

Another object is to provide a baffle means compelling the passage of the combustible particles through the flames of the burner.

In the accompanying drawings Figure 1 is a fragmental perspective view of a range embodying my invention.

Fig. 2 is a fragmental horizontal sectional view taken in the plane of line 2—2 of Fig. 1.

Figs. 3 and 4 are vertical sections on line 3—3 and 4—4, respectively, of Fig. 2.

Fig. 5 is a perspective view of a certain baffle.

Fig. 6 is a fragmental vertical section, illustrating a modification.

My invention may be embodied in various forms of stoves, as, for example, a stove adapted only for broiling, a stove comprising a broiling compartment with an oven thereabove, as in application Serial No. 714,618, or a range having top burners and an oven, as well as a broiling compartment. I have here chosen for illustration a range comprising a broiling compartment A, an oven B, and provision at the left of the oven and the broiling compartment for top burners and utility drawers. The walls of the range may be of any desired construction. Herein, 1 denotes the right-hand side wall, 2 the rear wall, and 3 the left-hand wall of the broiling compartment and the oven. A partition 4 which may be of any ordinary or preferred construction divides the broiling compartment from the oven, said partition being herein shown as resting upon ledges 5 on the stove walls. 6 is the oven door, and 7 is the closure for the broiling compartment.

Below the partition 4 is a burner 8. While it may be of any desired shape and size, I have herein shown a horizontal burner of oblong form spaced from the walls of the broiling compartment. The downwardly directed port holes 9 of the burner may be of any preferred character. The burner is provided with the usual mixer 10 and connecting mixer tube 10a.

The space between the burner and the walls of the broiling compartment is substantially closed by means of an imperforate baffle plate 11 attached to said walls and extending in the horizontal plane of the burner. As shown in Fig. 3, the front edge of the baffle plate 11 is above the doorway. As will be understood from the drawings, the baffle plate 11 has a central opening to accommodate the burner, the edges 12 of said plate which define the opening being bent upwardly so as to extend relatively close to the outer perimeter of the burner, thus producing a narrow space 13 around the burner through which the products of combustion may pass upwardly.

The space within the inner perimeter of the burner is substantially closed by an imperforate baffle plate 14, the body of which lies in the same plane as the body of the baffle plate 11. The baffle plate 14 has upturned edges 15 which extend close to the burner so as to form a restricted passageway 16 for the products of combustion. The baffle plate 14 may be supported in any desired manner, as, for example, by forming lugs 17 thereon to extend across the burner and rest upon the adjacent edges of the baffle plate 11. It will be understood from Figs. 2 and 3 that the baffle plates 11 and 14 provide a narrow slot 18 of oblong form for the passage of the products of combustion.

The burner 8 may be supported in any convenient manner, as, for example, by means of the gas supply pipe 19 and a rod 20 extending through ears 21 on the burner, said rod resting upon the baffle plate 11.

In use, the baffle plates 11 and 14 become intensely hot and, if desired, they may be made of sufficient thickness so as to absorb and hold heat for a relatively long time.

Below the burner 8 is means to support food to be cooked. This means may be of any desired nature, as, for example, an imperforate broiling or toasting plate 22. The food-supporting member may be mounted in any desired manner, as, for example, by means so connected to the closure 7 and the walls of the broiling compartment that the food-supporting member rises as the closure 7 is drawn upwardly and is lowered into proper relation to the burner 8 when the closure 7 is restored to normal position. Fig. 4 illustrates a portion of said raising and lowering means, but I claim no novelty therefor.

If desired, a burner (not shown) may be located below the food-supporting member 22 for the purpose of heating said member and the food lying thereon.

Secondary air to support combustion is admitted through the lower portion of the broiling compartment in the usual or any desired manner, the supply of secondary air being restricted, within practical limits, to the amount required to maintain proper operation of the burner or burners and to effect oxidation of smoke and vapors rising from the food being cooked.

In Figs. 2, 3 and 4, the mixer tube 10a is shown as being straight, and the baffle plate 11 as being bent upwardly at 23 to extend over the mixer tube and the mixer. In order that the burner with its mixer and mixer tube may be conveniently installed and removed, if necessary, it is desirable to provide a little clearance between the portion 23 and the mixer and mixer tube. Save for this slight clearance, it will be seen that the smoke and vapors produced in the cooking of the food cannot pass the baffles 11 and 14 without passing through the flames springing from the port holes 9, and consequently smoke and food vapors are completely burned. The products of combustion of the fuel and the smoke and vapors from the food pass upwardly through the narrow spaces 13 and 16 between the highly heated burner and baffle plates 11 and 14, and emerge through the narrow slot 18 into the space between the baffles 11 and 14 and the partition 4. In operation, this space becomes filled with highly heated gases which flow through the channels 23 in the side walls 1 and 3 to the upper portion (not shown) of the oven, and subsequently leave the oven through openings 24 leading to a channel 25 in the back wall 2 of the stove, and thence to the flue 26.

As seen in Figs. 2 and 3, the baffle plates 11 and 14 define a central outlet passage from the broiling compartment A, and the fuel discharge ports of the burner are so arranged relative to said outlet passage that a zone of intense heat is formed directly below the passage, through which zone the gaseous products including the vapors arising from the food being cooked are compelled to pass. In the present instance the burner flames project laterally in opposite directions directly below the outlet passage and across the entrances to the spaces 13 and 16 so that the gases are compelled to pass through the flames of the burner.

By the construction thus provided, the combustible particles are effectually consumed. Moreover, the baffle plates tend to reflect the heat of the burner downwardly toward the food support so as to produce a more effectual application of heat to the support. Due to the restricted character of the outlet passage the escape of the gases from the broiling compartment is retarded thus prolonging the time during which the smoke and food distillates may be consumed.

After passing from the lower compartment the highly heated gases are received in the space between the baffles and the partition 4. By locating the outlet channels 23 adjacent the opposite side walls of the enclosure, the gases are compelled to pass laterally after impinging upon the partition thereby supplementing the restricted outlet passage from the broiling compartment in retarding the flow of the gases through the enclosure.

For the purpose of obviating the possibility of vapors and smoke reaching the outlet 18 without passing through the flames, the construction shown in Fig. 6 may be adapted. As there shown, the mixer tube 10b is curved downwardly so as to clear the baffle plate 11a, the latter extending straight over to the burner so as to direct vapors and smoke so close to the flames that all smoke and vapors shall be subjected to the flames.

When baking is being done, the burner may, if desired, be shut off before baking has been completed and the baking finished with the heat derived from the hot burner and baffles and the hot gases in the space between the baffles and the partitions 4 and those in the channels 23 and the oven proper, since the upward flow of air through the spaces 16, 13 and 18 is so restricted that the hot gases do not escape rapidly by convection. The baffles prevent cold air from rushing through the spaces 16, 13 and 18 and into the oven. Thus the present construction is not only efficient in the broiling and toasting of foods rapidly and without smoke or odors, but also improves the efficiency of baking operations.

The construction herein shown may be modified in various respects without departing from the spirit and scope of the invention as defined in the following claims. For the sake of brevity the term "broiling" is used in the claims to include toasting and similar cooking operations, it being understood that the plate 22 may be used for the broiling of steaks and chops or the frying of sliced bacon, hamburger meat, etc., or the toasting of bread.

I claim as my invention:

1. In a cook stove, four vertical walls forming a broiling compartment, a burner in said compartment having downwardly directed port holes, a food support below the burner, an outer baffle plate extending across said compartment in the plane of the burner, from the said four walls of the compartment to a position close to the burner, the outer edges of said outer baffle plate being in contact with said four walls, and said baffle plate providing a restricted passage close to the burner, said burner being formed to extend around a space, and a baffle lying in said space in substantially the plane of the burner and extending close to the burner so as to provide a restricted passage between said baffle and the inner perimeter of the burner, the inner edges of said outer baffle plate and the outer edges of said inner baffle plate defining a relatively narrow slot for the passage of the products of combustion.

2. In a cook stove, four vertical walls forming a broiling compartment containing a burner having downwardly directed port holes, a food support below the burner, an outer baffle plate extending across said compartment, the outer edges of said plate being in contact with said four walls, said plate having an opening the shape of which corresponds generally to the outer form of the burner, the edges of said plate which define said opening being bent to lie close to the burner so as to provide a restricted passage close to the burner, said burner being formed to extend around a space, and a baffle extending across said space and close to the burner so as to provide a restricted passage between said baffle and the inner perimeter of the burner.

3. In a cook stove, four vertical walls forming a broiling compartment, a burner arranged horizontally within said compartment, said burner having downwardly directed port holes, a food support below the burner, and means in conjunction with said walls to prevent food vapors and products of combustion from passing up above the burner without passing close to the perimeter of the burner and through the flames issuing from said port holes.

4. A cook stove having a compartment and a

food support in the lower part of the compartment, partition means extending transversely of the compartment and providing a restricted passage therethrough, said partition means completely closing the compartment transversely thereof except for said passage, and a burner having fuel discharge orifices for supporting flames projecting laterally across said restricted passage whereby the unburned gases and food vapors are compelled to pass through said flames before escaping from the space below the partition means, said burner coacting with the partition means to direct heat downwardly in the compartment toward said support for broiling and toasting purposes, said passage serving to restrict the escape of products of combustion and food distillates and thus prolong their stay in the region below the partition means.

5. In a cook stove, four vertical walls forming a broiling compartment, a burner arranged horizontally within said compartment, said burner having flame orifices positioned to support a downwardly and laterally directed flame, a food support below the burner, and means forcing the products of combustion and matter arising from the food being cooked to pass closely adjacent said burner and through the flames thereof before escaping from the compartment.

6. A gaseoue fuel stove comprising a walled enclosure having upright side walls and a top wall, a partition extending transversely of the enclosure in downwardly spaced relation to said top wall and defining below it a chamber having an outlet passage through the partition spaced inwardly from opposite side walls, and a burner having fuel discharge means for supporting flames projecting laterally beneath the partition and immediately adjacent said passage whereby to provide a zone of intense heat directly below said passage, said partition being operative to force the products of combustion to pass through said zone of intense heat in escaping from said chamber through said passage.

7. A cook stove comprising a broiling compartment having front and rear walls and opposite side walls, said front wall having a normally closed doorway therein, a food support in the lower part of the compartment, partition means extending transversely of the compartment and providing a narrow outlet passage spaced inwardly from opposite side walls of the compartment, said partition means engaging the front wall above said doorway and serving to close the compartment transversely thereof except for said passage so as to force the products of combustion and food vapors to pass from the compartment through said passage, and a burner operative to apply heat downwardly in the compartment toward said support, said burner having fuel discharge means positioned for supporting flames projecting laterally beneath the partition means and in the region immediately adjacent said passage so as to produce a zone of intense heat directly below the passage for the consumption of vapors and the like compelled by the partition means to escape through said passage.

8. A gaseous fuel stove comprising a walled enclosure having upright side walls and a top wall, a partition extending transversely of the enclosure and comprising a baffle spaced a short distance below said top wall and providing a passage spaced inwardly from opposite side walls, said partition defining above it a space having outlet openings adjacent the opposite side walls and also defining below it a chamber communicating through said passage with said space, and a burner having fuel discharge means for supporting flames projecting laterally beneath the partition and immediately adjacent said passage whereby to maintain a zone of intense heat directly below said passage, said partition being operative to force the products of combustion to pass through said zone of intense heat in escaping from the lower chamber through said passage.

9. A gaseous fuel stove comprising a walled enclosure having upright side walls and a top wall, a partition extending transversely of the enclosure and comprising an outer baffle plate spaced a short distance below said top wall and an inner baffle plate coacting with the outer baffle plate to define a narrow passage spaced inwardly from said side walls, and a burner having fuel discharge means for supporting flames projecting laterally beneath the partition and immediately adjacent said passage whereby to maintain a zone of intense heat directly below said passage, said partition being operative to force the products of combustion to pass through said zone of intense heat in escaping through said passage.

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