Aug. 19, 1924. 1,505,244

A. A. BRUDER

COOKING RANGE

Filed June 3, 1922 2 Sheets-Sheet 1

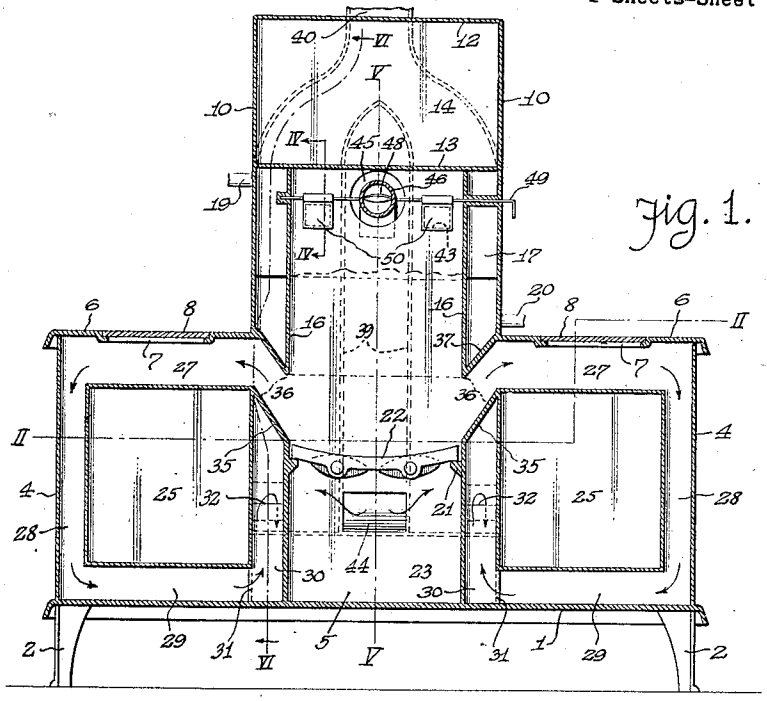

Fig. 1.

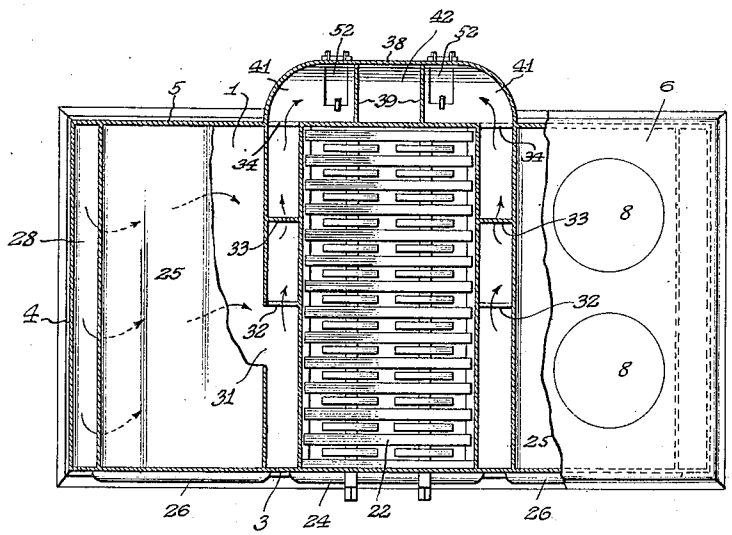

Fig. 2.

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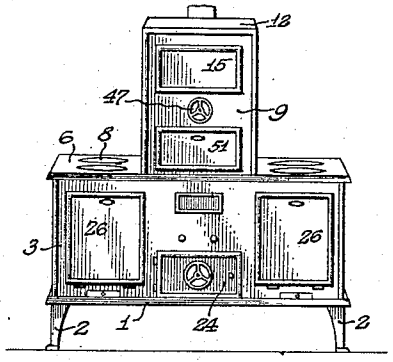

Fig. 7.

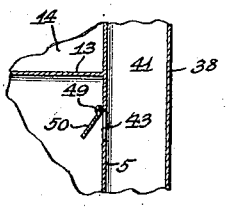

Fig. 4.

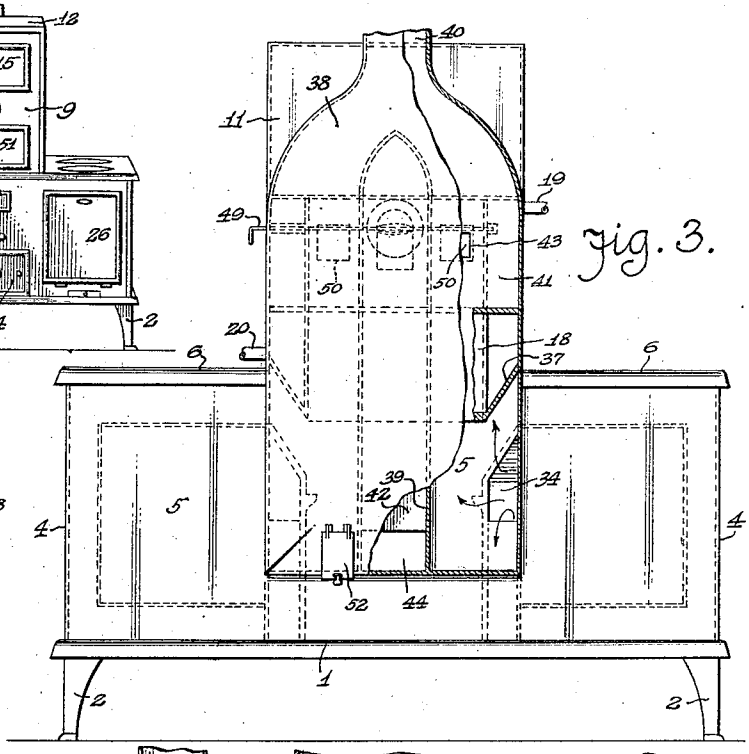

Fig. 3.

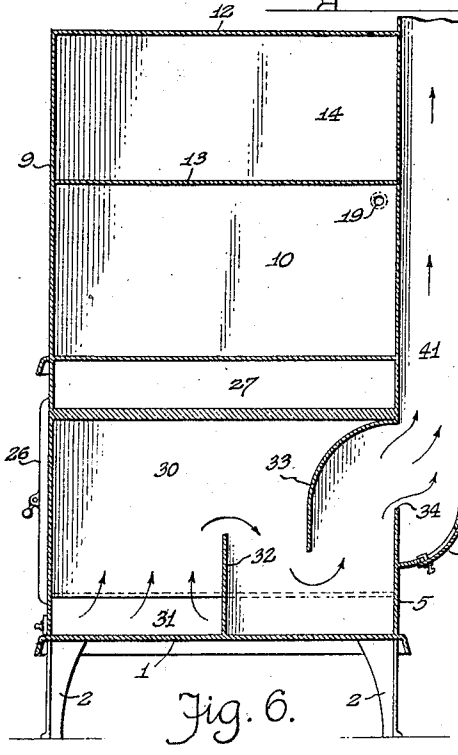

Fig. 6.

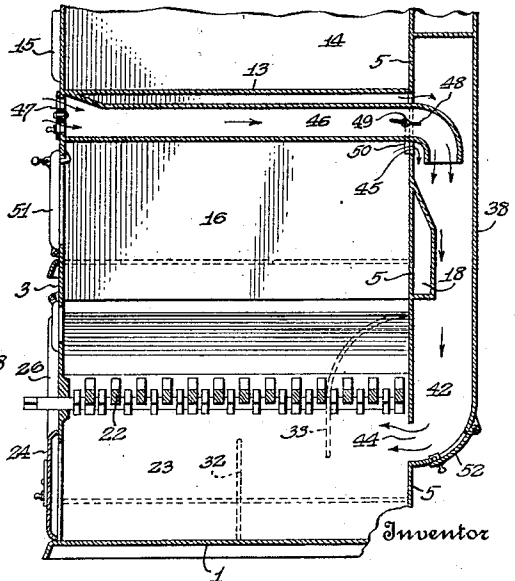

Fig. 5.

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Patented Aug. 19, 1924. 1,505,244

UNITED STATES PATENT OFFICE.

ALBERT A. BRUDER, OF HOLLY, MICHIGAN.

COOKING RANGE.

Application filed June 3, 1922. Serial No. 565,681.

To all whom it may concern:

Be it known that I, ALBERT A. BRUDER, a citizen of the United States of America, residing at Holly, in the county of Oakland and State of Michigan, have invented certain new and useful Improvements in Cooking Ranges, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a cooking range of that class in which hot fuel, as coal is utilized for heating ovens and a cooking top, although the construction of my range permits of various kinds of fuel burners being installed.

A cooking range in accordance with my invention may be characterized in the following particulars,

First, there is a central magazine combustion chamber with a warming oven above the same and baking ovens at the sides of the combustion chamber with said baking ovens providing cooking tops separated by the upper portion of the combustion chamber and permitting of each cooking top being conveniently used. In other words, the design of the cooking range is practically two stoves in one or a common combustion chamber serving two cooking units.

Second, the arrangement of flues about the baking ovens permits of heated air being withdrawn from the hottest part of the combustion chamber and circulated about the baking ovens to thoroughly heat the walls thereof, the circulation being somewhat retarded before final exhaust so as to utilize any latent heat during the operation of the cooking range.

Third, the air supply necessary for a thorough combustion of coal in the magazine combustion chamber is taken care of by an air inlet pipe disposed to produce a siphonic action at the upper portion of the combustion chamber so as to withdraw any gases, smoke, or unconsumed gaseous products of combustion and deliver the same beneath the fire grate of the combustion chamber. In the full operation of the cooking range the draft through the fire grate or the unconsumed products of combustion delivered thereto produces an extremely live fire and hot fire bed, with the result of a minimum waste of fuel and a minimum heat during the operation of the cooking range.

Fourth, there is an arrangement of dampers which will permit of smoke, dust laden air and gases exhausting to the atmosphere during the firing of the cooking range or the removal of ashes therefrom, otherwise such exhaust is deflected, by reason of the siphonic action previously mentioned and such exhaust made indirect to the atmosphere with the exhaust gases subjected to the action of the fire within the combustion chamber in order that any unconsumed products of combustion may be burned.

Fifth, the upper portion of the cooking range includes a water tank or receptacle surrounding a portion of the combustion chamber whereby the heated walls of said chamber may heat water in the tank or receptacle. In other words the tank or jacket about the combustion chamber is adapted to provide a source of warm water similar to the ordinary and well known type of hot water boiler or water back to the cooking stove.

The above are a few of the features of my cooking range and others may appear as the construction is described by aid of the drawings, wherein—

Figure 1 is a vertical longitudinal sectional view of the cooking range;

Fig. 2 is a horizontal sectional view of the same taken approximately on the line II—II of Fig. 1;

Fig. 3 is a rear elevation of the cooking range, partly broken away and partly in section;

Fig. 4 is a detail sectional view of one of the dampers of the cooking range, taken on the line IV—IV of Fig. 1;

Fig. 5 is a vertical cross sectional view taken on the line V—V of Fig. 1;

Fig. 6 is a similar view taken on the line VI—VI of Fig. 1, and

Fig. 7 is a front elevation, on a small scale, of the cooking range.

In the drawings, the reference numeral 1 denotes a base or range bottom that may be supported directly on a floor or by suitable legs 2. On the base is an oblong box-like structure comprising a front wall 3, end walls 4 and a rear wall 5.

On the upper edges of the walls 3, 4 and 5 are end cooking tops 6 provided with the usual openings 7 and lids 8. Between the end cooking tops 6 and extending upwardly from the range proper is a rectangular shell comprising a front wall 9, side walls 10, a rear wall 11 and a top wall 12, said walls cooperating with a horizontal partition 13

in forming an auxiliary or warming oven 14 in the upper portion of the shell; access being had to said oven by a suitable door 15 carried by the front shell, wall 9. The warming oven 14 is the full depth of the range as best shown in Fig. 6, and connecting the partition 13 to the base or range bottom 1 are vertically disposed walls 16 cooperating with the front walls 3 and 9 and the rear walls 5 and 11 in forming a combustion chamber the full depth of the range.

The upper portion of the walls 16 are disposed parallel and in spaced relation to the side walls 10 to form water jackets or receptacles 17 communicating with each other by a conduit 18 suitably mounted on the rear wall 11, said wall having openings at the jacket 17 in order that water may circulate through said jackets, one of which has a water inlet pipe 19 and the other a water outlet pipe 20. The walls of the jackets 17 and the conduit 18 will be heated during the operation of the range and there will be at all times an available source of warm water.

The lower portions of the walls 16 have confronting ledges 21 supporting a conventional form of grate 22 which has been illustrated as the rocker type. The grate divides the combustion chamber to the extent of providing an ash pit 23 and access is had thereto by a door 24 carried by the front wall 3.

The ash pit or lower portion of the combustion chamber divides the range structure and in the ends of said structure, below the end cooking tops 6, are rectangular baking ovens 25 the full depth of the range; access being had to the front ends of said ovens by doors 26 carried by the wall 3. The oven walls are in spaced relation to the walls of the range structure so as to provide top flues 27 under the cooking tops 6; end flues 28; bottom flues 29, and baffle flues 30, said baffle flues being between the baking ovens and the ash pit 23 of the combustion chamber. The innermost walls of the baking ovens 25 are carried downwardly to join the base or range bottom 1 for approximately half the depth of the range, as best shown in Fig. 6, thus leaving openings 31 at the front side of the range establishing communication between the flues 29 and 30. In the baffle flues 30 are baffles or deflectors 32 and 33, the former extending upwardly from the base or range bottom 1 in the middle portion of the baffle flue, and the latter extending downwardly from the top of the baffle flue to a point between the baffle 32 and the rear wall 5, said wall having an opening 34 at the rear end of each baffle flue. It is now apparent that any warm air following the direction of the arrows shown in Fig. 1, about the baking ovens 25, must pass through the openings 31 upwardly into the baffle flues 30, over the baffles 32, under the baffles 33, and outwardly through the openings 34. The baffles within the baffle flue tend to retard the progress or exhaust of heated air and thus insure a uniform temperature about the oven walls.

The baffle flues 30 have inclined top walls 35 and the water jackets 17 have inclined bottom walls 37, said walls cooperating with the front and rear walls of the range structure in providing passages 36 establishing communication between the top flues 27 and the combustion chamber directly above the grate 22.

Mounted against the rear walls 5 and 11 is a casing 38 containing longitudinally disposed parallel partitions 39 which meet below an exhaust connection 40 of the casing, said partitions providing exhaust flues 41 and a down flue 42. The exhaust flues 41 communicate with the openings 34 of the baffle flues 30 and with openings 43 in the wall 11 below the horizontal partition 13, said openings, at times, establishing communication between the exhaust flues 41 and the upper portion of the combustion chamber.

The down flue 42 has its lower end communicating with an opening 44 in the rear wall 5, said opening communicating with the ash pit 23. The upper end of the down flue communicates with the combustion chamber through an opening 45 in the wall 5 and extending through the opening 45 is a cold air inlet pipe 46 having its front end supported by the wall 9 and communicating with the atmosphere by means of a damper or shutter 47. The rear end of the cold air inlet pipe 46 extends downwardly in the down flue 42 and air entering the down flue from the pipe 46 is adapted to produce a siphonic action at the opening 45 and draw off any smoke, gases or unconsumed products of combustion from the combustion chamber. Such smoke and gases enters the ash pit 23, passes upwardly through the grate 22 and are burned by the bed of fire on the grate. Such gases as are not burned become heated and pass around the baking ovens 25 to eventually enter the exhaust flues 41 and the outlet connection 40 of the casing 38.

In the cold air inlet pipe 46, at or adjacent the opening 45, is a damper 48 on damper rod 49 suitably mounted in the chamber wall 16 and one of the walls 10 so that it may be manually operated or articulated with certain doors of the cooking range to be actuated in synchronism therewith. On the damper rod 49 are dampers or shutters 50 disposed so as to close the openings 43 when the damper 48 is open and conversely, when the damper 48 is closed the dampers 50 are open.

The wall 9 has a suitable door 51 below the oven door 15 and the door 51 permits of the upper portion or magazine of the combustion chamber being loaded with fuel, for instance to the height indicated by the broken line in Fig. 1. The fire bed will be maintained above the grate 22 and partly in the passages 36, as indicated by broken lines in said passages and consequently an intense heat will be in the top flues 27 below the cooking tops 6. It will be noted that the bottom walls 37 of the water jackets 17 are subjected to such heat.

When fuel is to be placed in the combustion chamber the dampers 50 are opened and consequently the damper 48 is closed. Since the door 51 will be opened a draft will be produced rearwardly in the combustion chamber to carry smoke and gases into the exhaust flues 41, instead of through the opening 45 into the down flue, there being no siphonic action because the damper 48 is closed. This is only during the "firing" of a stove and after the door 51 is closed the damper 48 may be opened, so that unburned gases or fumes will be directed downwardly into the ash pit to pass through the bed of fire and be substantially consumed.

For fear that soot and other matter may accumulate in the lower ends of the flues 41 and 42 the casing 38 is provided with doors 52 that may be opened and the flues cleaned out.

It is thought that the operation and utility of the cooking range will be apparent without further description, and while in the drawings there is illustrated a preferred embodiment of my invention, it is to be understood that the structural elements are susceptible to such variations and modifications as fall within the scope of the appended claims.

What I claim is:—

1. A cooking range comprising end cooking tops, a baking oven under each cooking top, a combustion chamber between said cooking tops and ovens, a grate in said combustion chamber, a casing having exhaust flues, and a down flue with the down flue communicating with the combustion chamber at a point beneath said grate, and means extending across said combustion chamber into the down flue of said casing adapted to produce a siphonic action to withdraw smoke and gases from the top of said combustion chamber and deliver the smoke and gases to the bottom of said combustion chamber.

2. A cooking range as called for in claim 1, wherein the combustion chamber is of the magazine type, and a water jacket surrounds a portion of said combustion chamber.

3. A cooking range as called for in claim 1, and a warming oven above said combustion chamber with said casing mounted against the back of said combustion chamber and said warming oven.

4. A cooking range comprising a combustion chamber, ovens at the sides thereof surrounded by flues in communication with said combustion chamber, cooking tops above said ovens, water jackets at the sides of said combustion chamber, and a casing at the rear side of said combustion chamber provided with flues, one of which conducts smoke and gases from the top of said combustion chamber to the bottom thereof, and the other flues communicate with the flues about said ovens.

5. A cooking range as called for in claim 4, wherein the combustion chamber between said ovens is of the magazine type extending above the plane of said cooking tops with a warming oven above said combustion chamber.

6. A cooking range comprising a combustion chamber, ovens at the sides thereof surrounded by flues in communication with said combustion chamber, cooking tops above said ovens, water jackets surrounding a portion of said combustion chamber, a casing at the rear side of said combustion chamber provided with flues, some of which communicate with the flues about said ovens, and means in connection with said combustion chamber and said casing for removing smoke and gases from the top of said combustion chamber and delivering said smoke and gases to the bottom of said combustion chamber.

7. A cooking range comprising baking ovens, cooking tops above said ovens, a magazine combustion chamber between said ovens and extending above the plane of said cooking tops, a casing on the rear side of said combustion chamber and provided with flues, means cooperating with said ovens and said cooking tops in providing flues above said ovens communicating with the flues of said casing, and means in connection with the top of said combustion chamber and said casing for producing a siphonic action to remove smoke and gases from the top of said combustion chamber and delivering the smoke and gases to the bottom of said combustion chamber.

8. In a cooking range, a combustion chamber, cooking tops projecting laterally from opposite sides of said combustion chamber, a grate in the bottom of said combustion chamber, a warming oven having its bottom forming the top of said combustion chamber, and means adapted to conduct smoke and gases from the top of said combustion chamber to a point below the grate in the bottom of said combustion chamber.

9. A cooking range comprising a combustion chamber containing a grate, an oven at a side thereof, a cooking top above said

oven, a casing at the rear side of said combustion chamber and providing flues, means cooperating with said oven and said cooking top in providing flues about said oven with said flues establishing communication between said combustion chamber and one of the flues of said casing, and means in the top of said combustion chamber extending into another flue of said casing to produce a siphonic action therein that will cause smoke and gases to be withdrawn from the top of said combustion chamber and delivered to the bottom thereof beneath the grate in said combustion chamber.

10. A cooking range as called for in claim 9, wherein said means includes an air intake pipe extending across said combustion chamber into said casing with dampers controlling the communication between said casing, said combustion chamber and said cold air intake pipe.

11. A cooking range as called for in claim 9, and water jackets about the upper portion of said combustion chamber.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT A. BRUDER.

Witnesses:
G. E. McGRANN,
KARL H. BUTLER.