Dec. 13, 1949 A. BARNSTEINER 2,490,852

HEATING APPARATUS

Filed May 22, 1942 4 Sheets-Sheet 1

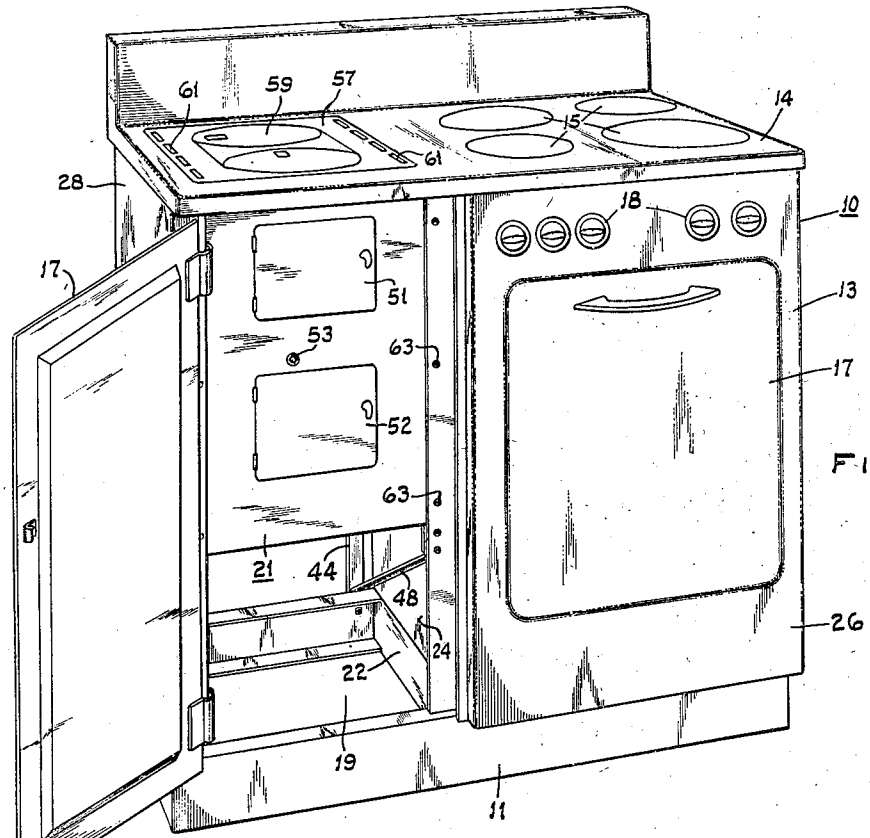


FIG. 1.

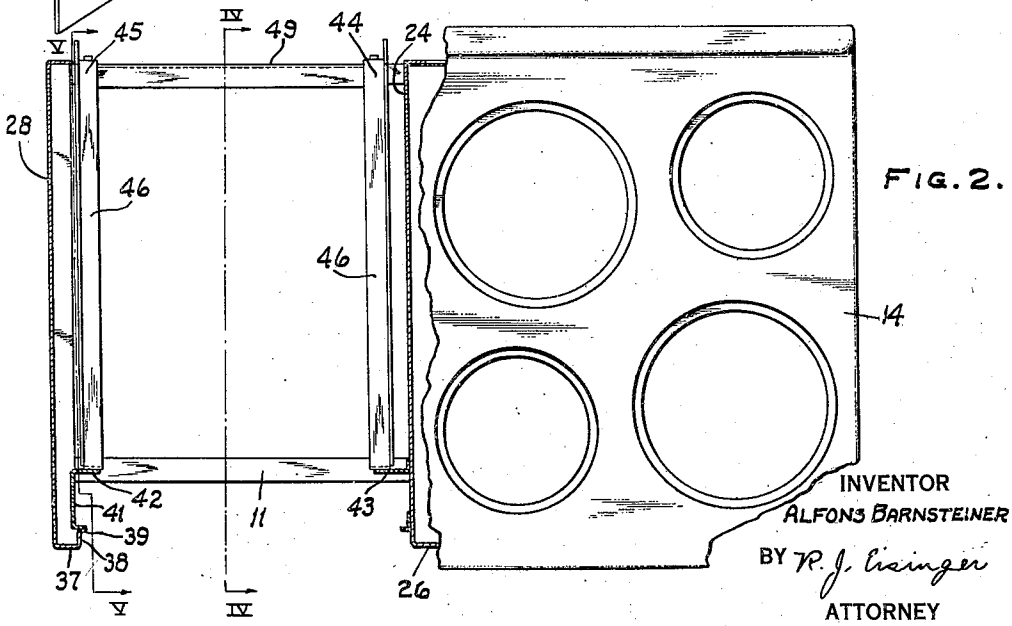


FIG. 2.

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HEATING APPARATUS

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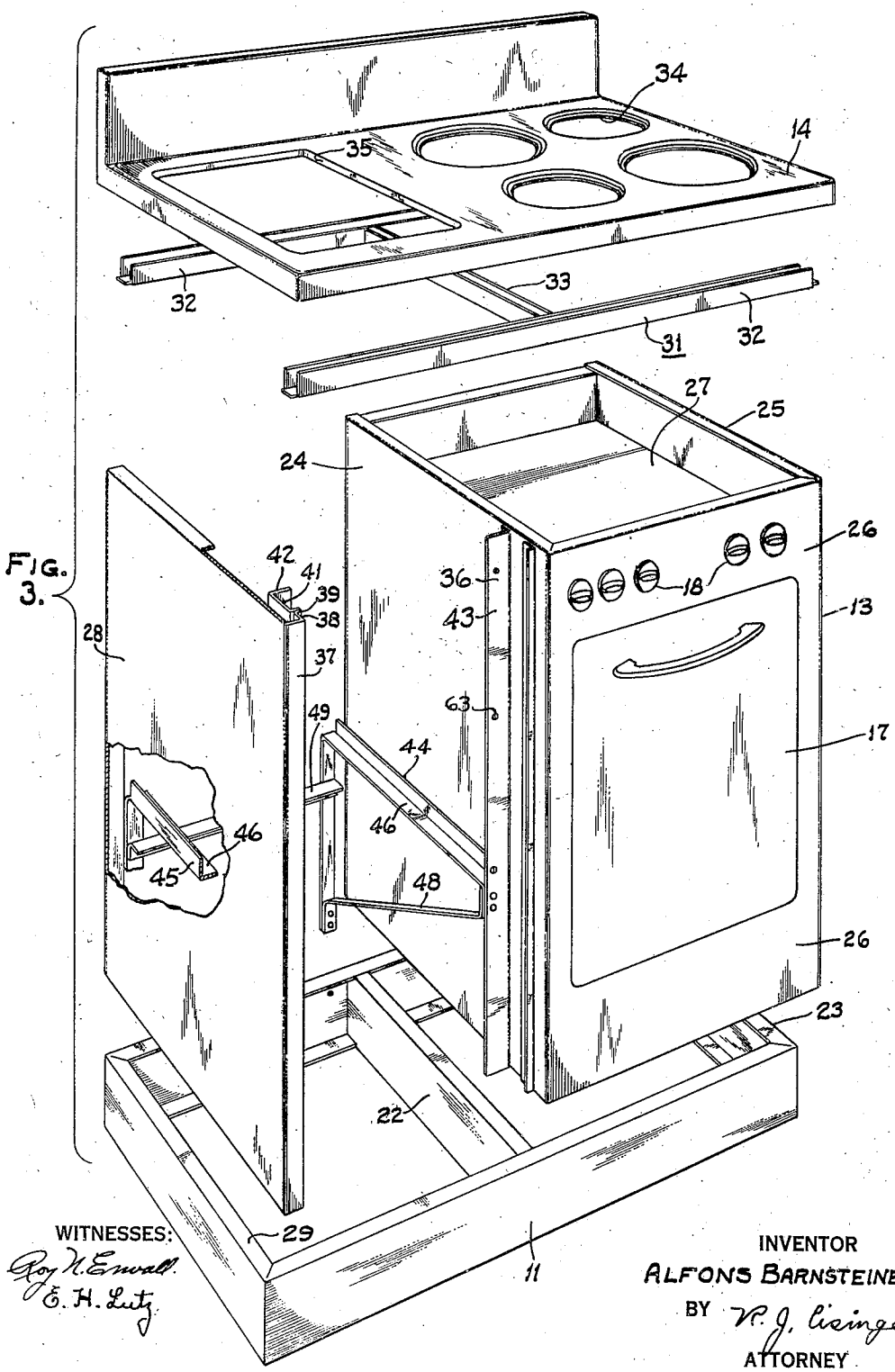


FIG. 3.

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HEATING APPARATUS

Filed May 22, 1942 4 Sheets-Sheet 3

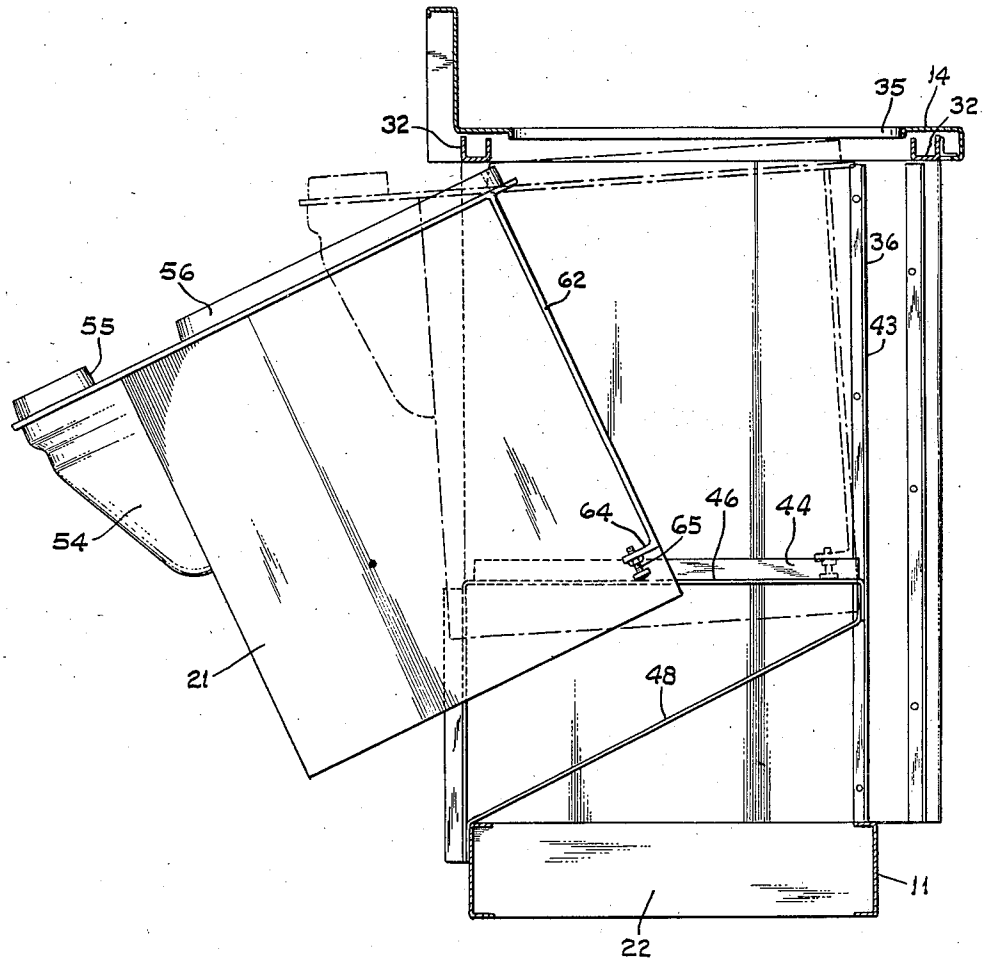


FIG. 4.

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Dec. 13, 1949 A. BARNSTEINER 2,490,852

HEATING APPARATUS

Filed May 22, 1942 4 Sheets-Sheet 4

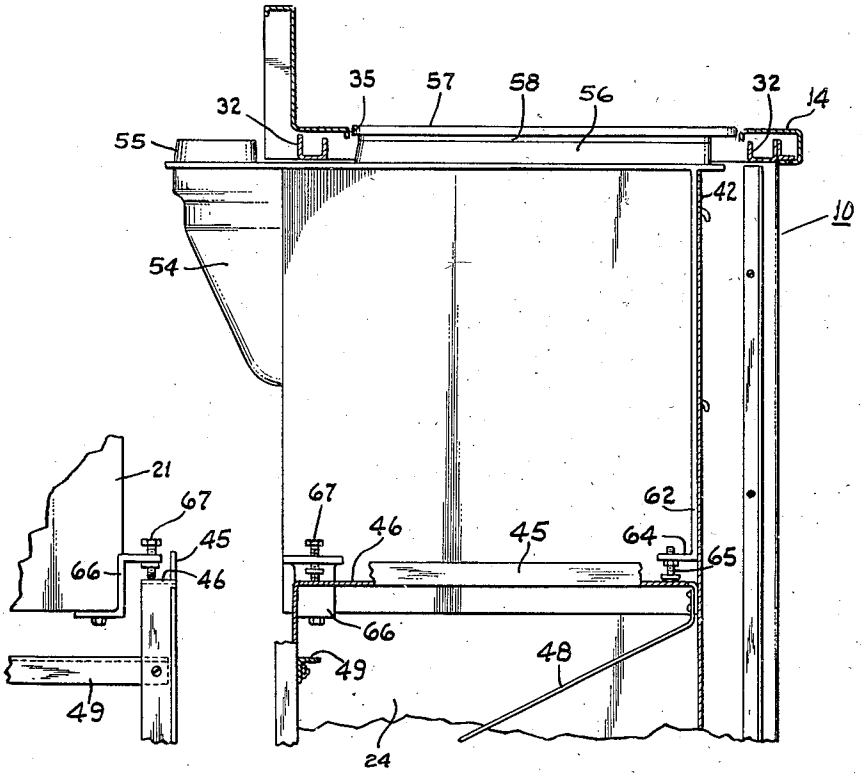


FIG. 5.

FIG. 6.

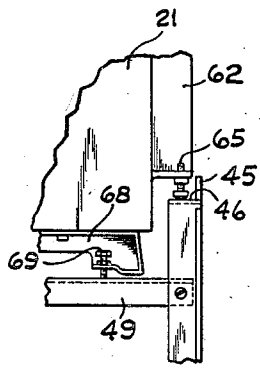


FIG. 8.

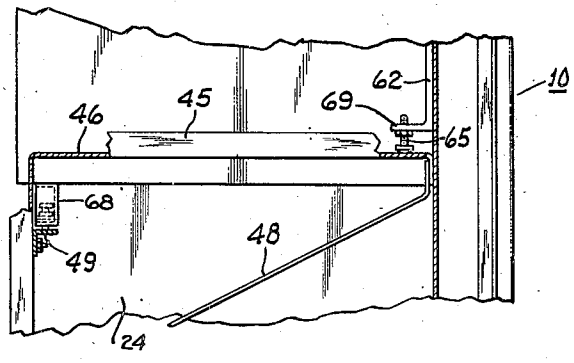


FIG. 7.

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Patented Dec. 13, 1949

2,490,852

UNITED STATES PATENT OFFICE

2,490,852

HEATING APPARATUS

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Application May 22, 1942, Serial No. 444,144

11 Claims. (Cl. 126—1)

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This invention relates to heating appliances and particularly to a combination fuel and electric cooking and heating range, and it has for an object to provide an improved device of the character set forth.

Combination fuel and electric ranges are old and well known and are particularly adapted for use in kitchens where the only means for heating the kitchen is the range itself. It has not been practical to heat a room with an electric range, and, therefore, the combination with an electric cooking range of a coal or wood-burning unit for heating a room is desirable.

The coal or wood-burning units of such combination ranges are usually made of heavy steel or cast iron and provided with a lining of fire brick, with the result that they are extremely heavy. The unit is usually mounted at one end of the range and consequently this end of the range is much heavier than the other end so that the range is difficult and awkward to handle both in shipping and installing the same.

Further, present range bodies are made of relatively light-weight sheet metal provided with an exterior surface of vitreous enamel or other covering to provide a pleasing appearance. These light-weight bodies are not particularly suitable to have a heavy fuel-burning unit mounted therein while the range is being handled in shipping, since the sheet metal body may tend to twist and cause cracking of the enamel surface.

It is apparent, therefore, that there is a definite need for a combination fuel and electric range construction in which the fuel-burning unit may be readily placed in the range body at the time the range is being installed in the kitchen.

It is accordingly a further object of the invention to provide a combination fuel and electric range in which the heavy fuel-burning unit may be assembled in the range body in the field.

It is a further object of the invention to provide a combination fuel and electric range in which the range body, including the electric portion thereof, may be made as a unit and the fuel-burning unit assembled as a second separate unit, but which may be easily installed in the range body without the necessity of dismantling the range body.

These and other objects are effected by the invention as will be apparent from the following description and claims taken in connection with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a perspective view of a combination fuel and electric range made in accordance with

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the present invention, the door which normally conceals the fuel burner being shown open;

Fig. 2 is a plan view of the range shown in Fig. 1, with the fuel burner unit omitted and a portion of the range platform broken away to expose the interior of the fuel burner compartment;

Fig. 3 is an exploded view of the parts forming the range body;

Fig. 4 is a vertical section taken substantially on the line IV—IV of Fig. 2 and illustrating the manner in which the fuel burner unit is installed in the range body, the fuel burner unit being shown in full lines as it appears during an initial stage of the assembly thereof in the range body and being shown in dot and dash lines just prior to its final mounting within the range body;

Fig. 5 is a vertical section taken substantially on the line V—V of Fig. 2, showning the fuel burner unit in final assembled position in the range body;

Fig. 6 is a fragmentary detail view looking from the left of Fig. 5;

Fig. 7 is a view corresponding to Fig. 5 and illustrating a slightly modified form of the invention; and,

Fig. 8 is a fragmentary detail view looking from the left of Fig. 7.

Referring to the drawings and particularly to Fig. 1, the range, generally indicated 10, comprises a base 11 on which is supported a range body, including an electric cooking range section 13 and a one-piece platform and backsplasher 14. The platform 14 carries a plurality of electric surface units 15 which may be of known construction. The electric range section is provided with an electrically-heated oven (not shown) accessible through a door 17. Switch knobs 18, mounted on the front of the electric range section, control the energization of the surface units 15 and of the oven heating elements, as it well understood in the art. The portion of the range body to the left of the electric range section 16 provides a compartment 19 in which a coal or wood-burning unit 21 is mounted.

Referring now to Fig. 3, it will be noted that the base 11 is rectangular in outline and made of channel-shaped members and provided with a cross brace 22 which may also comprise a channel member. The electric range section 13 is of known construction and may be fabricated for use solely as an electric range, if desired. In this case, a platform coextensive with the top of the electric range section and a suitable base would be provided therefor. The electric range

section is adapted for use in the present combination of a fuel and electric range, so that the final appearance of the range does not indicate that the electric range section is of separate manufacture, the combination range instead presenting a unitary appearance.

The electric range section 13 comprises a one-piece sheet metal wrapper sheet, enameled on its inner and outer surfaces and including side walls 24 and 25 which are continuous with a front wall 26. This wrapper sheet is flanged at the top and bottom, the bottom flanges being secured to the base 11 while the top thereof is closed by the top or platform 14. The cross brace 22 and the end member 23 of the base 11 are disposed below and are secured to the bottom flanges of the side walls 24 and 25 of the electric range section.

A transverse sheet metal partition 27 disposed in spaced relation below the top flanges of the range wrapper sheet, together with the platform 14, provides a heater box or compartment into which the surface units 15 depends. The construction of the electrically-heated oven may be conventional, and it is, therefore, unnecessary to illustrate the same.

Extending upwardly from the left end of the base 11 is a sheet member 28 which forms the left lateral side wall of the range body. This sheet member is flanged at all of its edges, the lower flange thereof being secured to the upper horizontal flange 29 of the base 11. The upper end of the side wall 28 is connected to the electric range section 13 by means of an H-shaped structure 31 made of channel-shaped metal strips. The longitudinal strips 32 of this structure are secured to the electric range section 13 along the front and rear edges thereof, while the transverse strip 33 overlies and is secured to the top flange of the side wall 24 of the range wrapper sheet.

As shown particularly in Fig. 3, the platform and backsplasher 14 is preferably formed of one piece of sheet metal having suitable openings 34 therein to receive the surface units 15 and is also provided with a rectangular opening 35 in which the top of the fuel-burning unit 21 is received.

The side wall 24 of the electric range section 13 and the side wall member 28 define the lateral sides of the compartment 19, which receives the fuel burner 21, while the platform 14 closes the top thereof. The front of the compartment is closed by a door (Fig. 1), the rear of the compartment being left open, if desired.

The side wall 24 has secured thereto a vertically-extending brace 36 made of angle iron which is spaced from the front wall 26 of the wrapper sheet. As shown in Fig. 3, the side wall member 28 is bent along its vertical front edge to provide a front wall portion 37 and a rearwardly-extending flange 38 from which there extends a flange 39. A channel-shaped brace 41 is secured to the flange 39 with its rear flange 42 disposed in the same vertical plane as the flange 43 of the brace 36. As will appear later, the flanges 42 and 43 of the braces 41 and 36 serve as abutments to which the front of the fuel burner unit 21 is secured.

A pair of track-forming members, generally indicated 44 and 45, are mounted within the fuel burner compartment 19 and serve to guide the fuel burner into position in the compartment and to support the same below the range platform 14. These members each comprise a length of angle iron bent into L-shape and secured at their front ends to the mentioned flanges 42 and 43, respectively, and at their lower rear ends to the rear channel member of the base 11, as shown particularly in Fig. 4. The horizontal portions 46 of these L-shaped angle irons serve as the guide rails or tracks for guiding the fuel burner 21 into the compartment 19 and for supporting the same therein. If desired, diagonal brace members 48 may extend between and be secured to the ends of the angle irons 44 and 45 to reinforce the fuel burner supporting structure.

An angle-iron brace 49 is secured to the vertical legs of the angle irons 44 and 45 a short distance below the track portions 46. This brace adds rigidity to the fuel burner supporting structure and, as shown in the modification illustrated in Figs. 7 and 8, may also support the lower rear end of the fuel burner when the same is installed in the range body. This brace member is preferably bolted to the angle irons 44 and 45 so that it may be readily removed therefrom when the fuel burner is being inserted into or removed from the fuel-burner compartment.

The fuel burner 21 has been shown somewhat diagrammatically in the drawings since the structural details thereof are not important to the present invention. The fuel burner is shown as generally rectangular and will usually have an uper fuel-burning space accessible through an upper opening closed by a door 51 and a lower ash-receiving space separated therefrom by suitable grates and accessible through an opening closed by a door 52. The grates may be shaken by means of a shaft 53 (Fig. 1). The fuel burner is provided with a smoke box 54 at the rear end thereof provided with a flange 55 adapted to be connected to a suitable flue.

The top of the fuel burner unit is provided with an opening surrounded by a flange 56. As shown in Fig. 5, wherein the fuel burner is installed in the range body, it will be noted that the flange 56 is substantially coextensive with and lies immediately below the opening 35 provided in the range platform 14. This flange projects above the lower surface of the H-shaped structure 31, so that it would not be possible to slide the fuel burner horizontally along the tracks 46 into the fuel burner compartment.

The flange 56 supports a top plate 57 (Fig. 5) which is slightly smaller than the rectangular opening 35 provided in the platform 14. This plate is provided with a depending flange 58 coextensive with and removably engaging the flange 56 of the fuel burner. The top plate 57, as shown in Fig. 5, is preferably disposed slightly above the plane of the platform 14. This top plate, as shown in Fig. 1, is provided with removable lids 59 and vents 61 and may be used for cooking.

The rectangular portion of the fuel burner is of such width that it may pass between the inner edges of the track portions 46 of the angle irons 44 and 45. Consequently the side walls of the fuel burner, when the latter is assembled in the range body, are spaced from the side walls 24 and 28 of the fuel burner compartment to provide spaces through which air heated by the hot side walls of the burner may rise and be discharged through the vents 61 in the top plate for heating the room.

By making the fuel burner narrower than the space between the tracks 46 of the fuel burner supporting structure, the fuel burner may be inserted into the range body without dismantling the latter. The manner of inserting the fuel burner into the fuel burner compartment 19 of

the range body is shown in Fig. 4. By reference to this figure, it will be noted that the front of the fuel burner is provided with a flange 62 at each side thereof. These flanges have openings therein which align with openings 63 provided in the abutment flanges 42 and 43. The lower ends of these flanges terminate in or are provided with horizontally-exending portions 64, each of which receives an adjustable screw 65 which serve to support the front of the fuel burner on the tracks 46. The rear of the fuel burner is provided with a pair of brackets 66 bolted to the fuel burner at each lower rear corner and which carry adjusting screws 67.

Installation of fuel burner

To install the fuel burner in the range body, the range body is set approximately four feet from the wall against which it is to be placed in use. The rear angle brace 49 is removed from the L-shaped angle irons 44 and 45 and the rear brackets 66 are also preferably removed from the fuel burner. The fuel burner is then set close to the rear of the compartment 19 and the front end lifted, so that the front adjusting screws 65 rest on the tracks 46. The fuel burner is then pushed forward into the compartment while keeping the rear end of the burner down to let the upper front of the fuel burner, and particularly the flange 56 carried by the top thereof, to pass under the rear strip 32 of the H-shaped member 31 of the range frame.

When the burner has been pushed into its extreme forward position, the rear end is then raised and the brackets 66 attached to the lower rear end thereof. This brings the adjusting screws 67 into the position shown in Fig. 5, so that they will support the rear of the fuel burner on the tracks 46.

The front adjusting screws 65 are preferably set at a predetermined distance from the top of the flange 56 before inserting the fuel burner in the compartment, final adjustment of the fuel burner to level the same being made by the rear adjusting screws 67. The cross brace 49 which had been removed to permit the fuel burner to be inserted in the compartment 19 may now be replaced and the front flanges 62 of the fuel burner secured, as by means of stove bolts, to the flanges 42 and 43 carried by the side walls 24 and 26 of the compartment. The top plate 57 is now lowered into the opening 35 in the platform to complete the assembly.

In Figs. 7 and 8, there is shown a slightly modified adaptation of the invention, in which the rear brackets 66 have been replaced by a single bracket 68 fastened to the lower rear end of the fuel burner. This bracket is provided with two adjusting screws 69, only one of which is shown, which are adapted to rest on the cross brace 49 for supporting the rear end of the fuel burner in its final assembled position.

While the invention has been shown in several forms, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications without departing from the spirit thereof, and it is desired, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What is claimed is:

1. A range comprising a body having a compartment therein, spaced horizontal guide means within said compartment and extending from front to rear thereof, said compartment being open at one end thereof, a fuel-burning unit adapted to be guided into and supported within said compartment by said guide means, said fuel-burning unit being of less width than the spacing between said guide means, laterally-projecting means carried by said unit and adapted to engage said guide means to support one end of said unit, whereby said unit may be tilted with said laterally-projecting means engaging said guide means and with the other end of said unit depending below said guide means while inserting said unit into said compartment, said compartment having sufficient clearance space below and between said guide means to accommodate said unit and to permit it to be so tilted while it is being inserted, and means for supporting said other end of said unit when the same is completely inserted in the compartment, said body having a platform overlying said compartment, said platform having an opening therein communicating with said compartment and through which said fuel-burning unit is exposed when said fuel-burning unit is in said compartment.

2. A range as set forth in claim 1 wherein said unit includes a flange which projects upwardly adjacent said platform and above a part of the body of the range above said open end of the compartment, said flange being adapted to be moved past said part of the body and into assembled position by reason of the tilting of said unit while being inserted.

3. In a range structure of the character set forth, a casing providing a fuel-burning stove compartment having an opening in its top, said compartment being accessible through one side, track members spaced apart within said compartment, a fuel-burning stove movable as a unit having a top portion adapted to be received within said opening, supports carried by the front portion of said stove and adapted to slide along said tracks, said tracks being spaced apart by a distance greater than the width of the rear portion of the stove and providing a free space between the tracks to permit the rear portion of said stove to swing downwardly between said tracks, and supporting means for the rear portion of said stove adapted to engage said tracks.

4. In a range structure of the character set forth, a casing providing a fuel-burning stove compartment accessible through one side, said casing having an opening in the top wall of said compartment for receiving the neck of a stove unit, track members mounted in said compartment and extending along opposite sides thereof, a fuel-burning stove of cross section dimensions greater than said opening and having an upwardly-extending reduced neck portion of cross section dimensions less than said opening, laterally-extending support members carried by the front of said stove and engaging said track members, said track members being spaced apart by a distance greater than the width of said stove and providing a free space therebetween to permit said stove to swing downwardly between said track members, and supporting means on the rear portion of said stove adapted to engage said tracks.

5. In a range structure equipped with a heater unit, a casing having a portion thereof providing a fuel-burning stove compartment, said compartment having an opening in one side providing access thereto and an opening in the top wall thereof for receiving the neck of a stove unit, a removable fuel-burning stove having top, bottom, end

and side walls providing a complete combustion chamber and an upwardly-extending neck portion adapted to be received within the top opening in said compartment, said stove being of dimensions smaller than the side opening in the compartment and being movable through said side opening into the compartment, and stove supporting means within said compartment for supporting said stove therein with said neck portion extending into the top opening of the compartment.

6. In a range structure equipped with a heater unit, a casing providing a fuel-burning stove compartment having an opening in one side providing access thereto, a removable fuel-burning stove having means defining bottom, end and side walls, said stove being of dimensions smaller than said opening and movable as a unit through said opening into said compartment, track members mounted in said compartment and spaced apart therein, said track members being spaced apart by a distance greater than the width of said stove and providing a free space therebetween to permit said stove to swing downwardly between said track members, said stove being equipped with laterally-extending supports carried by the front portion of the stove and adapted to slide along said track members, and removable members for supporting the rear portion of the stove upon said track members, and means defining a top for said stove cooperating with said end and said side walls.

7. In a range, a wall structure including opposed side walls and a top wall and defining a compartment adapted to receive a fuel-burning stove, track members mounted in said compartment substantially above the bottom thereof and below said top wall and extending horizontally along said opposed side walls, and a pair of vertical braces attached to said side walls, respectively, at one side of the compartment between said opposed side walls, each brace being of angular cross section including a flange extending inwardly from the side wall, the adjacent ends of said track members being connected to and supported by said flanges, respectively, said compartment having an opening in the side opposite said one side, said opening extending from adjacent said top wall to below said track members and extending substantially the width of said compartment, the compartment having clear space between said track members and also below said track members, so that a fuel-burning stove may be inserted through said opening while the end that is inserted first slides on said track members and the other end is tilted downwardly, said compartment having clear space between said track members and said top wall, which space is adapted to receive a fuel-burning stove of a height extending from said track members to said top wall, said top wall having an opening to receive and to provide access to the top of the stove.

8. In a range, a wall structure including opposed side walls and a top wall and defining a compartment adapted to receive a fuel-burning stove, track-forming members including track portions disposed substantially above the bottom of the compartment and below the top wall and extending horizontally along the opposed side walls, said track-forming members further including vertical supporting portions extending downwardly from the rear ends of said track portions, vertical braces connected to said opposed side walls adjacent the front of the compartment and extending substantially the full height of

the compartment, said braces being of angular cross section and including flanges projecting inwardly from the side walls, the front ends of said track portions being connected to and supported by said flanges, the compartment having an opening in the rear between said opposed side walls, said opening extending from adjacent said top wall to below said track portions and extending substantially the width of said compartment, the compartment having clear space between said track portions and also below said track portions, so that a fuel-burning stove may be inserted through said opening while the front end thereof slides on said track portions and the rear end is tilted downwardly, said top wall having an opening to receive and to provide access to the top of the stove.

9. A range comprising a body having a compartment therein, spaced horizontal track members within said compartment and extending from front to rear thereof, said compartment being open at one end thereof, a fuel-burning unit adapted to be guided into and supported within said compartment by said track members, said fuel-burning unit being of less width than the spacing between said track members, laterally-projecting means carried by said unit at only that end thereof which is inserted first, said laterally-projecting means extending only a short distance along the side walls of the unit and adapted to engage said track members to support said one end of the unit thereon, whereby said unit may be tilted with said laterally-projecting means engaging said track members and with the other end of the unit depending below said track members while inserting said unit into said compartment, said compartment having sufficient clearance space below and between said track members to accommodate said unit and to permit it to be so tilted while it is being inserted, and means for supporting said other end of said unit when the same is completely inserted in the compartment.

10. A range comprising a body having a compartment therein, track members mounted in said compartment substantially above the bottom thereof and extending horizontally in spaced parallel relation, a fuel-burning unit adapted to be guided into said compartment by said track members, said fuel burning unit having laterally-extending projections adjacent one end thereof disposed and adapted to engage said tracks to slide thereon during insertion of the unit into the compartment, said compartment having an opening in one side adjacent one end of said track members, said opening extending the full width of the space between the track members and also below said track members and the compartment having sufficient clear space between and below said track members so that said unit may be inserted through said opening with said one end inserted first and so that said projections may slide on said track members substantially to the opposite end thereof while the other end of said unit is tilted downwardly at least partly between said track members and so that said other end may then be raised, all that portion of said unit which depends below said track members between the ends thereof while said projections slide on said track members substantially to said opposite end with said other end of the unit tilted downwardly and which portion is then raised above said track members being of no greater width than the space between said track mem-

bers, and means for supporting the fuel-burning unit in said compartment when so inserted.

11. A range as set forth in claim 10 wherein the fuel-burning unit, when mounted within the compartment, extends upwardly within the compartment above a part of the body located above and adjacent said opening, the fuel-burning unit being adapted to clear such body part during said insertion by the tilting of said other end of the unit downwardly.

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