May 20, 1924.

1,494,843

G. T. JOCKERS

OIL BURNING RANGE

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Fig. 1.

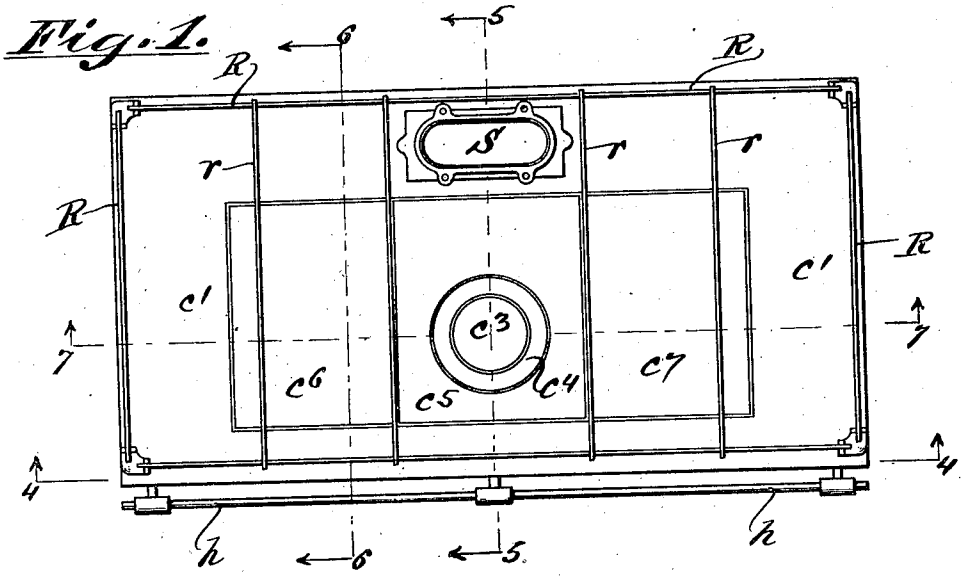
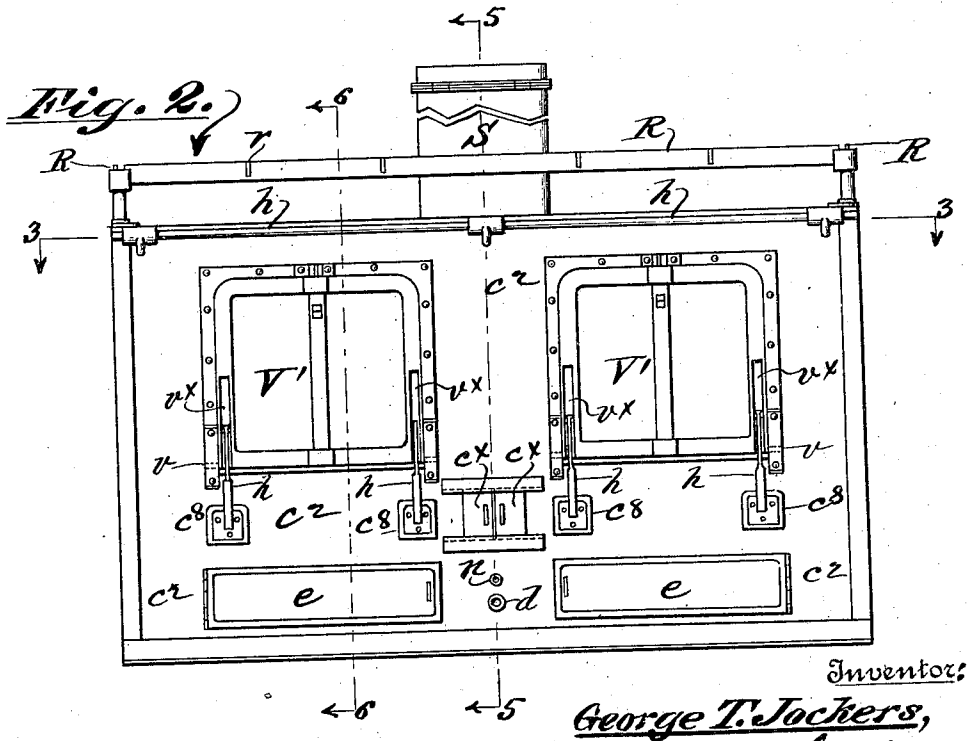


Fig. 2.



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May 20, 1924.

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OIL BURNING RANGE

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Fig. 3.

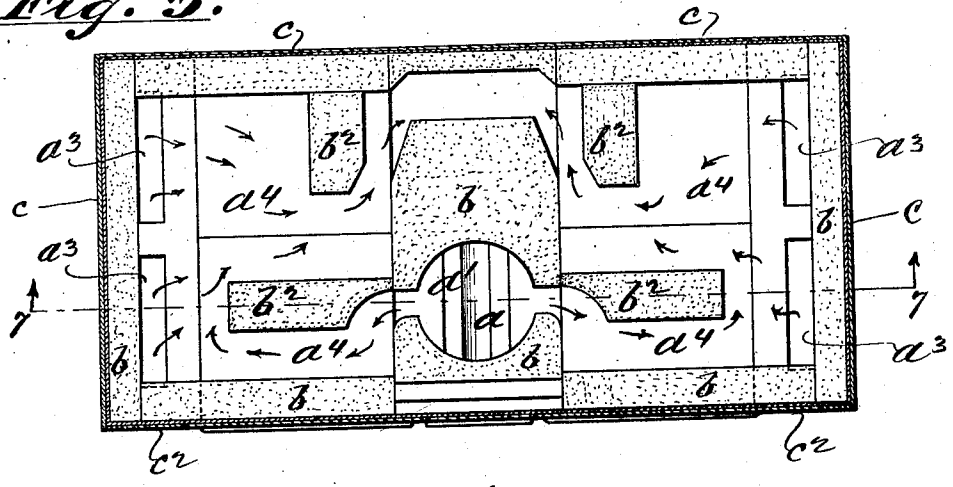
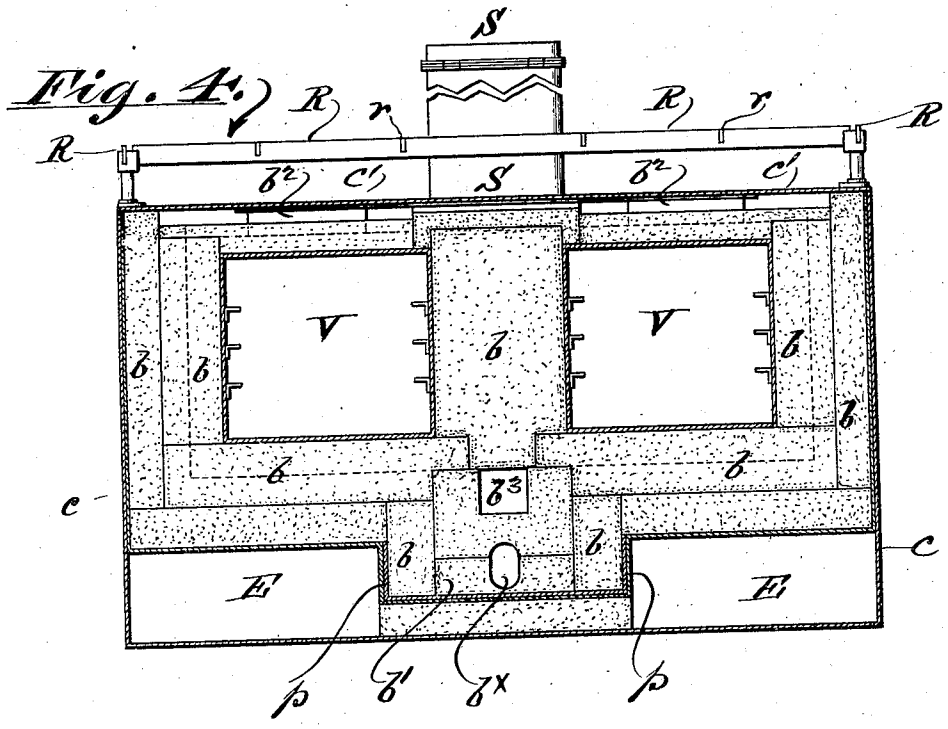


Fig. 4.



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OIL BURNING RANGE

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Fig. 5.

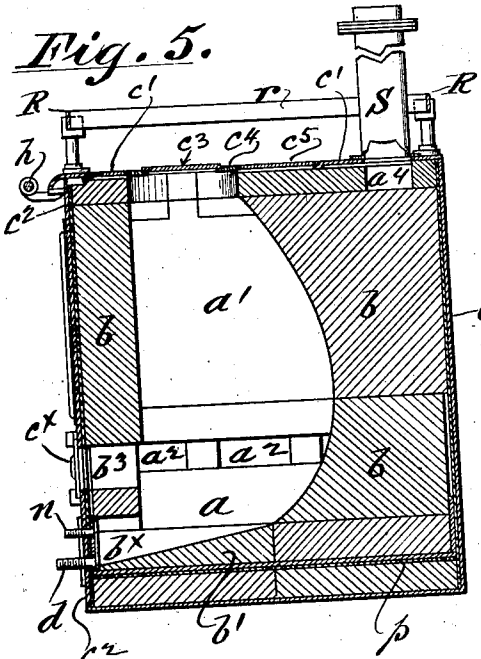


Fig. 6.

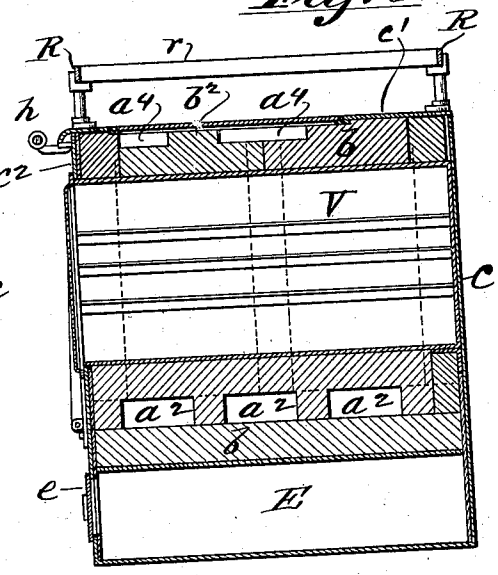
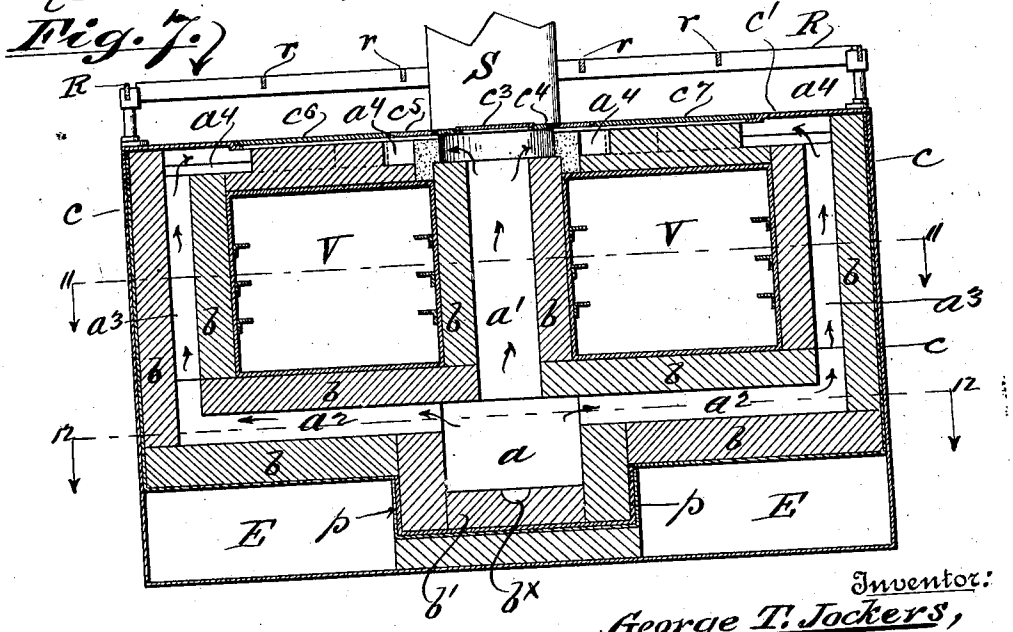


Fig. 7.



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OIL BURNING RANGE

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Fig. 8.

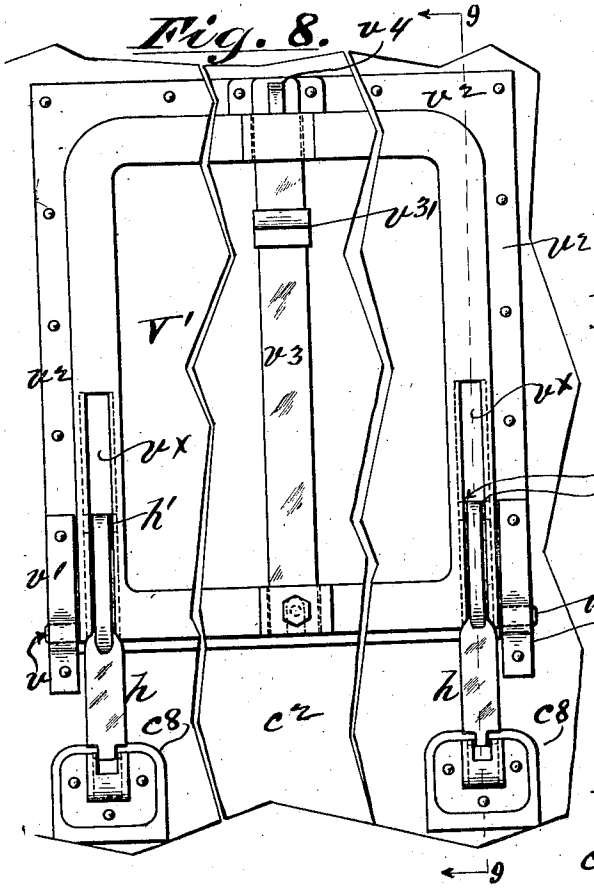


Fig. 9.

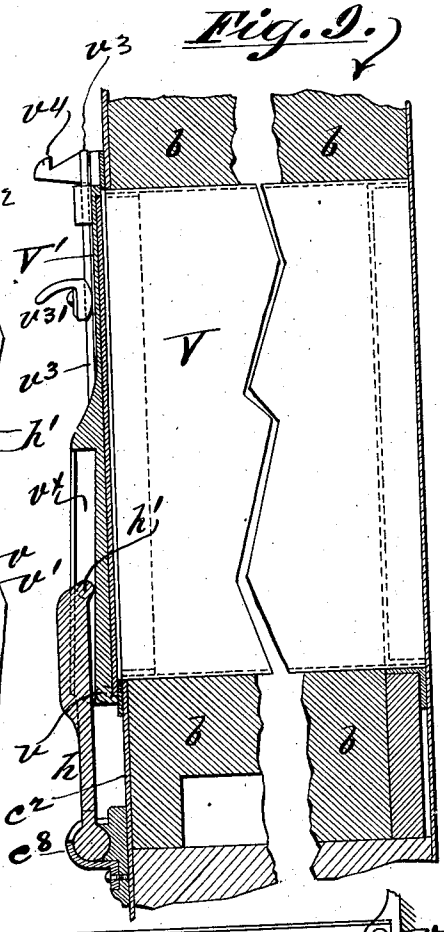


Fig. 13.

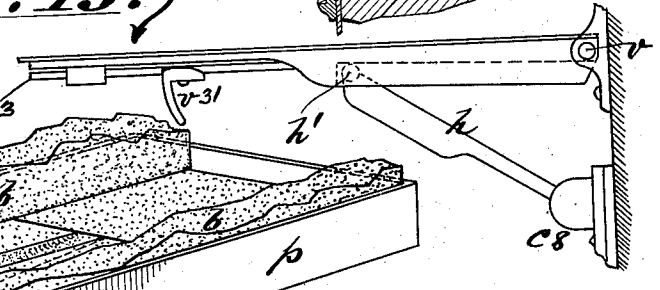
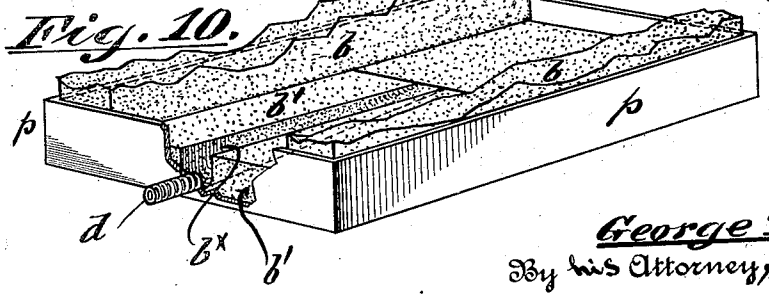


Fig. 10.



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1,494,843

OIL BURNING RANGE

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Fig. 11.

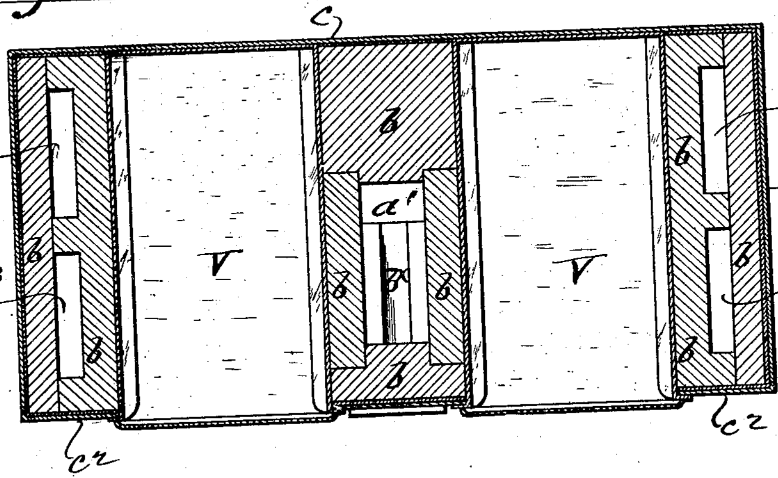
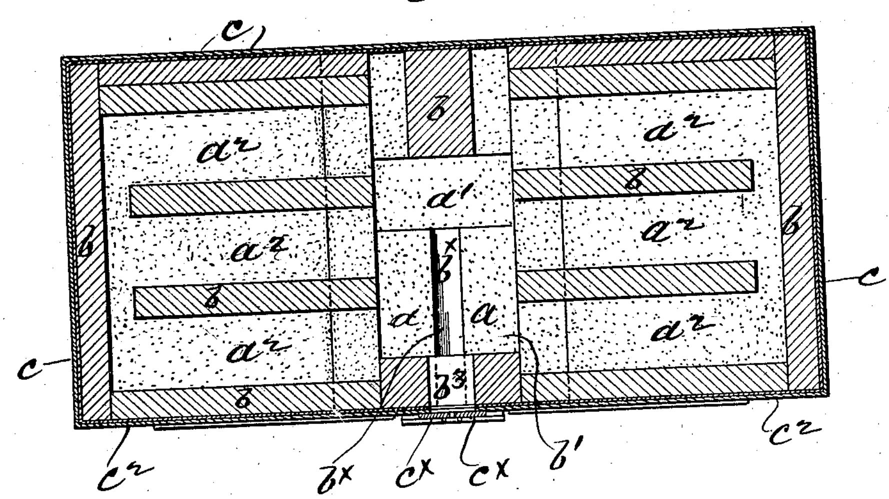


Fig. 12.



Inventor:

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By his Attorney, Geo. Wm. Miatt

Patented May 20, 1924. 1,494,843

UNITED STATES PATENT OFFICE.

GEORGE T. JOCKERS, OF BROOKLYN, NEW YORK.

OIL-BURNING RANGE.

Application filed April 30, 1923. Serial No. 635,470.

To all whom it may concern:

Be it known that I, GEORGE T. JOCKERS, a citizen of the United States, and a resident of the borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Oil-Burning Ranges, of which the following is a specification sufficient to enable others skilled in the art to which this invention appertains to utilize the same.

My improvements relate to heating and cooking ranges generally, in which the fuel used is atomized oil injected into a fire box in a manner well known in the prior state of the art,—my invention being the result of experimental investigation undertaken for the purpose of attaining perfect fuel combustion and the effective utilization of the full caloric value thereof; and consisting in the specific construction, combination, and arrangement of parts and appurtenances described and claimed, whereby original and important results are attained, all as hereinafter fully set forth.

In the accompanying drawings I exemplify a practical embodiment of the essential features of my invention, in a duplex type of range, although I do not limit myself to the identical form and construction shown in this connection in so far as minor details are concerned, since modifications, and equivalent mechanical expedients, may be resorted to with like effect, and without departing from the spirit and intent of my invention in this respect.

With this understanding,

Fig. 1, is a plan or top view of my improved oil burning range;

Fig. 2, is a front elevation thereof;

Fig. 3, is a horizontal section taken upon general plane of line 3—3, Fig. 2;

Fig. 4, is a vertical section taken on general plane of line 4—4, Fig. 1, being virtually an elevation of the range with the front plate, etc., thereof, omitted;

Fig. 5, is a central vertical section through the body of the range and taken upon general plane of line 5—5, Figs. 1 and 2;

Fig. 6, is a vertical section taken upon plane of line 6—6, Figs. 1 and 2;

Fig. 7, is a vertical longitudinal section taken upon plane of line 7—7, Figs. 1 and 3;

Fig. 8, is a frontal elevation in detail, upon a larger scale, of the oven doors and appurtenances, the figure being broken away in part;

Fig. 9, is a sectional detail taken upon plane of line 9—9, Fig. 8;

Fig. 10, is a perspective view of the drain tray.

Fig. 11, is a horizontal section taken upon plane of line 11—11, Fig. 7;

Fig. 12, is a horizontal section taken upon plane of line 12—12, Fig. 7.

Fig. 13, is a diagram illustrating the open oven door support in conjunction with Figs. 8 and 9.

I herein show and describe my new and improved oil burning range as adapted particularly to the requirements of use in ship galleys, although the main features in the construction and arrangements of parts are equally adapted for use for cooking ranges for hotels, restaurants, &c.

The fire brick b, or other refractory material constituting the body of the range is enclosed in a metallic casing c, c, at bottom and all four sides, the top plate c', of the casing serving as an extraneous heating and cooking surface,—a guard rail R, extending around said top plate c', said guard rail R, being provided with transverse bars r, r, and the whole rail functioning to retain cooking utensils, etc., positioned upon the top plate c, an essential precaution in the case of marine ranges. h, is a hand rail such as usually provided on the upper front portion of such ship ranges.

In the duplex and bi-laterally symmetrical construction and arrangements of parts shown herewith the combustion chamber a, is positioned centrally between and below the two ovens V, V, and communicates directly with the vertical flue a', and lateral horizontal flues a^2, a^2, for the products of combustion, as shown more particularly in Figs. 5 and 7, of the drawings. The bottom of the combustion chamber a, consists of a block b', of fire brick, in which is formed a forwardly inclined gutter b^x, the floor of which leads to a drain pipe d, through which surplus unconsumed oil is drawn off, thereby obviating all danger of explosion and preventing waste of fuel. The drain block b', and those adjacent rest on and in a metallic pan p, which prevents loss of oil by seepage through the fire brick, and leakage thereof under and back of the range,—a source of danger heretofore prevalent in the use of ranges of this class.

The horizontal flues a^2, a^2, communicate with vertical flues a^3, a^3, on the sides

of the ovens opposite to the combustion chamber a, and its direct vertical flue a', as shown more particularly in Fig. 7, of the drawings; and both these side flues a^3, a^3, and said direct flue a', lead to and communicate with horizontal flue spaces a^4, a^4, above the ovens V, V, and beneath the top plate c', which top flue spaces a^4, a^4, communicate indirectly with the stack S, through which the products of combustion are finally discharged. These upper flue spaces a^4, a^4, are shown connectively and collectively more particularly in Fig. 3, of the drawings, in which b^2, b^2, represent fire brick baffles which insure an equitable distribution of the products of combustion over the tops of the ovens V, V, as said products of combustion pass to the stack S.

The fuel oil is injected in the form of spray into the combustion chamber a, through a nozzle n, preferably of the type described in my Letters Patent No. 1,450,000, issued March 27th, 1923, or by any equivalent means.

b^3, is an air inlet passage in the front of the range positioned above the oil injecting means, and provided with one or more doors c^x, c^x, or equivalent means for regulating the admission of air to the combustion chamber a, to prescribe the quantity of oxygen essential to insure the incandescence and reduction of the nascent oil spray in the said combustion chamber to perfect gaseousness preparatory to the extreme of such products of combustion into the flues on their way to the discharge stack S. Ignition of the fuel within the combustion chamber may be effected through said air inlet b^3, or through the top of the direct flue a', by the removal of the central cover c^3, on the top plate c' as will be understood by reference more particularly to Fig. 5, of the drawings.

Said central cover c^3, rests on a concentric annular cover c^4, in turn supported on a removable central plate c^5, which is flanked by two other top plates c^6, c^7. The openings closed by the cover plates c^3, and c^4, are provided for the accommodation of pots, pans, etc., to be subjected to the direct heat of the main flue a'; and these larger cover plates c^5, c^6, and c^7, give access to the top flues for cleansing purposes, or for the accommodation of cooking utensils of larger size, according to circumstances and requirements of use. Obviously, the flanking top plates c^6, c^7, may be formed, if desired, with circular openings for pots, etc., closed normally by suitable covers as in the case of the central top cover plate c^5.

E, E, are compartments in the casing below the ovens V, V, closed normally by doors e, e, and which spaces may be utilized for the purpose of the temporary storage of plates, dishes, or cooking utensils which it is desired to keep warm, said spaces E, E, performing a double function in that they not only act as heating compartments as above stated, but also act as non-conducting areas to prevent loss of heat, and keep the floor cool.

The top, bottom and sides of the oven shells are made in one piece to facilitate replacement when desirable, in which case it is simply necessary to temporarily remove the upper brick work in order to remove an old shell and substitute a new one.

The doors V′, V′, of the ovens V, V, are pivotally supported at their lower edges by trunnions v, v, mounted in bearings in side brackets v', v', on the door frames v^2, v^2, as shown more particularly in Fig. 8; and they are held closed normally by slidable bolt bars v^3, which engage with hooks v^4, on the upper part of said door frames v^2, v^2, as indicated in both Figs. 8 and 9, of the drawings, $v^{3'}$, representing lifters by means of which the doors may be latched or unlatched. In order to support the doors when open, I provide side bracket arms h, h, fulcrumed in socket pieces c^8, c^8, on the front plate c^2, of the casing c, the outer ends of said bracket arms h, h, being formed with lugs h', h', which fit in shouldered grooves v^x, v^x, in the side members of the doors V′, V′, as will be understood by reference more particularly to the aforesaid Figs. 8 and 9, of the drawings. Thus when a door is opened and lowered into horizontal position as indicated diagrammatically in Fig. 13, the bracket arms h, h, will act as braces to support said door in such position.

It is to be understood that this special form of oven door V′, and articulative supports, forms no part of my present invention, the distinctive feature of which is the novel construction and arrangement of the range flues, and accessories relating thereto, whereby the products of combustion are caused to pass under, around, and over the ovens, in a manner essentially direct to the discharge stack, but never in a reverse or downward direction as in the prior state of the art.

By my method of insuring a continuous upward and forward passage of the products of combustion as related to the discharge stack, and around and on all sides of the oven, I attain a relatively high degree of temperature in the oven with a minimum amount of fuel oil, practical and comparative tests having demonstrated the fact that the use of a pint of oil in my improved structure of oil burning range will insure results equivalent to those attained by an expenditure of two gallons of oil in ranges of this class as heretofore constructed. Furthermore, I attain this economical desideratum with greater safety because leakage

and seepage of oil is eliminated, with all danger of extraneous fire or explosion; and in this connection it may be mentioned also that explosion of oil within the combustion chamber is avoided by the draining off of all drip or surplus oil that might otherwise collect in the bottom of said combustion chamber.

It is to be understood that while I herein illustrate the essential principles of my invention as embodied in a twin oven range, the same may be utilized for a single oven range with like results, in that an equitable distribution of heat to oven space is attained in either case, as well as to the heating surfaces constituting the top of the range.

Furthermore, it is to be understood that by the term "fire-brick" as herein used I mean to designate any refractory material known commercially as by that name, or any equivalent thereof, said body structure of refractory material being indispensible in a range of this character in which the intense heat generated by oil-spray combustion would otherwise result in a speedy deterioration and destruction of the range, considered in its unitary sense.

What I claim as my invention and desire to secure by Letters Patent is,

1. A substantially all fire brick range embodying a fire-brick enclosing structure with an oven therein, a combustion chamber beneath the oven, a vertical flue and lateral horizontal flues around the oven, the bottom of said combustion chamber comprising a fire brick block with forwardly-inclined gutter, the upper wall of the oven having horizontal flue spaces, and fire brick baffles to insure distribution of the products of combustion over the top of the oven.

2. An oil burning range comprising a fire box and means for injecting fuel thereto, a flue extending upwardly from the fire box, the back wall of said flue and box being formed with a gradual curve to the top of the structure and extending approximately half the distance from front to rear of the range.

3. An oil burning range with a fire box and a flue extending to the upper front part of the range, horizontal extension flues at each side of the upper end of said first flue, and baffles forming the back of said second flue and extending outwardly behind the first flue.

4. An oil burning range with a fire box and a flue extending to the upper front part of the range, horizontal extension flues at each side of the upper end of said first flue, baffles forming the back of said second flue, and extending outwardly behind the first flue, and other baffles at right angles to the first-named baffles.

5. An oil burning range with a fire box and a flue extending to the upper front part of the range, horizontal extension flues at each side of the upper end of said first flue, baffles forming the back of said second flue and extending outwardly behind the first flue, and twin ovens in proximity to the said flues.

6. An oil burning range with a fire box and a flue extending to the upper front part of the range, horizontal extension flues at each side of the upper end of said first flue, baffles forming the back of said second flue and extending outwardly behind the first flue, other baffles at substantially right angles to the first-named baffles, and twin ovens in proximity to the said flues.

GEORGE T. JOCKERS.

Witnesses:
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GEO. WM. MIATT.