April 9, 1935. O. C. SCHROEDER ET AL 1,997,347

OIL BURNER APPARATUS

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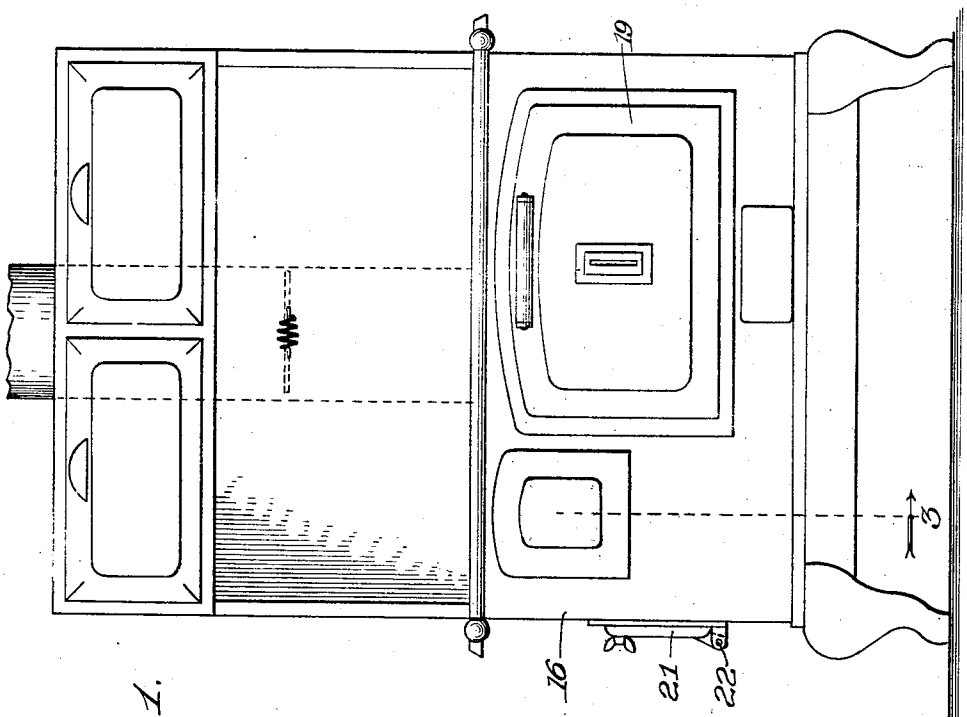


Fig. 1.

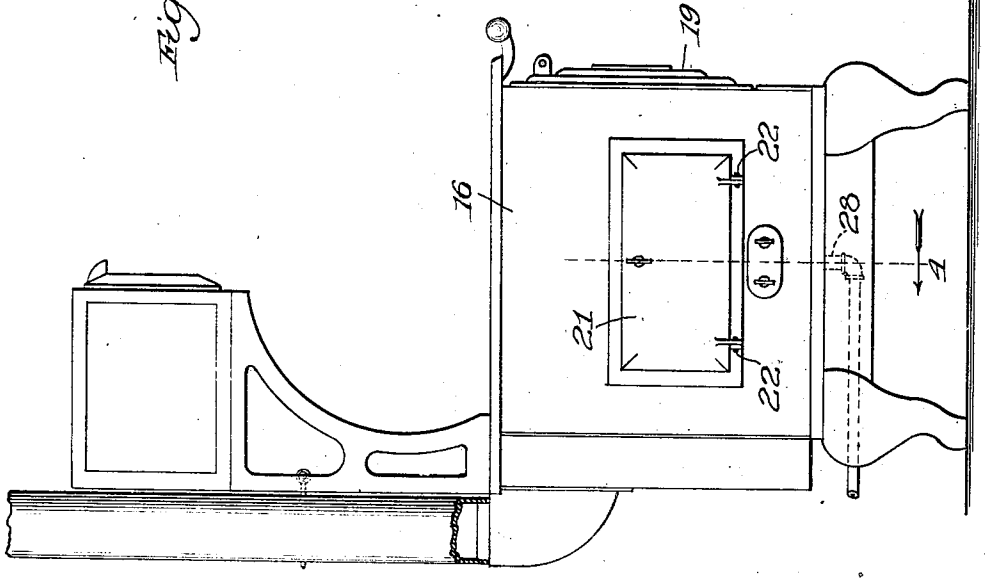


Fig. 2.

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Fig.3.

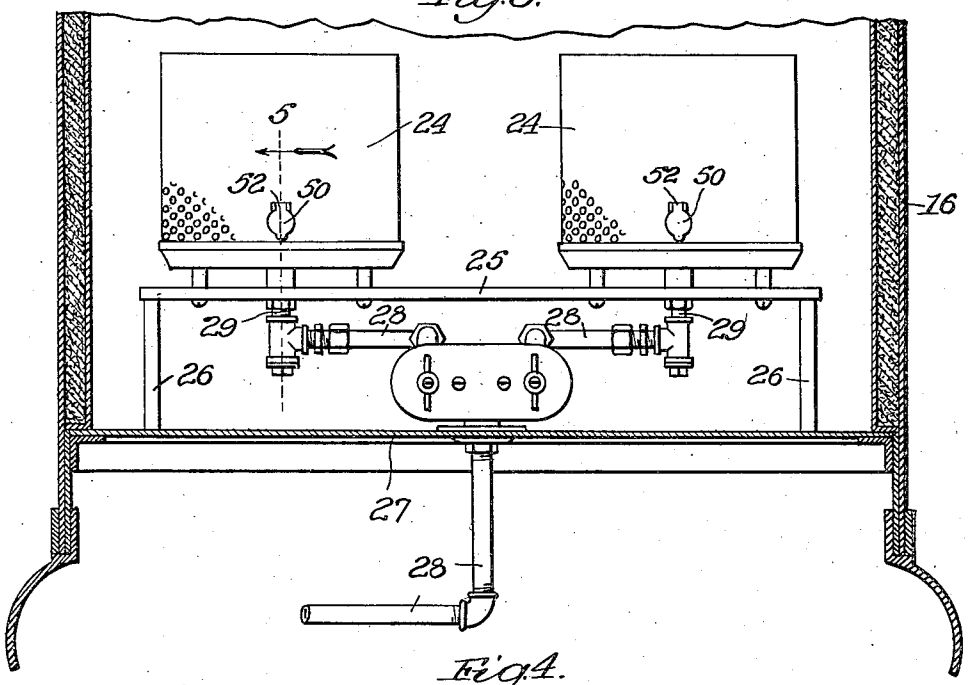


Fig.4.

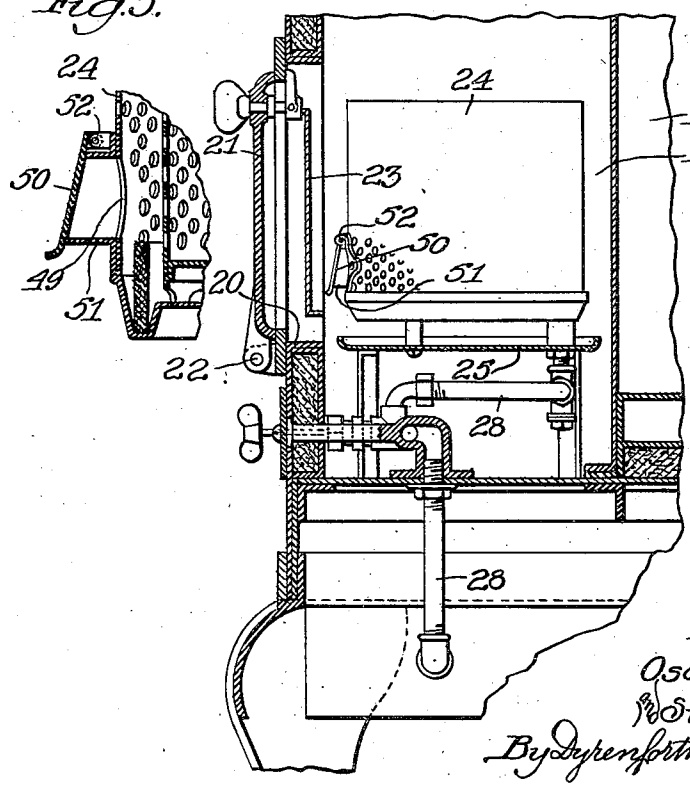
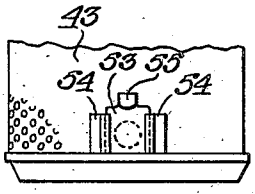


Fig.5.

Fig.6.



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Fig. 7.

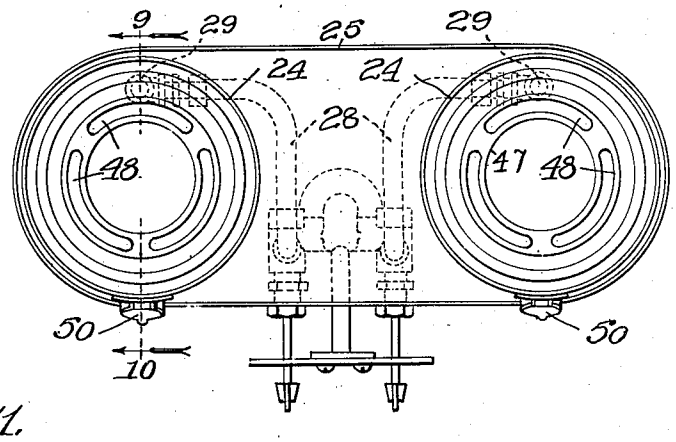


Fig. 11.

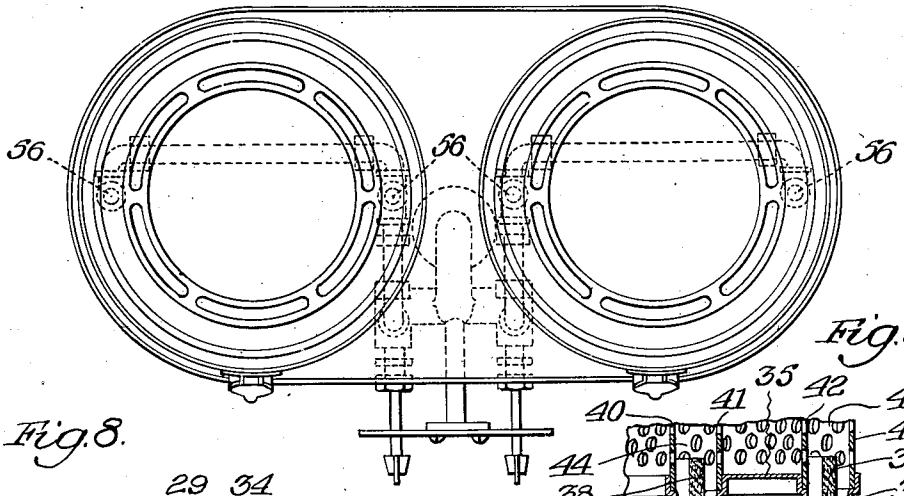


Fig. 8.

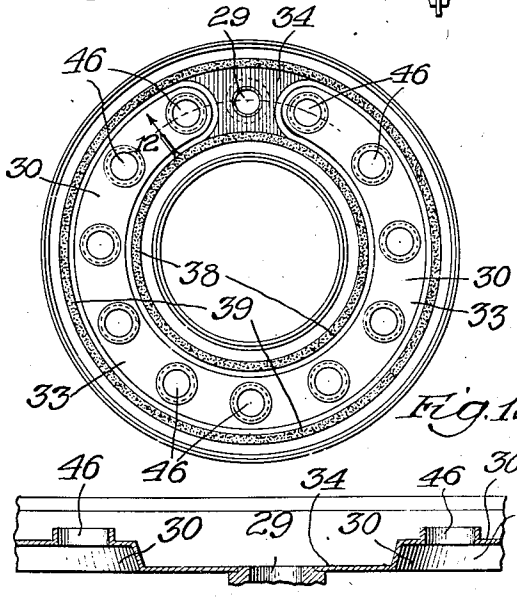


Fig. 12.

Fig. 9.

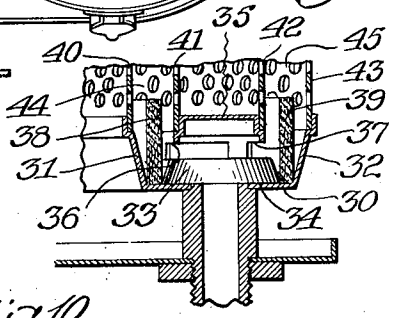
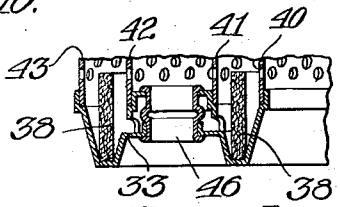


Fig. 10.



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OIL BURNER APPARATUS

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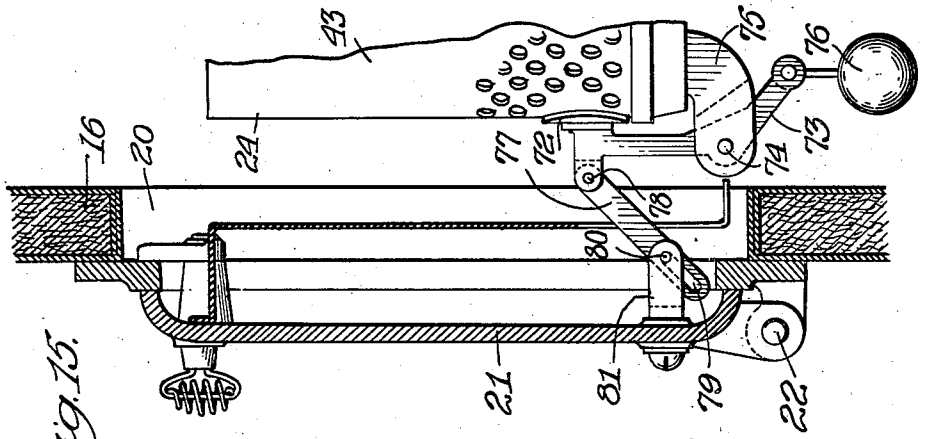


Fig. 15.

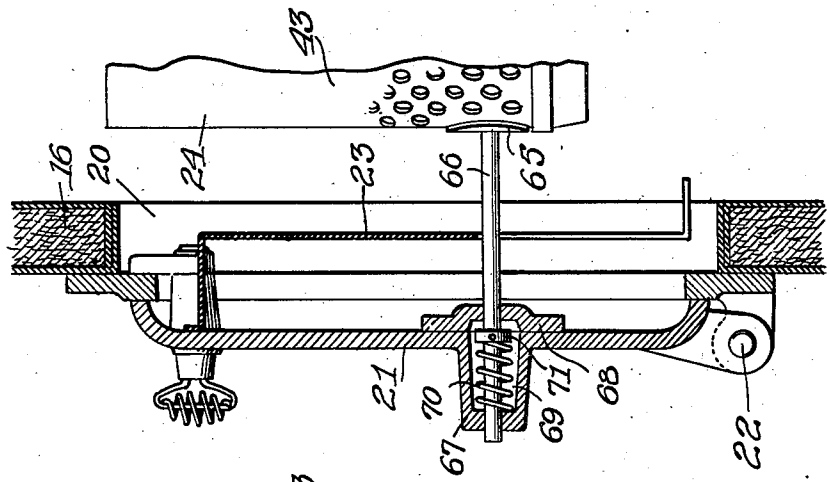


Fig. 14.

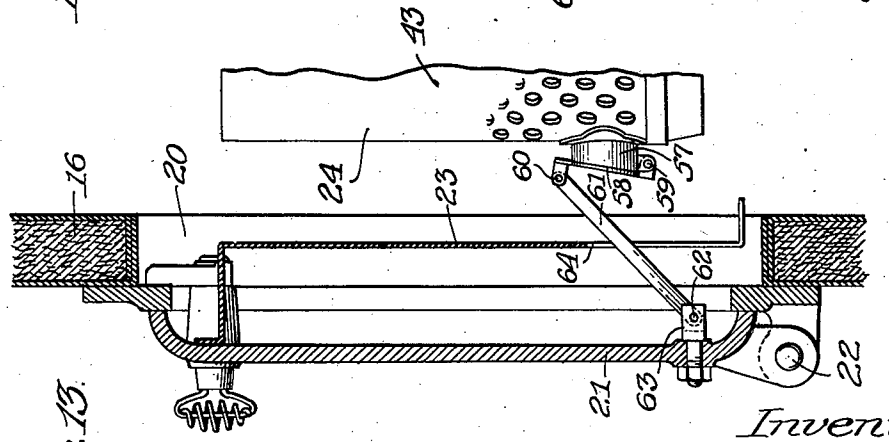


Fig. 13.

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Patented Apr. 9, 1935

1,997,347

UNITED STATES PATENT OFFICE

1,997,347

OIL BURNER APPARATUS

Oscar C. Schroeder and Stanley Perry, Chicago, Ill., assignors to Automatic Burner Corporation, Chicago, Ill., a corporation of Illinois

Application October 26, 1932, Serial No. 639,685

7 Claims. (Cl. 126—45)

Our invention relates to oil burner structures more particularly of the type comprising upwardly extending shells, commonly of cylindrical form and spaced apart, certain thereof being perforated, and forming between them a combustion chamber, with a wick located at the bottom thereof for absorbing oil supplied thereto and which is ignited at the wick by the operator for the preliminary heating of the burner, the invention relating more especially to burners of this type which are located in the fire pots of ranges, stoves, or the like, and are commonly referred to as range burners.

Heretofore the construction of burner apparatus of this type has been such that the igniting of the fuel is effected by the introduction of a torch or taper downwardly through the top of the burner structure which is not only an awkward way of lighting the burner but is inconvenient and often results in the objectionable displacement of parts of the burner and is generally regarded in practice as an objection much desired to be overcome, this objection being more pronounced in stoves, ranges, or the like, without cover lids, and requiring the use of a torch or taper which, for the lighting of the burner, is introduced downwardly into the combustion chamber through a door in the side of the stove or range.

Our primary object is to provide for the simple and easy lighting of oil burners particularly those employing wicks and especially when installed in stoves, ranges, or the like, and without requiring the introduction of the lighting element into the combustion chambers through their tops and without disturbing the shells or cover plates at the tops thereof when formed of separate parts.

Referring to the accompanying drawings:

Figure 1 is a view in front elevation of a range equipped with an oil burner and embodying our improvement.

Figure 2 is an end view of the structure shown in Fig. 1.

Figure 3 is an enlarged broken view in sectional elevation of the structure shown in Figs. 1 and 2, the section being taken at the line 3 on Fig. 1 and viewed in the direction of the arrow.

Figure 4 is a similar view, the section being taken at the line 4 on Fig. 2 and viewed in the direction of the arrow.

Figure 5 is an enlarged fragmentary sectional view of one of the similar burners. the section being taken at the line 5 on Fig. 3 and viewed in the direction of the arrow.

Figure 6 is a broken view in elevation of a burner showing another embodiment of the invention.

Figure 7 is a plan view of the burner assembly of Figs. 3 and 4.

Figure 8 is a plan view of one of the similar burner-heads of Fig. 7 with certain parts removed.

Figure 9 is an enlarged broken sectional view taken at the line 9 on Fig. 7 and viewed in the direction of the arrow.

Figure 10 is an enlarged broken sectional view taken at the line 10 on Fig. 7 and viewed in the direction of the arrow.

Figure 11 is an enlarged plan view showing a modification of the burner assembly.

Figure 12 is an enlarged broken developed sectional view taken at the line 12 on Fig. 8 and viewed in the direction of the arrow; and

Figures 13, 14 and 15, broken views in vertical sectional elevation of adjacent portions of the range and oil burner showing several other embodiments of the invention.

Referring to the construction shown in Figs. 1–5 and 7 to 10, inclusive, 16 represents, by way of example, a range generally of common construction and presenting an elongated fire pot 17 extending lengthwise across one end of the range and an oven 18 at the other end thereof and having a door 19, the outer side wall of the fire pot 17 which extends across the adjacent end of the range having an opening 20 controlled by a door 21 hingedly supported at its lower edge as represented at 22 and shown as provided with a substantially vertical baffle plate 23 extending into the opening 20.

Located in the fire pot 17 is an oil burner shown as comprising two oil burner heads 24 alike in construction and which extend in a series lengthwise of the fire pot 17.

The burner heads are shown as supported on a plate 25 which, in turn, is supported at legs 26 on the bottom 27 of the fire pot, the arrangement being such that the burner heads 24 extend substantially in the horizontal plane of the opening 20.

The burner heads 24 are shown as supplied with fuel oil at the rear thereof (viewing the structure as in Figs. 2 and 3). The oil may be supplied to the burner heads in any desirable way and under any suitable control as for example as is commonly provided for in oil burning apparatus, the means shown for this purpose comprising piping 28 which would connect with any suitable source of fuel-oil supply and presenting

terminal outlet pipes 29 which open into the rear portions of the burner heads 24.

The particular burner heads 24 illustrated are of the same general construction as the burner heads shown and described in our pending application for U. S. Letters Patent Serial No. 497,314, filed November 21, 1930, each involving a base ring 30 having upturned annular flanges 31 and 32 at its inner and outer peripheries, with its base portion upwardly deflected as represented at 33, except at the zone represented at 34 at which the oil-feed pipe discharges upwardly into the burner head, a ring 35 having depending annular flanges 36 and 37 apertured at intervals around their lower edges and superposing the deflected portion 33 and with the latter and the flanges 31 and 32 forming troughs shown as containing annular wicks 38 and 39, and four perforated cylindrical shells 40, 41, 42 and 43 extending one within the other and spaced apart and telescoped with the flanges 31 and 32 and the flanges 36 and 37 of the ring 35, the shells 40 and 41 forming the side walls of an inner combustion chamber 44 and the shells 42 and 43 forming the side walls of an outer combustion chamber 45, the annular space between the shells 41 and 42 opening at its lower end to the atmosphere through an annular series of pipes one of which is represented at 46, whereby combustion supporting air is supplied through the shells 41 and 42 to the combustion chambers 44 and 45.

A cover plate represented at 47 extends over the annular chamber formed by the shells 41 and 42 and the combustion chamber 44 and is apertured as represented at 48 to render the top of the chamber 44 open.

The burner shown is started into operation by the operator igniting the oil on the outer wicks 39 and supplied thereto through the pipes 29, the apparatus, to the end of permitting of the easy and ready lighting of the wicks, involving the provision of an opening 49 in the front side of each shell 43 adjacent its lower edge and thus substantially in line with the upper edge of the wicks 39 through which the operator, reaching through the opening 20 in the fire-pot wall (assuming the door 21 to have been previously opened) inserts a match, or other suitable lighting means, for igniting the oil on the wick.

As will be understood, should the fuel used be highly volatile the wicks may be dispensed with, in which case the fuel would be ignited by igniting the vapor rising therefrom, by any suitable lighting means introduced through the opening 20.

The opening 49 is provided with a closure shown as in the form of a door 50, there being preferably interposed between the door 50 and the shell 43 a tubular casing 51 secured to the shell 43 and to which the door 50 is hinged at its upper edge as represented at 52, the hinge 52 being positioned at such a distance from the shell 43 that in the swinging of the door 50 upwardly to open position it moves beyond dead center and thus remains in open position until swung by the operator out of this position.

According to the embodiment of the invention illustrated in Fig. 6 the removable closure member for the opening 49 instead of being in the form of a hinged plate as in Figs. 3–5, is in the form of a slide which is represented at 53 and slides at its opposite vertical edges in vertical guideways formed by the angle plates 54 secured to the outer surface of the shell 47, the closure member 53 being provided with a projection 55 to be engaged by the hand of the operator to facilitate the opening and closing thereof.

Where the burner heads are of such construction or size as to render it necessary or advisable to introduce the oil into the base member of the burner at a plurality of points (in which construction a flat zone, such as that shown at 34 in Figs. 8 and 9 would be provided in each burner head base at each oil-inlet to permit flow of oil to all of the wick troughs) the parts of the apparatus would be so positioned that the closure-equipped opening in each outer shell and corresponding with the openings 49 of Figures 1–6, would be located midway between adjacent ones of the oil-inlets of each burner head. Thus, by way of example and as shown in Fig. 11, where two inlets for each burner head and shown at 56 are provided in diametrically opposed position, the closure-equipped opening for each burner head would be located midway between the inlets 56.

It may be here stated that the purpose of providing the opening 49 at a point diametrically opposed to the single oil-inlet as in the case of the construction shown in Figs. 3, 4 and 7 and midway between the oil-inlets of a burner head where two such inlets are provided, as in the case of the construction of Fig. 11, is to provide for the igniting of the fuel at a point as far remote as possible from the oil inlet or oil-inlets as the case may be, thereby insuring of the rapid propagation of the flame throughout the circumference of the combustion chamber and the rapid establishment of uniform combustion conditions throughout the circumference of the burner, and which is of particular importance in constructions employing wicks as above described.

The invention also involves as to a certain phase thereof, further modifications of the closure means for the opening 49 in the outer shell of the burner head, whereby the operations of opening the door of the fire pot and the closure for the opening referred to, instead of being performed in succession by a series of operations, are effected by the single act of the operator in opening the fire pot door, Figs. 13, 14 and 15 illustrating embodiments of the invention in a structure of this character.

Referring to Fig. 13, the burner-head-opening 49 in the shell 43 is equipped with a casing represented at 57 and corresponding with the casing 51 of the preceding figures of the drawings. The door in this construction is represented at 58, but instead of being hinged at its upper end is hinged at its lower end 59 to the casing 57 its upper end being pivotally connected at 60 with the upper end of a link 61 pivotally connected at its lower end at 62 with a stud 63 carried by the door 21 above its hinge 22, the partition plate 23 being slotted at 64 to receive the link.

As will be understood from the foregoing, opening of the door 21 will operate, through the connection 61, to swing the door 58 to open position to permit of the lighting of the wick, and swinging of the door 21 to closed position will close the door 58.

Figures 14 and 15 develop the feature of the automatic opening of the closure for the shell-opening 49 by the act of opening the fire pot door, with a view to providing for the tight closing of this shell-opening regardless of slight variations in the dimensions of the parts of the range or stove and the relative positioning of the burner heads and the fire pot door.

In Fig. 14 the closure member for the shell-opening and indicated at 65 is flexibly mounted on the inner end of a rod 66 slidably mounted in the door 21 which, in this particular construction, is provided with a hollow boss 67 and a separate plate 68 affording a socket 69 housing a coil spring 70 which surrounds the rod 66 and is confined between an end wall of the socket 69 and a collar 71 pinned to the rod 66. The spring 70 operates to urge the closure member 65 toward the shell 43 and thus provides a certain amount of take-up or lost motion which insures the tight closing of the closure member 65 against the shell 43 at the opening therein in the closed position of the door 21.

In Fig. 15, the closure member for the shell-opening and represented at 72 is provided on the upper end of a bell crank lever 73 fulcrumed at 74 on a bracket 75 depending from the base of the burner head, the lower end of the lever 73 being associated with means, shown as in the form of a weight 76, for normally holding the closure member 72 in closed position against the shell 43. A link 77 is pivotally connected at its upper end, as indicated at 78, to the upper end of the bell crank lever 73 and engages at an elongated slot 79 in its lower end, with a pin 80 carried by a stud 81 on the fire pot door 21. The parts of the structure are so proportioned and arranged as shown that when the door 21 is in closed position the pin 80 will extend toward the rear end of the slot 79 in which position the weight 76 securely holds the closure member 72 in closed position, but in the opening movement of the door 21 the pin 80 will engage the forward end of the slot 79 thereby rocking the lever 73 against the action of the weight 76 and withdrawing the closure member 72 from closed position.

The claim of this application is not directed to any feature of the burner structure independent of the provision of a lighter opening in the outer side wall of the burner, as the novel features of the burner construction, regardless of the provision of the lighter opening, form the subject of our pending application Serial No. 497,314, filed November 21, 1930.

While we have illustrated and described certain particular embodiments of the invention, we do not wish to be understood as intending to limit it thereto as the same may be variously modified and altered and the invention embodied in other forms of structure without departing from the spirit of the invention.

What we claim as new, and desire to secure by Letters Patent, is:

1. In combination, a stove, range, or the like, having a fire pot containing an opening in a side wall thereof, a removable closure for said opening, an oil burner in said fire pot and comprising a combustion chamber formed of inner and outer side walls, said outer side wall having an opening adjacent its lower end and in substantial registration with the opening in the side wall of said fire pot and through which openings means may be introduced to ignite fuel at the lower portion of said combustion chamber, a removable closure for said last-named opening, and means operatively connecting said closures together, for the purpose set forth.

2. In combination, a stove, range, or the like, having a fire pot containing an opening in a side wall thereof, a removable closure for said opening, an oil burner in said fire pot and comprising a combustion chamber formed of inner and outer side walls, said outer side wall having an opening adjacent its lower end and in substantial registration with the opening in the side wall of said fire pot and through which openings means may be introduced to ignite fuel at the lower portion of said combustion chamber, a removable closure for said last-named opening mounted independently of said first-named closure; and means operatively connecting said closures together, for the purpose set forth.

3. In combination, a stove, range, or the like, having a fire pot containing an opening in a side wall thereof, a removable closure for said opening, an oil burner in said fire pot and comprising a combustion chamber formed of inner and outer side walls, said outer side wall having an opening adjacent its lower end and in substantial registration with the opening in the side wall of said fire pot and through which openings means may be introduced to ignite fuel at the lower portion of said combustion chamber, a removable closure for said last-named opening, and means operatively connecting said closures together and affording lost motion between said closures, for the purposes set forth.

4. In combination, a stove, range, or the like, having a fire pot containing an opening in a side wall thereof, a removable closure for said opening, an oil burner in said fire pot and comprising a combustion chamber formed of inner and outer side walls, said outer side wall having an opening adjacent its lower end and in substantial registration with the opening in the side wall of said fire pot and through which openings means may be introduced to ignite fuel at the lower portion of said combustion chamber, and a removable closure for said last-named opening, carried by said first-named closure.

5. In combination, a stove, range, or the like, having a fire pot containing an opening in a side wall thereof, a removable closure for said opening, an oil burner in said fire pot and comprising a combustion chamber formed of inner and outer side walls, said outer side wall having an opening adjacent its lower end and in substantial registration with the opening in the side wall of said fire pot and through which openings means may be introduced to ignite fuel at the lower portion of said combustion chamber, a removable closure for said last-named opening carried by said first-named closure and movable thereon, and means urging said second-named closure toward closing position.

6. In combination, a stove, range, or the like, having a fire pot containing an opening in a side wall thereof, a removable closure for said opening, an oil burner in said fire pot and comprising a combustion chamber formed of inner and outer side walls, said outer side wall having an opening adjacent its lower end and in substantial registration with the opening in the side wall of said fire pot and through which openings means may be introduced to ignite fuel at the lower portion of said combustion chamber, a removable closure for said last-named opening pivotally supported and tending to move toward closed position, and a lost-motion connection between said closures, for the purpose set forth.

7. In combination, a stove, range, or the like, having a fire pot containing an opening in a side wall thereof, a removable closure for said opening, an oil burner in said fire pot and comprising a combustion chamber formed of inner and outer side walls, said outer side wall having an opening adjacent its lower end and in substantial registration with the opening in the side wall of

said fire pot and through which openings means may be introduced to ignite fuel at the lower portion of said combustion chamber, a removable closure for said last-named opening, a bell crank lever pivoted between its ends and carrying said second-named closure, means engaging said bell crank lever and tending to move it to a position in which said second-named closure is in closed position, and a lost-motion connection between said first-named closure and said bell crank lever, for the purpose set forth.

OSCAR C. SCHROEDER.
STANLEY PERRY.

CERTIFICATE OF CORRECTION.

Patent No. 1,997,347. April 9, 1935.

OSCAR C. SCHROEDER and STANLEY PERRY.

It is hereby certified that the above numbered patent was erroneously issued to "Automatic Burner Corporation", as assignee of the entire interest in said invention whereas said patent should have been issued to Oscar C. Schroeder and the Automatic Burner Corporation, said corporation being assignee of the entire right of "Stanley Perry", as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of May, A. D. 1935.

Leslie Frazer

(Seal) Acting Commissioner of Patents.