July 26, 1938. J. JENSEN 2,125,166

ELECTRICALLY IGNITED DISTILLATE OIL BURNER

Filed Jan. 7, 1937 2 Sheets-Sheet 1

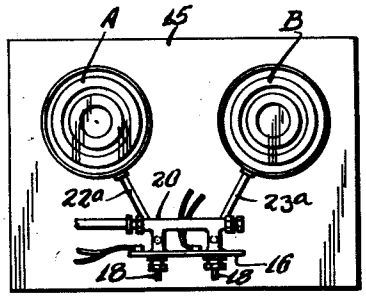


Fig. 1.

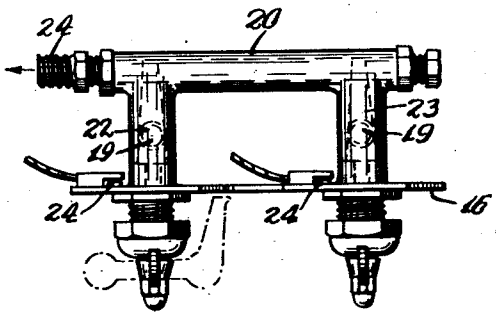


Fig. 2.

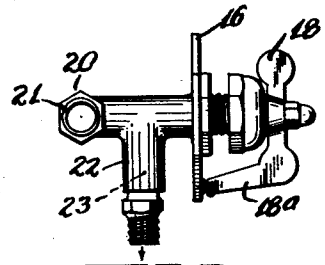


Fig. 3.

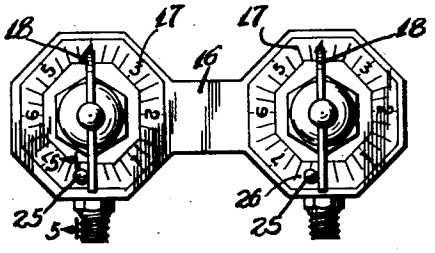


Fig. 4.

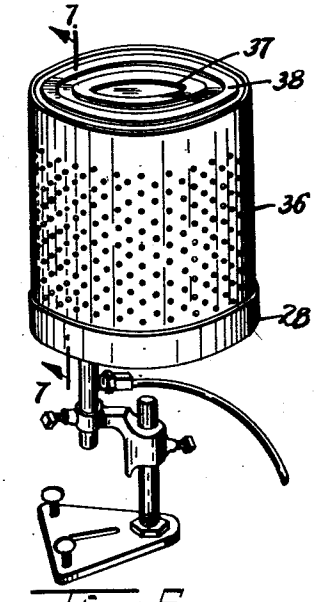


Fig. 6.

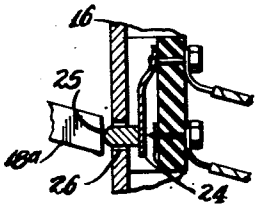


Fig. 5.

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ELECTRICALLY IGNITED DISTILLATE OIL BURNER

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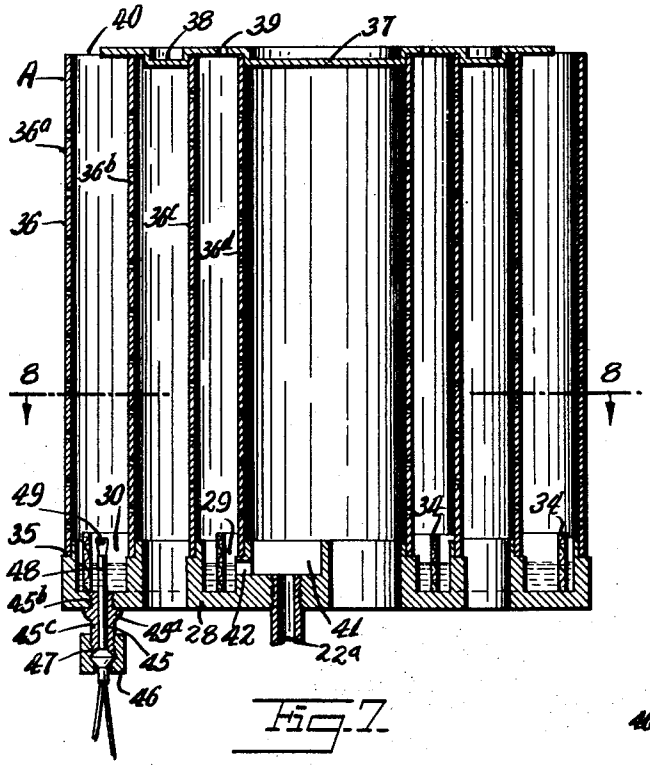


Fig. 7.

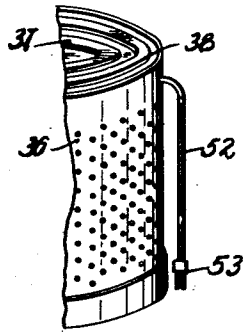


Fig. 12.

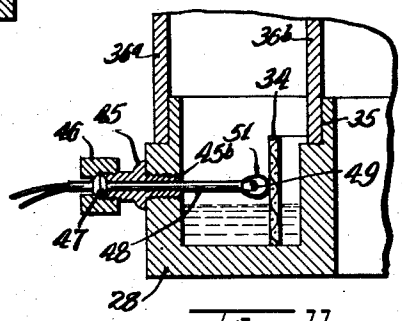


Fig. 11.

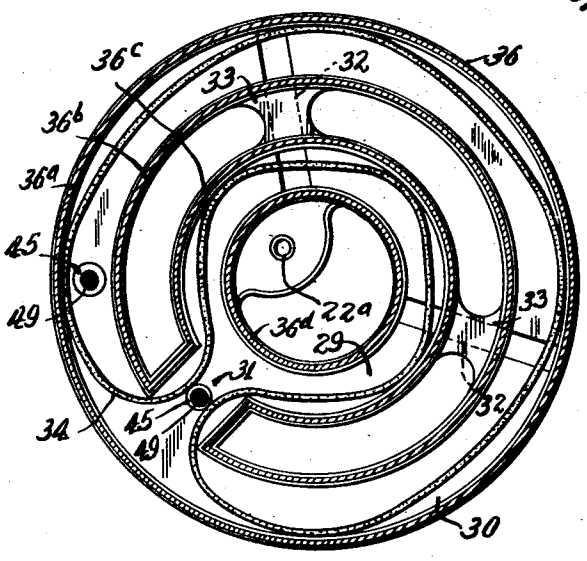


Fig. 8.

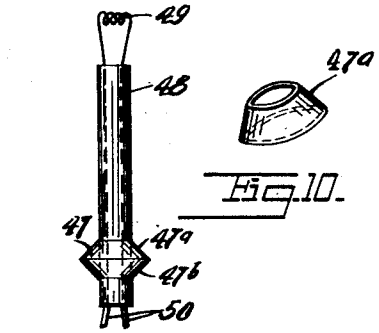


Fig. 10.

Fig. 9.

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UNITED STATES PATENT OFFICE

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ELECTRICALLY IGNITED DISTILLATE OIL BURNER

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Application January 7, 1937, Serial No. 119,395

4 Claims. (Cl. 158—90)

This invention relates to new and useful improvements in an electrically ignited distillate oil burner.

The invention has for an object the construction of a device as mentioned which is characterized by the fact that it is provided with a control cock for controlling the supply of fuel oil to the burners, and a switch which is associated with the control cock in a manner so that when the oil is turned on an ignition device momentarily operates to ignite the wick of the burner.

More particularly the invention proposes to make its features adaptable to combination burners consisting of more than one burner element or stove portion, each of which is controlled by a separate fuel control cock.

Another one of the objects of this invention resides in a particular construction of burner which is characterized by a base portion with a pair of concentric fuel oil holding grooves and troughs and concentric perforated shells and covers for the shells associated with each other in a particular manner.

Still further the invention also proposes a novel construction of ignition device which is characterized by a bushing to be mounted through the bottom or side wall of one of the troughs for the oil fuel and supporting an insulation element in conjunction with a clamp and a cap in a manner so that the insulation element may be adjusted to various positions and support an incandescent coil at a most advantageous location for efficiently igniting the wick.

Still further the invention proposes an arrangement so that the wick for the distillate oil burner is continuous irrespective of the number of grooves formed in the base plate thereof so that only one ignition device is needed for lighting the distillate oil burner.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:—

Fig. 1 is a plan view of a pair of adjacent stove and range burner elements controlled with fuel controlling cocks and automatic ignition devices according to this invention.

Fig. 2 is a fragmentary enlarged detailed view of a portion of Fig. 1 showing in particular the fuel control cocks and the switches of the ignition device.

Fig. 3 is an edge elevational view looking from the left hand end of Fig. 2.

Fig. 4 is a front elevational view of Fig. 2.

Fig. 5 is a fragmentary enlarged sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a perspective view of one of the stove and range burners.

Fig. 7 is a transverse vertical sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a horizontal sectional view taken on the line 8—8 of Fig. 7.

Fig. 9 is an elevational enlarged view of the insulation element, the lamp which is associated therewith, and the incandescent coil used in the ignition system of the device.

Fig. 10 is a perspective view of one of the jaws of the clamp shown in Fig. 9.

Fig. 11 is a fragmentary enlarged view similar to the lower corner of Fig. 7 but illustrating a modified construction.

Fig. 12 is a fragmentary perspective view similar to Fig. 6 but illustrating another modified construction.

The electrically ignited stove and range burner, according to this invention, may consist of one or more units. In Fig. 1 a base 15 is illustrated supporting a pair of adjacent stove and range burner units A and B. These units are of identical construction. They are controlled and operated by a combination cock and ignition control device. This device comprises a plate 16 imprinted or formed with scales 17 over which the control handle 18 of a pair of cocks 19 operate. These cocks 19 control the supply of fuel oil through a cock body 20 which has an inlet 21 and a pair of outlets 22 and 23.

Each of the control handles 18 controls the passage of fuel oil through one of the outlets. The details of the cocks will not be given in this specification as they form no part of the invention. The outlets 22 and 23 are respectively connected by pipes 22^a and 23^a to the stove or range units A and B. Adjacent each cock there is an ignition switch 24. Each of these switches comprises a pair of adjacent contacts, one of which is resilient and which are normally separated from each other. The resilient contact is provided with a button 25 which passes through an opening 26 in the plate 17.

This button 25 is adapted to be automatically pressed in by a projecting finger 18^a from the handle 18. The button 25 is so positioned that it is necessary for the cock to be fully opened by

turning the handle 18 substantially through 350°. Then the finger 18ª rides upon the button 25 to close the switch 24. This switch 24 controls an ignition device hereinafter more fully described, which then operates to ignite the wick or the fumes from the wick, or the fumes from the oil of the stove or distillate oil burner. The handle 18 is then turned back to a desired amount so that the stove operates at full or partial heating capacity.

Each stove or distillate oil burner comprises a base plate 28 having a pair of concentric fuel oil holding grooves or troughs 29 and 30 in the top side thereof and a main passage 31 connecting these grooves and supplementary passages 32 for further connecting these grooves. The supplementary passages 32 are tunneled through bosses 33 disposed between the troughs 29 and 30. The passage 31 is arranged on the top side of the base plate and directly connects the grooves 29 and 30 so that the wick for the burner may extend therethrough. This arrangement permits a continuous wick to be used for both of the grooves. This wick is indicated by reference numeral 34. It is shown resting in a vertical position within the grooves and extends continuously along the entire lengths of the grooves 29 and 30. The wick may also be arranged singly or in any other suitable manner.

The walls which form the troughs or grooves have recessed edge portions 35 forming shoulders upon which concentric perforated shells 36 may be rested. If the stove or range burner has a pair of concentric grooves or troughs it is required that there be four concentric shells. These shells are separately indicated by numerals 36ª, 36ᵇ, 36ᶜ and 36ᵈ. These perforated shells may be substantially of the same height. There is a cover 37 mounted across the upper end of the inner shell 36. It has a projecting periphery which is slightly spaced from a concentric cover 38 mounted upon the shells 36ᵇ and 36ᶜ. There is a space 39 between the adjacent edges of the covers 37 and 38 which forms an annular passage through which the heated air may pass. The external periphery of the cover 38 is smaller than the diameter of the shell 36ª to provide a passage 40 through which heated air may pass. These passages 39 and 40 are arranged over the troughs of the base plate.

The pipe 22ª or other fuel supply pipe for the burner connects with a smaller trough 41 formed in the top face of the base plate which is connected by a tunnel 42 to the trough 29. As the trough 29 is connected by passages to the trough 30 fuel will be supplied to each of the troughs.

The ignition device includes a bushing 45 which has an enlarged central headed portion 45ª which may be used as a nut portion by which the bushing may be screwed. The bushing has an inner end 45ᵇ which is threadedly engaged through a wall of the base plate, as shown in Fig. 7, specifically through the bottom wall. The bushing 45 is also provided with an outer threaded portion 45ᶜ which is adapted to receive a cap 46. The cap and the outer end of the bushing are formed with shoulder portions adapted to clamp down on a clamp member 47 slidably arranged on an insulation element 48 adapted to extend through the bushing 45.

An incandescent coil 49 is supported on the inner end of the insulation element and is connected in a circuit 50. One end of the coil 49 may be connected to the ground and the other to an electric source of supply; or both ends of the coil may be connected to the electric source, to form this circuit. The details of the circuit 50 will not be given in this specification as they form no part of the invention. A conventional ignition circuit controlled by the switch 24 may be used. The clamp member 47 comprises a pair of opposed frusto-conical elements 47ª and 47ᵇ arranged with their large ends together.

When the nut 46 is loose on the bushing 45 the clamp member 47 will also be loose on the insulation element 48. It is then possible to move the insulation element upwards or downwards so that the incandescent coil 49 is at an advantageous location. The coil 49 is required to be above the fuel oil level and below the burning area of the wick 34. When the cap 46 is turned tight it not only holds the insulation element 48 but it forces together the frusto-conical portions of the clamp 47 to form an oil-proof joint to prevent leakage of oil through the bushing. Furthermore, the nut 46 will fix the clamp member 47 fixedly in relation to the insulation element 48.

In Fig. 11 a modification of the invention has been disclosed in which the ignition device is engaged through a side wall of the trough. In this form of the invention there is a guard 51 arranged around the incandescent coil 49 to hold it from being in continuous contact with the wick and to protect it from damage by the wick. In other respects this form of the invention is similar to the previous form and similar parts may be recognized by the same reference numerals.

In Fig. 12 a still further modified form of the invention has been disclosed in which there is an ignition device consisting of a wire 52 which becomes electrically alive when the switch 24 is closed. The end of this wire is provided with an incandescent element 53. This wire 52 and incandescent element 53 may be dropped inwards through the top of the burner to ignite the wick. Then when the burner begins to burn the wire 52 is withdrawn and allowed to depend along the exterior side of the ignition stove and range burner, or the wire 52 may be so arranged that it may be left in place.

It is to be understood that while Fig. 1 indicates 2 burners, this device may be used in connection with any number of burners. The incandescent coil 49, or any other heating element may be positioned at any desired location in the burner and either one or more of these burners may be used at the preferred positions, also that any suitable timing means may be used with this device for fixing the time interval between the opening of the fuel control device and making the electrical contact for igniting the wick of the burner.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:—

1. In an electrically ignited stove or range burner, a base plate having a pair of concentric fuel oil holding grooves and troughs in the top side and a passage connecting said grooves, concentric perforated shells supported on each of the walls forming said grooves so that each groove is encased with a pair of said shells, an insulation member extended into one of said oil

holding grooves, an incandescent wire supported on said insulation, said incandescent wire being adapted for connection in an ignition circuit, and a single continuous wick placed within both of the fuel grooves and extending above the fuel in said fuel groove.

2. In an electrically ignited stove or range burner, a base plate having a pair of concentric fuel oil holding grooves and troughs in the top side and a passage connecting said grooves, concentric perforated shells supported on each of the walls forming said grooves so that each groove is encased with a pair of said shells, an insulation member extended into one or more of said oil holding grooves, an incandescent wire supported on said insulation, said incandescent wire being adapted for connection in an ignition circuit, and a single continuous wick placed within both of the fuel grooves and extending above the fuel in said fuel groove, said base plate having air passages, and cover plates mounted on the upper ends of said perforated cylindrical shells and arranged so as to allow the escape of heated air or fumes from said fuel oil grooves.

3. In an electrically ignited stove or range burner, a base plate having a pair of concentric fuel oil holding grooves and troughs in the top side and a passage connecting said grooves, concentric perforated shells supported on each of the walls forming said grooves so that each groove is encased with a pair of said shells, an insulation member extended into one of said oil holding grooves, an incandescent wire supported on said insulation, said incandescent wire being adapted for connection in an ignition circuit, and a single continuous wick placed within both of the fuel grooves and extending above the fuel in said fuel groove, said base plate having air passages, and cover plates mounted on the upper ends of said perforated cylindrical shells and arranged so as to allow the escape of heated air or fumes from said fuel oil grooves, and the annular space between said covers constituting passages for the heated air.

4. In an electrically ignited stove or range burner, a base plate having a pair of concentric fuel oil holding grooves and troughs in the top side and a passage connecting said grooves, concentric perforated shells supported on each of the walls forming said grooves so that each groove is encased with a pair of said shells, an insulation member extended into one of said oil holding grooves, an incandescent wire supported on said insulation, said incandescent wire being adapted for connection in an ignition circuit, and a single continuous wick placed within both of the fuel grooves and extending above the fuel in said fuel groove, said base plate having air passages, and cover plates mounted on the upper ends of said perforated cylindrical shells and arranged so as to allow the escape of heated air or fumes from said fuel oil grooves, and the annular space between said covers constituting passages for the heated air, the upper edges of the walls forming said grooves being recessed to form shoulders and said shells being rested upon said shoulders.

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