Oct. 9, 1951 J. J. CONRON 2,570,771

BAFFLE STRUCTURE FOR COMBUSTION TUBE-TYPE BURNERS

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FIG. 2.

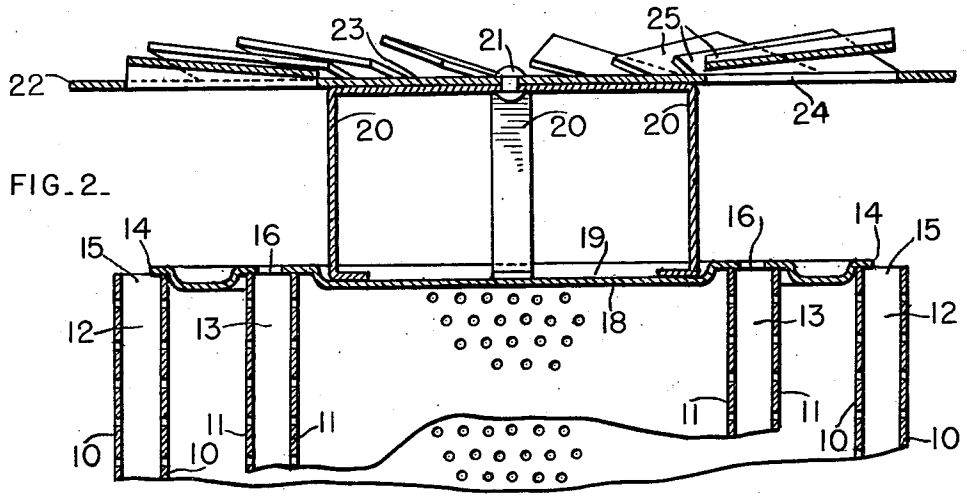


FIG. 1.

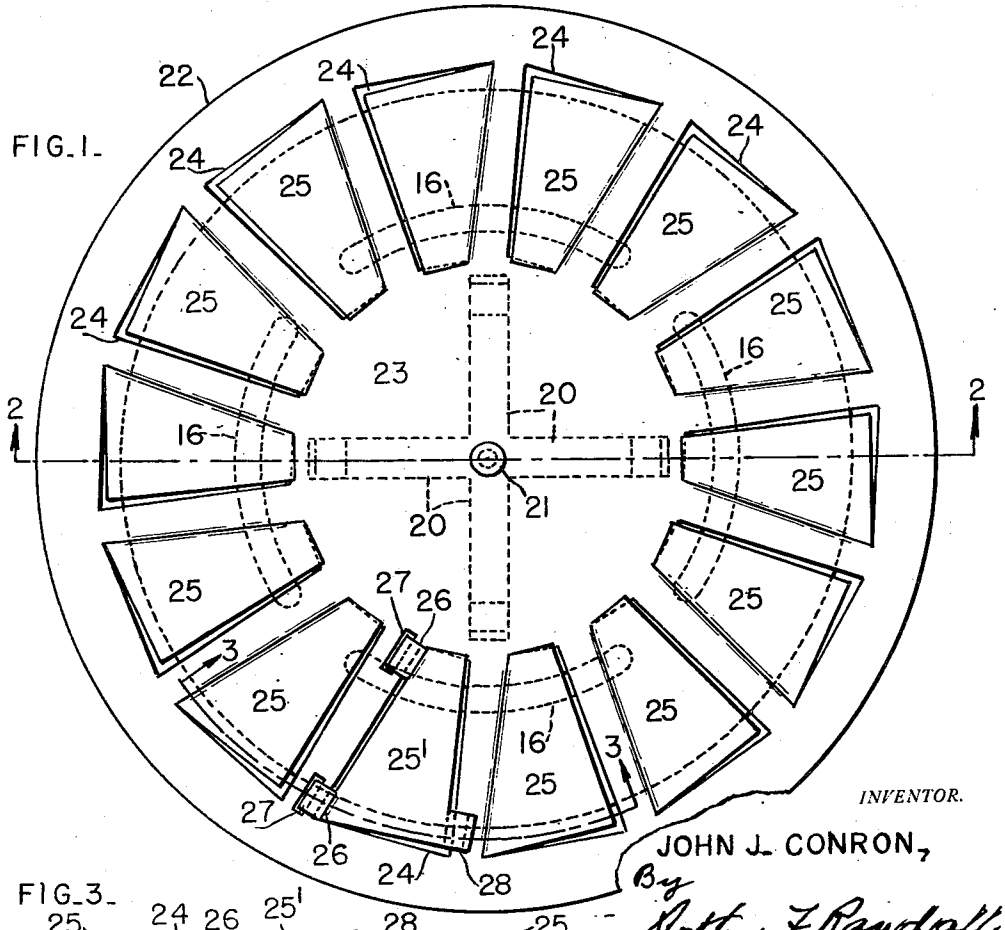
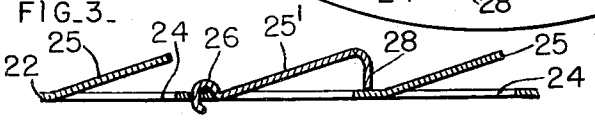


FIG. 3.



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BAFFLE STRUCTURE FOR COMBUSTION TUBE TYPE BURNERS

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1 Claim. (Cl. 158—89)

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This invention relates to range oil-burners and particularly to baffles for the tops of such burners and it has for its primary object to improve the construction and operation of burners of the class indicated.

A further object of the invention is to provide a baffle attachment unit for application to the top of an existing oil-burner which will enhance the efficiency of the latter; which will be of simple, efficient and inexpensive construction, and which can be applied to an existing oil-burner, preferably without requiring modification of the construction of the latter.

To these ends I have provided certain improvements in oil-burners and attachments therefor which, in the preferred embodiment of the invention, may be constructed and operate as set forth in the following description, the novel features of the invention being particularly pointed out and defined in the claims at the close of the description.

In the accompanying drawings:

Figure 1 is a top plan view of a baffle attachment constructed in accordance with this invention.

Figure 2 is a section on line 2—2 of Fig. 1 showing the attachment applied to the top of an oil-burner.

Figure 3 is a developed sectional detail on line 3—3 of Fig. 1.

In the accompanying drawings I have embodied my invention in a well known type of oil-burner for use within the firebox of a kitchen range or the like, said oil-burner comprising a cast iron base member (not shown) that is supported by the bottom of the firebox and recessed upon its top side to telescopically receive within it the lower ends of two pairs of upstanding concentrically disposed cylinders 10, 10, and 11, 11, of perforated sheet metal. Seated within the recessed top of the base member, as usual, are two annular wicks (not shown) whereof one is disposed between the lower ends of the two cylinders 10, 10, while the other wick is disposed between the lower ends of the two cylinders 11, 11, all of said wicks being saturated with fuel oil that is automatically fed into the recessed top of the base member, as usual, as the supply therein is consumed by the burner.

As is also usual in this type of burner the base member is provided with air inlet apertures (not shown) through which air is supplied to the lower end of the chamber within the innermost cylinder 11 and also to the annular space between the innermost cylinder 10 and the outermost cylinder 11.

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Between the two cylinders 10, 10, and extending from the top of the wick between the bottoms thereof to the tops of the two cylinders is the usual annular combustion chamber 12 to which air is supplied through the perforations of said cylinders. Likewise, between the two cylinders 11, 11, and extending from the top of the wick that is between the lower ends thereof to the tops of the cylinders, is the usual annular combustion chamber 13 to which air is supplied through the perforations of said cylinders.

The burner is started in operation by means of a lighted taper which is inserted into the upper ends of the combustion chambers 12 and 13 and applied to the two wicks referred to above. This ignites the oil of the wicks and shortly all parts of the burner, including the wicks, become heated with the result that vaporized oil is liberated from the wicks and ascends the combustion chambers where air is intermixed therewith to occasion and support combustion, the flames thereof and the heated products of combustion discharging upwardly from the upper ends of the combustion chambers.

In accordance with my invention I provide a sheet metal cap plate 14 that is in the form of a disk of substantially less diameter than that of the interior of outermost cylinder 10 and of slightly greater diameter than that of the exterior of the innermost cylinder 10. This provides an annular outlet 15 for the flames and heated products of combustion issuing from combustion chamber 12. This plate 14 is seated upon the tops of the three innermost cylinders as shown in Fig. 2 and is made with arcuate apertures 16 which register with the upper end of the combustion chamber 13 and to serve as outlets for the flames and products of combustion issuing from within said chamber and also to provide entrances for the lighted taper employed in lighting the innermost wick when starting the operation of the burner.

The middle portion of the plate 14 is imperforate and embossed or molded to provide the bottom side thereof with a circular boss 18 that is slightly smaller in diameter than the inside diameter of the innermost cylinder 11 into which it projects to hold the plate 14 with its center approximately at the axis of the burner, and also to provide the top side of plate 14 with a circular recess or pocket 19 within which are seated the lower ends of four legs 20 that are parts of a sheet metal spider that is fastened at its middle by a rivet 21 to the center of a circular baffle plate 22.

The imperforate middle portion of the cap plate 14 serves as a closure for the upper end of the in-

terior of the innermost cylinder 11 by which latter air is supplied to the perforations of the same, while the outer marginal portion of the cap plate 14 closes the upper end of the air supplying space between the innermost cylinder 10 and the outermost cylinder 11.

The baffle plate 22 is made as a disk-like metallic structure having an imperforate circular middle portion 23 to which said legs 20 are fastened, said middle portion being surrounded by a circular series of angularly spaced-apart radial openings 24 which are disposed directly above the outlets 15 and 16 so that the flames and products of combustion rising from the two combustion chambers pass upwardly through the same.

At one side of each aperture 24 the baffle plate 22 is provided with an upwardly and obliquely disposed deflector vane 25 by which the products of combustion and flames that pass upwardly through the aperture are deflected laterally thereby imparting a cyclonic motion to the gas and flames after the latter pass through the baffle plate. This agitation not only mixes additional oxygen-laden air with the gases and flames thereby increasing the combustibility of the unburnt gases but also delays the escape thereof into the off-take flue connected with the firebox of the range within which the burner is mounted. This increases the efficiency of the burner to a substantial extent, economizes in the use of fuel oil, and correspondingly reduces the cost of operating the burner.

As herein shown the baffle plate is preferably made from sheet metal and all of the vanes 25 with the exception of at least one that is shown at 25' in Fig. 1, may be punched upwardly from the material of the baffle by means of a die which simultaneously forms all of the apertures 24, so that each vane 25 is an integral extension of said body portion which extends obliquely upwardly from said body portion and tangentially relatively to the center thereof, with all of the vanes 25 facing circumferentially, so to speak, in one direction in order to obtain the cyclonic effect referred to above.

The single vane 25' is originally produced as a separate unit at one side of which are provided two integral hinge tangs 26, 26, that loosely occupy holes 27, 27, formed in the body portion of the baffle 22. At the opposite side of the vane 25' is provided an integral leg tang 28 whose extremity rests upon the top of the baffle and supports said vane 25 in its oblique position. When starting the operation of the burner vane 25' is swung upwardly on the hinge tangs 26 into an open position thereby to permit the lighted taper referred to above to be passed downwardly through the passageways 15 and 16 to light the wicks after which the vane is returned to its normal oblique position with tang 28 resting upon the top of the baffle.

What I claim is:

In a device of the class described, the combination of a cap plate to seat upon the tops of the cylinders of a range oil burner and made with a circular series of apertures adapted to be disposed at the top of one of the combustion chambers of the burner to serve as outlets for said chamber, the middle portion of said cap plate being imperforate and formed upon its top side with a circular recess; a baffle plate above said cap plate provided with depending legs resting within said recess and supporting said baffle plate above and spaced away from said cap plate, said baffle plate having a circular imperforate middle portion surrounded by a circular series of angularly spaced apart radial openings adapted to occupy positions directly above the cylinders of the burner and each of which openings is provided with an obliquely disposed deflector vane by which the products of combustion issuing upwardly through its opening are deflected laterally, one of said vanes being hingedly connected with said baffle plate so that it can be adjusted into an out-of-the-way position permitting a lighted taper to be passed through its opening to ignite a wick of the burner, all of said vanes except said hinged vane being integral stamped out portions of said baffle plate, and all of said openings being surrounded by an imperforate continuous peripheral portion of said baffle plate.

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