Feb. 14, 1933. H. C. LITTLE 1,897,314

OIL BURNER

Filed Jan. 27, 1930 2 Sheets-Sheet 1

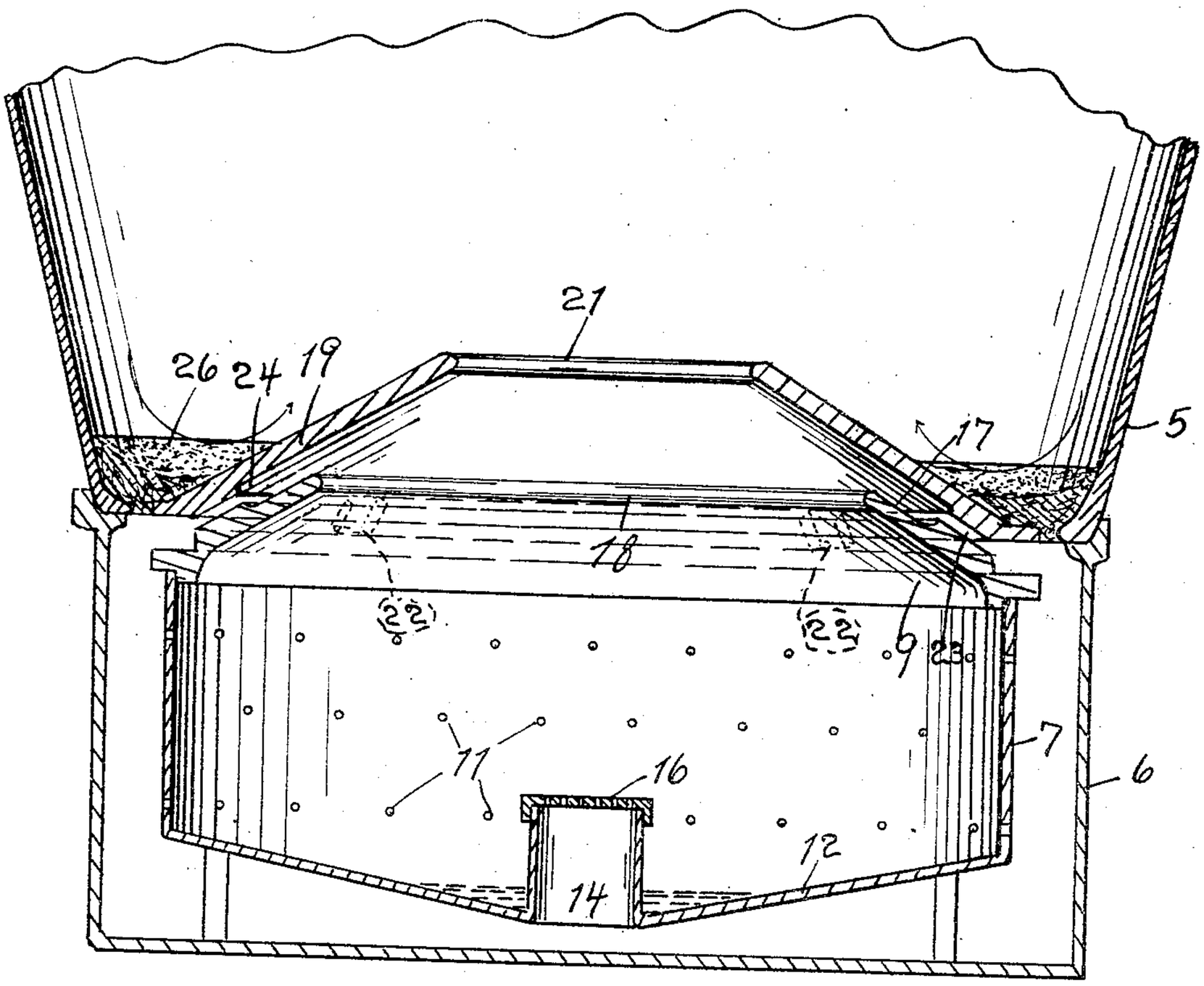

Fig. I.

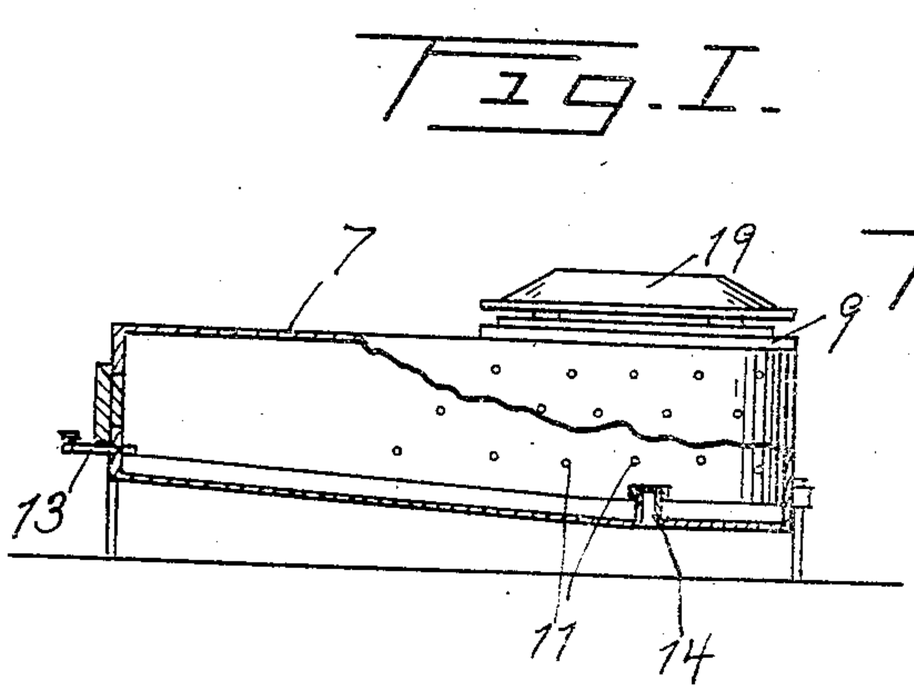

Fig. II.

INVENTOR.

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2 Sheets-Sheet 2

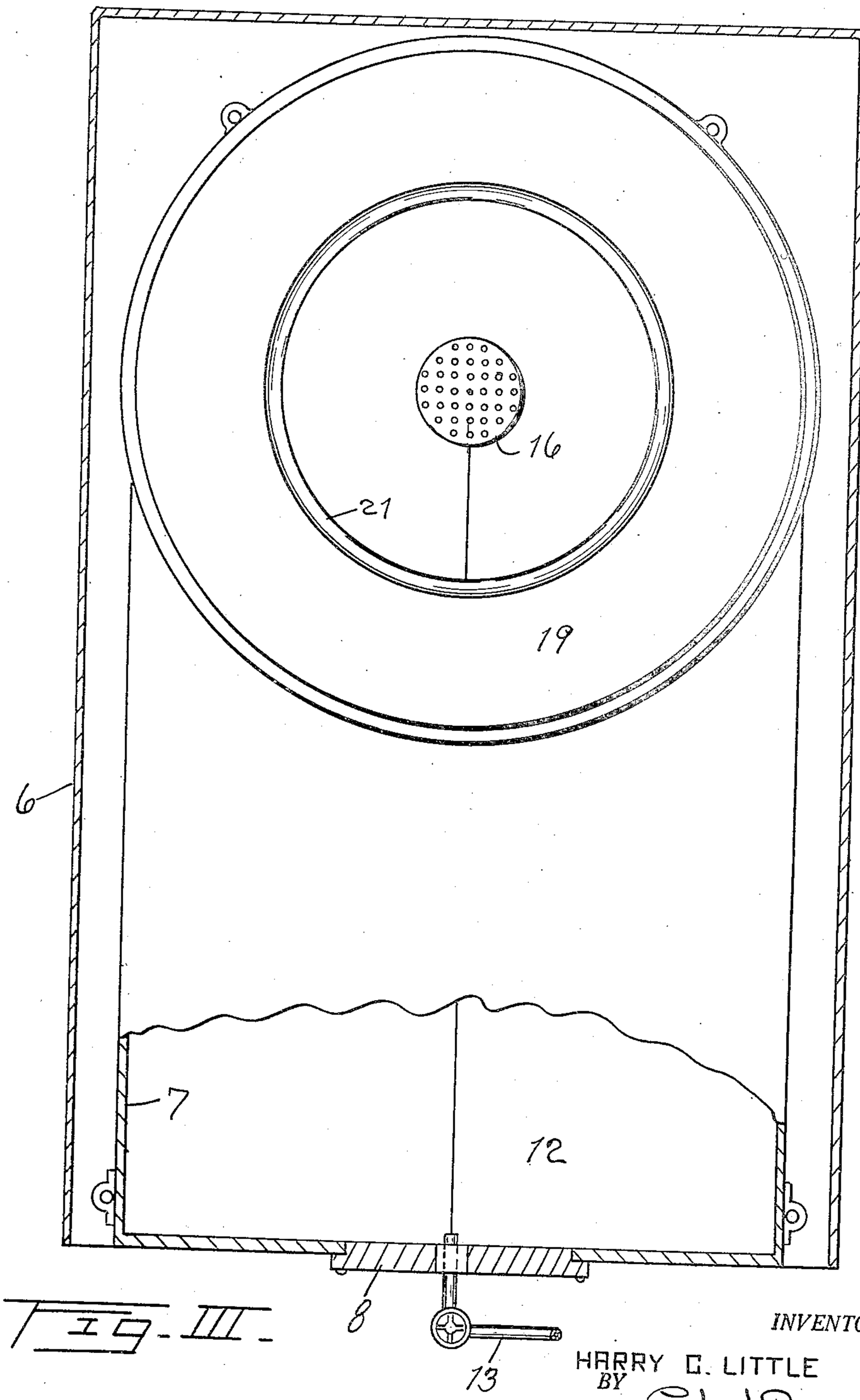

Fig. III.

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Patented Feb. 14, 1933

1,897,314

UNITED STATES PATENT OFFICE

HARRY C. LITTLE, OF SAN RAFAEL, CALIFORNIA

OIL BURNER

Application filed January 27, 1930. Serial No. 423,740.

This invention relates to improvements in oil burners.

The principal object of this invention is to produce an oil burner which will burn a liquid fuel in an efficient manner.

A further object is to produce a device of this character which may be employed wherever it is desired to obtain heat.

A further object is to produce a device of this character which is economical to manufacture.

A still further object is to produce a device wherein a perfect combustion takes place and one wherein the operation is practically noiseless.

A further object is to provide means whereby a thorough mixing of the gas and the air necessary to support combustion is accomplished.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Figure I is a vertical cross-section of a burner as the same would be applied to a furnace pot,

Figure II is a side elevation on a reduced scale of my complete burner and partly broken away, and

Figure III is a top plan view of my burner as the same would appear when positioned in an ash pit.

Applicant is aware of the fact that many forms of oil burners have been used, which oil burners depend upon the gassifying of the oil due to heat created within the burner. This type of burner, is in contradistinction to that type of burner wherein the oil is sprayed into the furnace and where difficulty is experienced in producing a perfect combustion due principally to the difficulty in combining the secondary air with the rich gases generated by the heating of the oil, resulting in back firing and a very noisy burner. This back firing also created a frying action of the oil which adds to the noise. Further, this spasmodic flaring of the burner resulted in poor combustion, resulting in much smoke.

Applicant has therefore produced a burner of this type wherein the secondary air admitted is proportional to the flame or draft passing through the throat of the burner, and has further provided means for mixing this air with the gases to create a more combustible mixture, or one which would burn without noise or smoke.

Referring to the drawings, the numeral 5 designates the fire pot of an ordinary furnace, and the numeral 6 the ash pit thereof. It is within the ash pit that my burner is positioned and consists of a substantially rectangular housing 7, at the front end of which is a removable plate 8, and near the rear end thereof and in the top is positioned a deflector plate 9. The housing 7 is perforated along its sides and rear portion as shown at 11, and has a sloping bottom 12. The bottom slopes from side to side and also from front to back, with the result that oil which enters the housing through the pipe 13 will flow toward the rear thereof. At 14 I have shown an upstanding thimble having a perforated cap 16, the purpose of which will be later seen.

By referring now to Figure I it will be noted that the deflector plate 9 has a recess 17 formed upon its top surface and entirely surrounding the opening 18 formed within the deflector plate 9. Mounted on the deflector plate 9 is an auxiliary plate 19 having an opening 21 therethrough corresponding to the opening 18 in the plate 9. These openings 18 and 21 will hereafter be termed the throat of the burner.

The auxiliary plate 19 is spaced from the plate 9 by lugs 22, the result being that there is an air passage 23 between the plates 9 and

19. It will also be noted that a recess 24 is formed in the under side of the plate 19 and corresponds to the recess 17 of the plate 9.

In order to seal the plate 19 to the fire pot 5 I employ any plastic material as shown at 26, the purpose of which is obvious.

The operation of my burner is, as follows:

Assuming that oil is permitted to flow through the pipe 13 into the housing 7, the oil will run by gravity toward the rear of the housing or to a point surrounding the thimble 14. Any means of ignition may be employed for igniting the oil. As soon as the oil commences to burn, air will be induced through the openings 11, as well as through the openings in the cap 16. The flames of the burning oil will now pass upwardly through the throat of the burner, at which point secondary air will enter through the space 23 between the plates 9 and 19, and due to the heat reflected by the top of the plate 9 toward the plate 19, the air entering will be heated and expanded thus reducing its velocity and resultant noise, this reduced velocity also permits the air to be heated to a higher degree and as a result there is a better mixing of the heated air and the products of combustion, with the result that when the combined gases reach the throat, they will be intimately mixed and will burn as a perfect combustible mixture. The air coming through the cap 16 will be sufficient to maintain a small fire within the housing for the purpose of keeping up gas generation.

It might be said therefore that after the burner is in operation the gas within the housing is too rich to burn and only burns at a point about the cap 16 and at a point above the throat of the burner. Therefore, after the burner is in full operation the fire leaves the housing and is maintained only at a point above the burner throat, and at this point the rich gases have all been thoroughly mixed with the air, and the result is a perfect and silent combustion.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes relative to the material, size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

Having thus described my invention, I claim:—

An oil burner comprising an open-topped generating and mixing chamber having oil supply means therefor, an inwardly extending annular deflector plate positioned on the open top of said chamber and defining a central outlet therefrom; the inner upper surface of the said plate having an annular recess extending outwardly a substantial distance from the said outlet, a second annular plate spaced above and mounted coaxially with the first mentioned plate to form an annular air inlet and having a similar annular recess formed on its underside which coacts with the first mentioned recess to form an annular expansion chamber surrounding the said outlet, whereby the velocity of the incoming air will be reduced prior to its entering the said outlet which will eliminate noise and result in a higher heating of the air.

In testimony whereof I affix my signature.

HARRY C. LITTLE.