June 15, 1926. 1,588,945

J. B. DAILEY

OIL BURNER

Filed Feb. 6, 1923

Fig. 1.

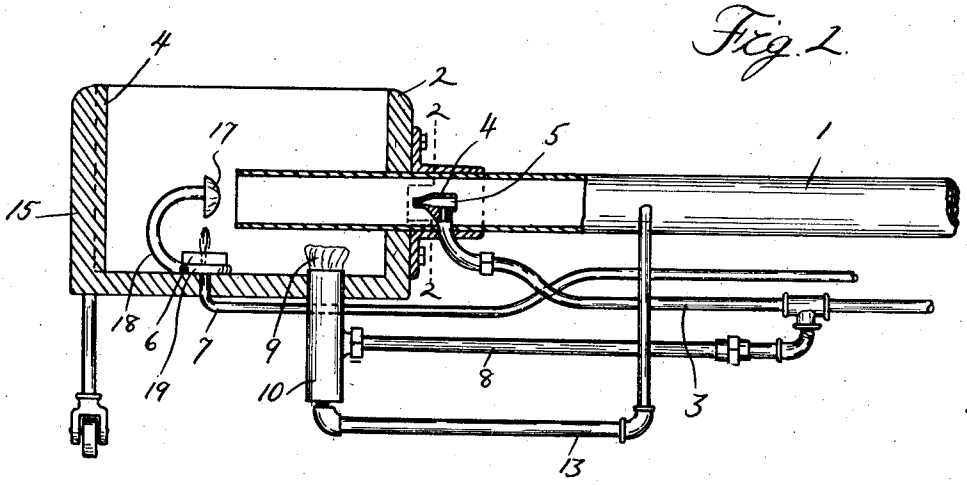


Fig. 4

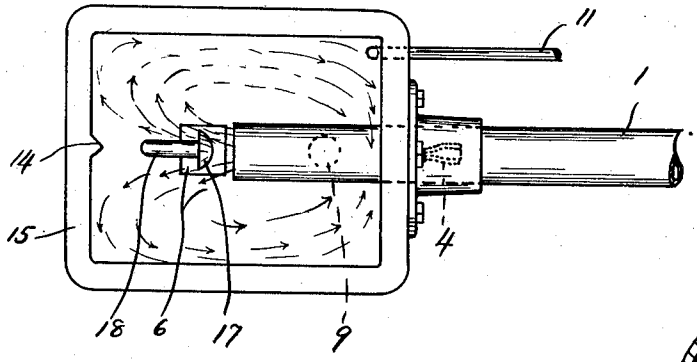


Fig. 2

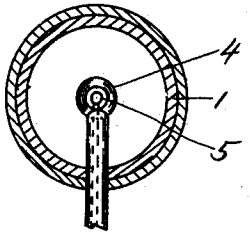
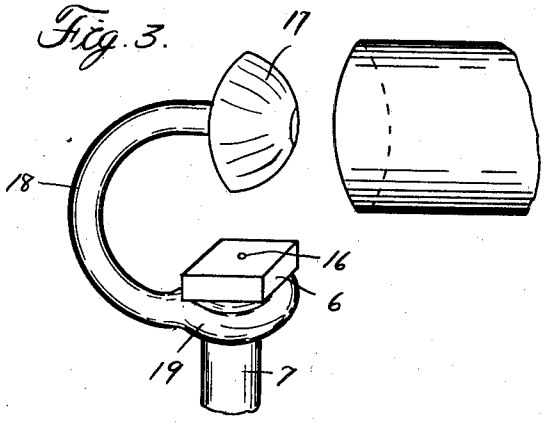


Fig. 3.



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UNITED STATES PATENT OFFICE.

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OIL BURNER.

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This invention relates to heating apparatus.

An object of the invention is to provide a heater with a reliable pilot in which oil is used as the fuel.

Another object is to provide a burner pilot which is located at a point remote from the discharge end of the fuel supply means and which is in a position to heat the fuel before it is discharged into the burner.

Another object is to provide reliable and efficient means for automatically increasing the supply of fuel to the pilot when the combustible mixture is discharged from the air conduit into the burner so as to enlarge the flame of the pilot and prevent the flame from being accidentally extinguished.

Another object is to provide a strong and durable construction which can be manufactured at a very low cost.

Another object is to provide simple and practical means for breaking up into finer particles the combustible mixture which is discharged into the burner; for effecting a better distribution of the mixture within the burner, and providing for the constant maintenance of the flame of the usual gas pilot.

With the above and other objects in view the invention consists in certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawing:

Figure 1 is a longitudinal sectional view of a heating apparatus embodying my invention and showing parts in elevation;

Figure 2 is a sectional view taken on the lines 2—2 of Figure 1;

Figure 3 is an enlarged detail view of the deflector and gas pilot and showing a portion of the air conduit;

Figure 4 is a fragmentary top plan view of the heating apparatus.

Referring now to the drawing in which like characters of reference designate corresponding parts throughout the several views, the numeral 1 designates a conduit for supplying air from a suitable fan (not shown) to an open top burner 2. This conduit preferably extends through one wall of the burner and terminates about the center of the burner. Oil, preferably kerosene, is supplied to the burner through a relatively small conduit 3 which is in communication with a suitable tank or reservoir (not shown) and which extends into the conduit 1 adjacent to the burner 2. The conduit 3 is provided with a nozzle 4 which is preferably arranged co-axially with the air conduit 1 and which is provided with a Venturi passage 5 for discharging the oil in spray form into the air conduit 1. The air passing through the conduit 1 is adapted to draw the oil through the nozzle 4 and discharge it into the burner in a finely atomized condition. Usually this mixture of oil and air is ignited in the burner by means of a pilot 6 which is supplied with gas through a suitable conduit 7, but it has been found that frequently the pilot flame is extinguished due to the supply of gas to the pilot being reduced on account of lower pressures in the mains and from other causes. It is also frequently the case that it is desired to install the heaters in localities where gas cannot be obtained.

With the present invention, a branch conduit 8 leads from the main oil supply conduit 3 to a pilot wick 9 extending upwardly in the burner. This wick may be constructed of any suitable material and is preferably located at a point remote from the discharge end of the conduit 1 so that the force of the air and oil discharged from the conduit 1 will not extinguish the flame of the wick, while at the same time the wick is in a position to cause the flame thereof to heat the combustible mixture in the conduit 1 adjacent to the nozzle 4.

The main oil conduit 3 is arranged with respect to the reservoir (not shown) so that the level of oil in the conduit 3 will normally be below the nozzle 4 while the fitting 10 of the conduit 8 is arranged so that the level of oil in the conduit 8 will not rise above the wick 9. A suitable overflow pipe 11 extends from the burner at the bottom thereof and is adapted to convey any unused oil to a suitable container (not shown).

A conduit 13 leads from the air conduit 1 to the fitting 10 and receives oil from the conduit 3. The level of oil in the conduit 13 is normally equal to the level of the oil in the conduit 3 and in the fitting 10. A portion of the air forced through the conduit 1 will enter the conduit 13 and will force the oil therein upwardly through the wick 9 in the fitting 10 with the result that the flame

of the wick will be enlarged sufficiently to avoid being accidentally extinguished.

The combustible mixture is discharged from the conduit 1 with considerable force and ordinarily it passes over the gas pilot 6 and strikes against a vertically extending substantially wedge-shaped projection 14 upon the outer wall 15 of the burner and is directed in opposite directions about the interior of the burner. However, it has been found that this projection does not distribute the mixture properly within the burner. It has also been found that the mixture is directed against the wall 15 of the burner with such force that it rebounds and sometimes floods the port 16 of the gas pilot with the result that the flame of the pilot is extinguished. To overcome these objectionable features I provide a concavo-convex deflector 17 which is positioned in front of the discharge end of the conduit 1 and above the usual gas pilot 6. A curved arm 18 is preferably used to support the deflector in position and is provided with a horizontal looped portion 19 which is secured to the vertical portion of the conduit 7 leading to the pilot 6.

Thus it will be readily seen that the combustible mixture discharged from the conduit 1 will be broken up into finer particles which will be distributed evenly about the interior of the burner. Likewise the deflector will prevent the mixture from striking against the wall 15 of the burner, consequently it will not rebound upon the port of the usual gas pilot. Therefore, the deflector provides for the constant maintenance of the flame of the gas pilot.

While it is believed that from the foregoing description, the nature and advantages of the invention will be readily apparent, I desire to have it understood that I do not limit myself to what is herein shown and described and that such changes may be resorted to when desired as fall within the scope of what is claimed.

What I claim as my invention is:

1. In a heating apparatus, the combination with an oil burner bowl, of a conduit for supplying oil to said bowl, an ignition burner for said bowl, an auxiliary oil burning pilot located beneath said conduit remote from its discharge point and constantly burning within said bowl, and a conduit leading from the conduit aforesaid to a fitting beneath said last-mentioned pilot for supplying oil to it.

2. In a heating apparatus, the combination with an oil burner bowl, of a conduit for supplying a combustible mixture to said bowl, said conduit adapted to project thru one wall of said bowl terminating at a point intermediate the walls, an ignition burner located in said bowl, a constantly burning auxiliary oil burning pilot located beneath said conduit remote from its discharge point, and a member in front of the discharge point of said conduit for deflecting the mixture discharged whereby the same will be ignited by the pilot.

3. In a heating apparatus, the combination with a burner, of an air conduit extending through a wall of said burner, a fuel conduit leading into said air conduit, a constantly burning pilot located in said burner beneath said air conduit remote from its discharge point, means for supplying oil to said pilot, and a concave-convex deflector intermediate the walls of said burner and in the path of the discharge mixture for distributing the same within said burner prior to its ignition.

In testimony whereof I affix my signature.

JOHN B. DAILEY.