March 29, 1927. 1,622,963

C. MILLAR

OIL BURNER

Filed Feb. 5, 1925

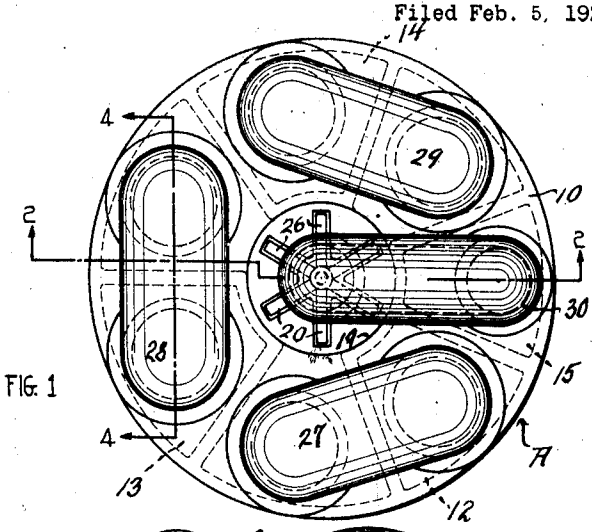
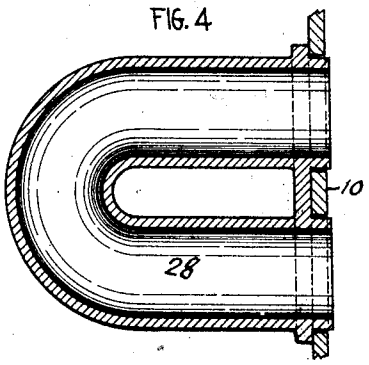


FIG. 1

FIG. 4



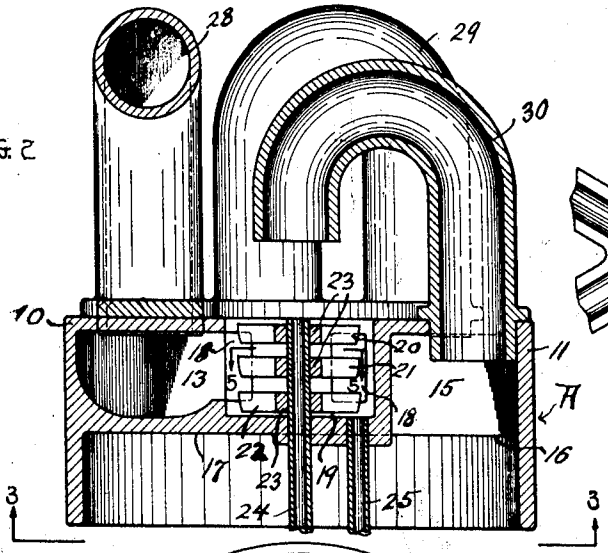


FIG. 2

FIG. 5

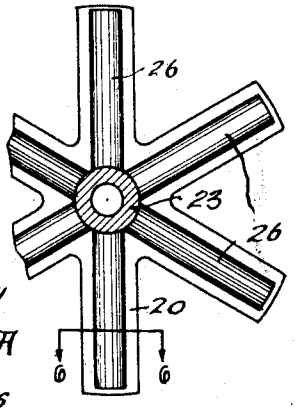
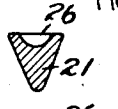




FIG. 6





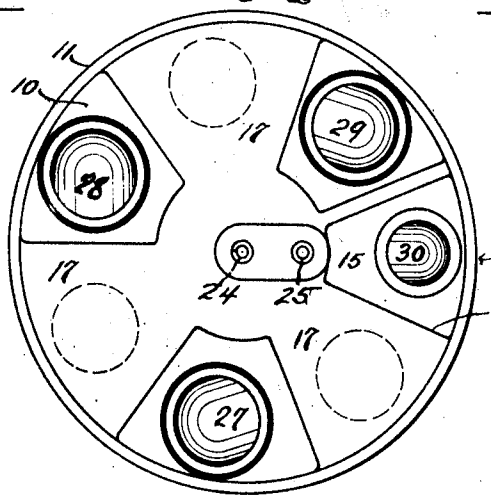


FIG. 3

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Patented Mar. 29, 1927. 1,622,963

UNITED STATES PATENT OFFICE.

JAMES CORBETT MILLAR, OF DE PERE, WISCONSIN.

OIL BURNER.

Application filed February 5, 1925. Serial No. 6,993.

The invention relates to an oil burner, and more especially to hydrocarbon oil burners.

The primary object of the invention is the provision of a burner of this character, wherein the air before coming into contact with the oil is heated to a high degree, so that the oil will be vaporized and thus be converted into a gas, the said burner being of a novel construction to assure perfect and complete combustion.

Another object of the invention is the provision of a burner of this character, wherein the construction thereof permits the same to be used in a furnace or stove of the domestic type, and the oil fed thereto will be vaporized in an efficient manner and comingle with the requisite amount of air which supplies the oxygen to support combustion.

A further object of the invention is the provision of a burner of this character, wherein the air is delivered thereto in a circuitous manner so as to be preheated, and thereby effect the vaporization of the oil immediately on contact therewith, thus eliminating the smoking of the burner, as perfect combustion is effected.

A still further object of the invention is the provision of a burner of this character, which is extremely simple in construction, thoroughly reliable and efficacious in its operation, strong, durable, possessing but few parts, novel in construction, easily cleaned, capable of quick repair, and inexpensive to manufacture and install.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts, as will be hereinafter fully described, illustrated in the accompanying drawing, and pointed out in the claims hereunto appended.

In the accompanying drawing:

Figure 1 is a top plan view of the oil burner constructed in accordance with the invention.

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a bottom plan view looking in the direction of the arrows 3—3, of Figure 2.

Figure 4 is a sectional view taken on the line 4—4 of Figure 1.

Figure 5 is an enlarged fragmentary sectional view taken on the line 5—5 of Figure 2.

Figure 6 is a sectional view taken on the line 6—6 of Figure 5.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring to the drawing in detail, A, designates generally the body of the oil burner, preferably made from cast metal, although the same may be made from any other suitable material, and includes a circular disc like top 10, and an annular rim 11, integral therewith. This body A, is adapted to be placed in a furnace or the like and surrounded by fire brick or any other suitable material, so that all draft will have to go into and through the burner.

Formed interiorly of the body A, is a series of air chambers 12, 13, and 14, the said chamber 12, being of duplex type to provide a supplemental chamber 15, the latter having an open bottom 16, communicating with the interior of said body A, while the other chambers are closed at their bottoms 17, thus being shut off from communication with the body A, yet these chambers 12, 13, and 14, are formed with inner end openings 18, for communication with the hollow center or burner cup 19, which opens through the top 10, of the body A.

Located within the hollow center or burner cup 19, is a series of vertically aligned superposed radially armed oil trays 20, 21, and 22, respectively, the hub 23, of each being fitted about and secured to a vertical oil pipe 24, extending upwardly centrally through the hollow center or burner cup 19, the upper end of this pipe terminating substantially flush with the top 10, and is adapted to deliver oil to the trays, as will be obvious.

Leading from the hollow center or burner cup 19, through its closed bottom is an overflow or drain pipe 25, adapted to carry off surplus oil delivered to the trays.

The trays 20, 21, and 22, longitudinally of their arms in the upper faces are formed with oil channels or grooves 26, for trapping oil therein delivered to the trays by the supply pipe 24, the oil in the trays being ignited for the operation of the burner.

Rising above the top 10, of the body A, eccentrically of the burner cup 19, are inverted substantially U-shaped air circulating tubes 27, 28, and 29, communicating with the respective compartments or chambers 12, 13,

and 14, and also with the interior of the body A, while overhanging the burner cup 19, is an inverted substantially U shaped air supply pipe 30, which communicates with the supplemental chamber 15, and has its opposite end terminating above the trays within the hollow center or burner cup 19, so as to direct air onto the said trays and thus supply oxygen to the burner to assure perfect combustion. The air is delivered to the air pipe 30, directly from the ash pit of the furnace, and is ejected against the burner trays 20, 21, and 22, while the air in the tubes 27, 28, and 29, is taken from the ash pit, and is drawn through the hollow center or burner cup 19, the air circulating through the tubes and air supply pipe, respectively, is pre-heated, and in this manner complete combustion is obtained during the working of the burner.

The air in the tubes 27, 28, and 29, is caused to circulate therethrough by the draft in the chimney for the furnace.

It will be apparent that the air before coming into contact with the oil is heated to a high degree while passing through the tubes 27, 28, and 29, and when the heated air comes into contact with the oil trays 20, 21, and 22, the oil is thoroughly vaporized, so that the burner when operating is really burning gas. The burner is smokeless by reason of the assurance of complete combustion.

It is obvious that the circulating tubes 27, 28, and 29, produce a current of heated air all around the burner cup 19, and in this manner the oil is properly vaporized.

What is claimed is:

1. A burner of the character described, comprising a body having a central burner cup, superposed oil trays each having radial arms arranged in said cup, means supplying oil to the trays, an overflow pipe leading from the cup, said body being provided with air chambers eccentrically of the burner cup, and opening into the latter, air circulating tubes opening into the body and into the chambers, and means overhanging the burner cup ejecting air onto the trays from the interior of the body.

2. A burner of the character described, comprising a body closed at its top and open at the bottom, and having a series of air chambers concentrically thereof, a burner cup centrally of the body and communicating with the air chambers, means for delivering air from the interior of the body to said chambers, superposed oil trays located in the cup and each having radial arms formed with oil channels in their upper faces, means for delivering oil to the channels in the trays, means for draining surplus oil from the cup, and means for ejecting air onto the trays and communicating with the interior of the body.

In testimony whereof I affix my signature.

JAMES CORBETT MILLAR.