

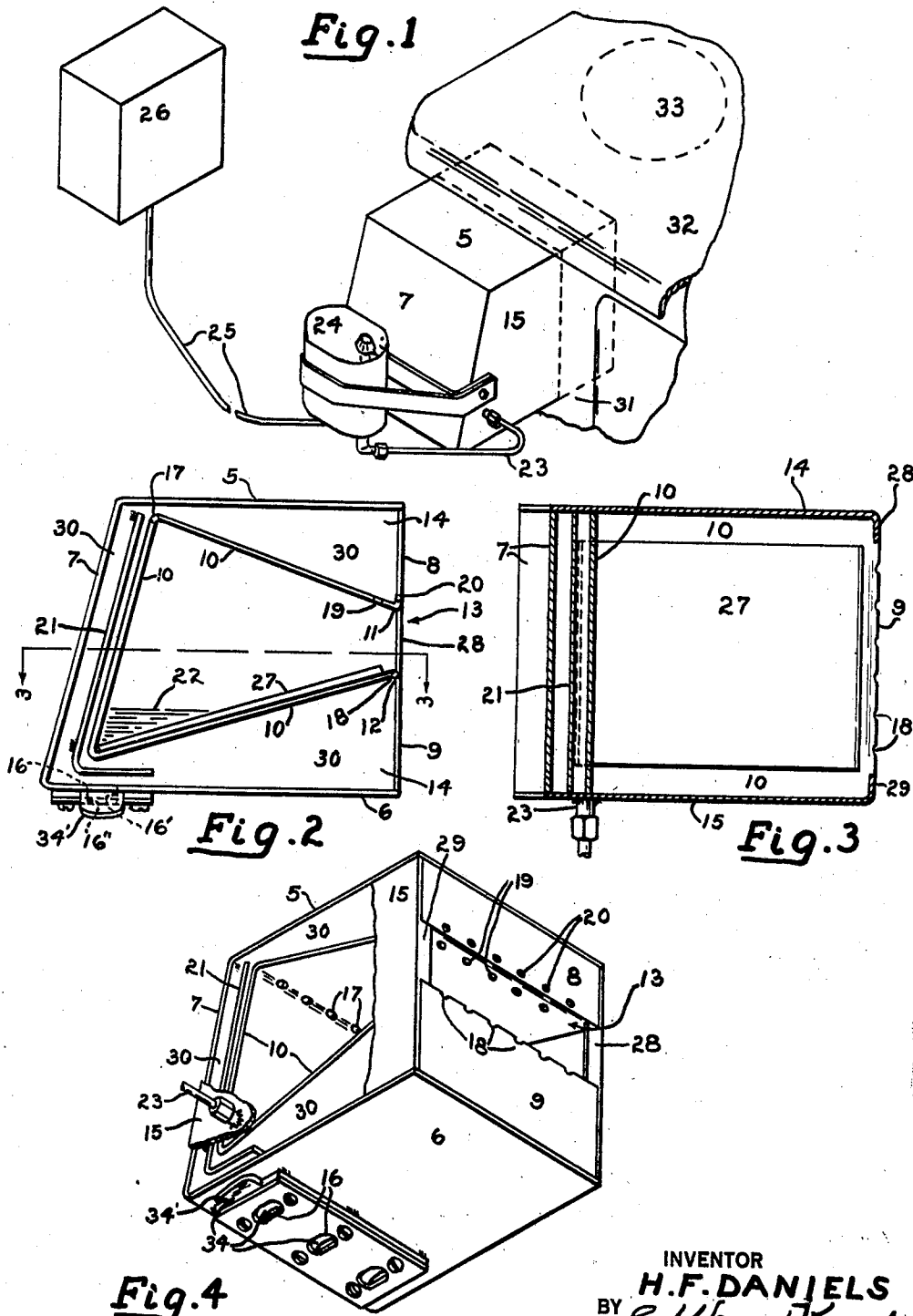
June 15, 1937.

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2,083,832

OIL BURNER

Filed Aug. 3, 1936



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UNITED STATES PATENT OFFICE

2,083,832

OIL BURNER

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Application August 3, 1936, Serial No. 94,005

4 Claims. (Cl. 158—91)

This invention relates to oil burners, and particularly to devices for vaporizing and burning Diesel, and other heavy oils, in an open mouthed vessel.

In many attempts to provide heat from such heavy oils, various devices have been tried for vaporizing pools of oil in the bottoms of vessels with open tops. Such devices when placed in fireboxes of stoves and ranges etc., discharge the flames from the oil upward and but a short distance till they strike the under surfaces of the stove covers. Such flames are thus confined to only a small area, soon cooled, against such covers; carbon particles also soon collect under such covers, and retard the heating effect of such flames.

Efforts have also been made to vaporize a pool of oil in the lower portion of such open topped vessels, by fanning flames downward. But in such practices the iron metal used for economy for the retainer is soon destroyed. And in order to provide such vessels at a reasonable cost it has been found that a metal more costly than iron therefor has been prohibitive. Again in such forms of vessels the oil covers the entire bottoms, and the oil receives very little heat from contact with the enclosing metal for vaporization thereof.

After numerous experiments I have discovered that a device provided with a bowl or vessel for oil, and a mouth opening from a side thereof will discharge the flames from such oils a considerable relative distance horizontally. Such devices when placed within or opening into a stove or other heater will project the flames beneath the entire cover of the firebox, and at the same time burn practically all of the carbon formed.

I have found also that by using such an oil vessel or bowl with a sloping bottom and placing over the bottom of such bowl an auxiliary heating plate of bronze, brass, or other suitable metal of good heat conductivity will permit the use of iron or other cheap metal for the construction of the remainder of the device. Said heating plate must be formed of material which will not soon scale or burn away by extreme heat.

It is therefore an object of this invention, to provide an effective device for vaporizing and burning heavy oils. Such device to be formed principally of low cost metal for economical production of heat for domestic and other uses.

Another object is to provide such a heating device formed with double walls and air spaces between the same, and the inner wall mounted on a slope, with the lower end thereof near the bottom wall and the higher end terminating as a

lower jaw of a side mouth in the device. Said sloping bottom to form a bowl or receptacle for oil to be burned therein.

A further and special object is to provide an auxiliary heating plate of bronze or other suitable heat conducting and noncorroding metal, mounted over such sloping bottom, for heating and vaporizing oil in such bowl.

A still further object is to provide an upper jaw spaced above such lower jaw, with rows of holes inside and outside said upper jaw, together with apertures for flow of air into and through such spaces between said walls and out through such holes, with additional holes through such inner wall to provide air for burning.

With these and other objects hereinafter shown, I have illustratively exemplified my invention by the accompanying drawing of which

Figure 1 is an isometric view, taken from above, showing the device assembled with part of a stove,

Figure 2 shows a side elevation with a side wall removed to disclose the interior,

Figure 3 is a top plan sectional view taken on line 3—3 of Figure 2, and

Figure 4 is an isometric view taken from below, with part of side wall removed to show the interior.

Like numerals on the different figures represent like parts.

Numeral 5 refers to the top wall, 6 refers to the bottom and 7 to the back wall; such walls being preferably formed of one piece of sheet metal bent into the shapes shown in Figures 1 and 4. Figures 8 and 9 refer to the upper and lower portions respectively of the front face, and are also preferably of one piece of sheet metal, and the portion thereof between such face sections is bent backward in form of an open triangle 10 within said outer walls, as shown in Figure 2. The lower edge of such upper section 8 and the upper portion of such lower section 9 where bent inward, provide upper and lower jaws 11 and 12, spaced apart to provide a mouth 13, from which flames are expelled for heating purposes.

The side edges of the triangle are affixed to outer side walls 14 and 15, to provide enclosed air spaces 30 between said top, bottom and rear walls and the triangular inner walls.

Apertures for entrance of air to the spaces are shown as 16, through the bottom 16' through an adjustable damper plate 34 and 16'' through a bracket for supporting the damper, and its handle 34'. Exit holes for air are shown as 17 through the upper corner of the triangle, 18

through the top of the lower jaw, 19 inside the upper jaw, and 20, along the outer edge of such upper jaw.

A baffle plate 21 is mounted between the side walls, to direct the currents of air from the entrances toward the upper and lower escape draft holes.

The fuel oil 22 is fed into the lower open portion of the triangle or bowl from a feed pipe 23, leading from a suitable or ordinary constant level valve (not necessary to be shown) in a chamber 24.

A supply pipe 25 may be carried to any suitable supply tank 26, above the valve. A heating plate 27 of bronze or other suitable metal is adjustably mounted along the top of the floor of the triangle, with the lower end thereof immersed in the fuel oil 22 and the upper end terminating inside of the row of holes 18 in the lower lip. Short cheek plates 28 and 29 close the mouth for a short distance at each side thereof. Said heating plate 27 is formed of suitable width to be passed into a proper position through the remaining width of the mouth and so covers the floor of the triangle for such width.

An ordinary damper plate 34 with operable handle 34' may be provided for regulating and opening and closing the air apertures 16 and 16' and a fan not necessary to be shown may be also provided for forcing air through such apertures to increase the draft for extreme degrees of heating. Such a device will, however, operate by natural flow of air, when the oil in the vessel is ignited.

In use the front end of the device may be placed through any entrance or doorway as 31, of any stove or range, and the flames will flow from said mouth along the length of an ordinary fire box, and so heat the entire surface as 32, of the stove, or the bottom of any cooking utensil that may be positioned over an opening or lid, as 33.

While I have described the device in connection with a stove, or range, for illustration, it may be applied to the outside of a hot water tank coils or otherwise where economical heating is desired.

In operation a suitable supply of Diesel or other suitable fuel oil passes through the valve into the lower portion, or heating bowl of the triangle. The oil is then suitably ignited, and the suction of the flames draws a sufficient additional supply of air into the interior of the triangle through the apertures 16 and through the upper holes 17 for combustion.

As the flames increase, and flow from the mouth 13, more air is drawn through such apertures and the space 30 around the triangle, which air flows out through all of the holes 17—18, 19 and 20, to fan the flames and increase the vaporization of the oil in the vessel bowl. This again increases the heat to be provided for domestic or other suitable uses.

The rows of holes 18 and 20 tend to fan and carry the flames away from the surface of the iron heater to protect the same and the air flowing through the area 30 tends to prevent the iron from burning. The cheek plates and air currents from holes 19 cause the flames inside the mouth to eddy backward and down upon the oil, and particularly upon the heating element or plate 27, thus rapidly vaporizing the oil for increasing the flames and heat.

Having described my invention I claim as new:

1. A heating device for vaporizing and burn-

ing heavy oils, comprising a receptacle with outside walls in substantially rectangular form of sheet metal, the top, back, bottom and sides substantially closed, sections of sheet metal across the upper and lower portions of the front and provided with a mouth opening horizontally between such sections, jaws along the upper and lower edges of such sections respectively, and such front sections of metal bent backward and inward from such mouth substantially as an open triangle forming inner walls for the top bottom and back of said device and spaced apart from said outer walls, to provide air spaces between the same, the inner and lower portion of such triangular wall adapted for retaining oil to be vaporized, and the remainder of the interior of said triangular walls surrounding a chamber adapted for mixing vapor from said oil with air and for burning the same, the upper rear corner of said triangle and the inner edge of said upper jaw both provided with holes from said air spaces for passage of air into said chamber to facilitate the vaporizing and burning of such oil, said upper jaw provided with holes along the outer edge thereof and said lower jaw provided with holes along the top thereof both for the passage of air from such spaces for fanning, increasing and spreading the flames from such oil when burned, together with a metal plate of heat conducting qualities superior to that of said interior and outer walls, resting on the floor of such chamber to facilitate the rapid heating and vaporization of such oil, and means for feeding oil into said chamber and air into such spaces.

2. A device for vaporizing and burning heavy oils, comprising, a metal retainer with double walls around the top, bottom and back, the outer walls thereof in substantially rectangular form, and inner walls of substantially triangular form, both provided with an open mouth across the front side thereof centrally disposed between an upper and lower closing wall over such front, the lower portion of such inner triangular walls on a slope to provide a bowl for oil to be vaporized, a heating plate mounted on such bottom with the inner and lower end thereof positioned to be immersed in said oil and the outer and upper end thereof adapted to convey heat to said oil for vaporizing the same.

3. A heating device for vaporizing and burning heavy oils, comprising a metal receptacle with outer walls of substantially rectangular form, and provided with interior walls of substantially triangular form surrounding a chamber for vaporizing and burning oil therein, such chamber provided with a mouth on the front side of said receptacle adapted to discharge flames horizontally therefrom, means for feeding oil into the lower portion of said chamber and means for feeding air into the upper portions of said chamber to provide such flames by the combustion of said air and oil.

4. A device for vaporizing and burning heavy oils, comprising a heating receptacle provided with a discharge mouth positioned horizontally across the central portion of the front thereof, an inner floor in said receptacle positioned on a slope downward from said mouth to provide a bowl for oil to be vaporized, and a heating plate resting on such floor and above the oil at one end thereof and beneath such oil at the other end thereof for heating and vaporizing said oil.

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