Dec. 28, 1926. 1,611,913

R. J. INCH

OIL BURNER

Filed Feb. 23, 1926 2 Sheets-Sheet 1

Fig. 1.

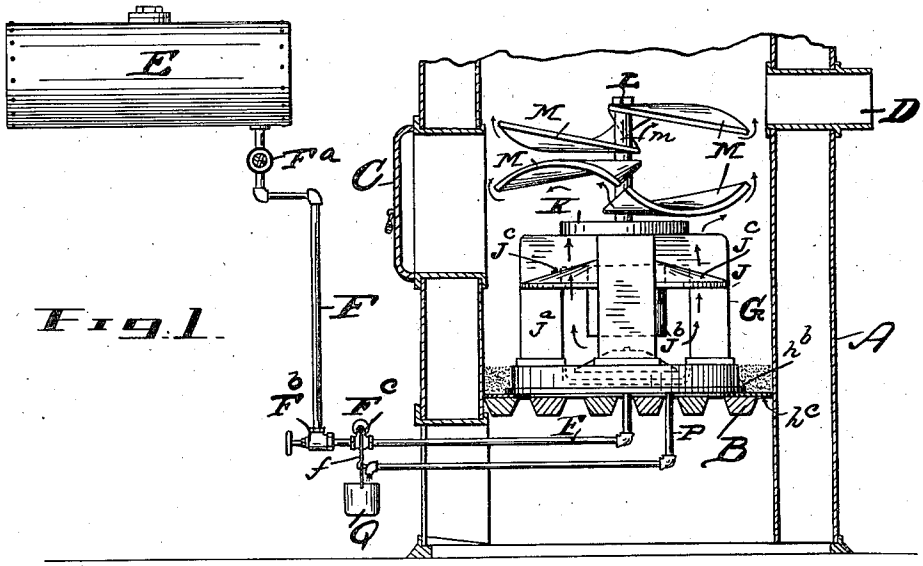
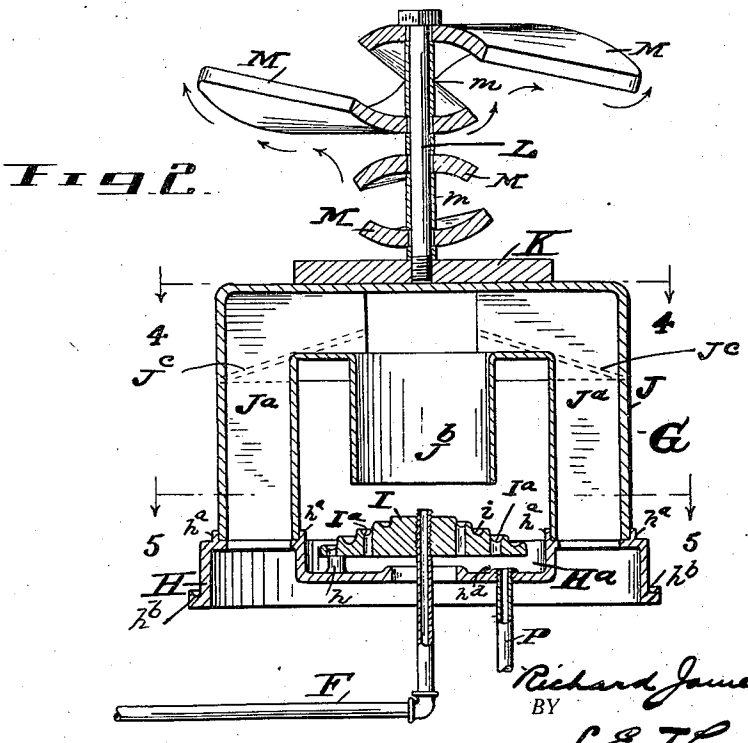


Fig. 2.



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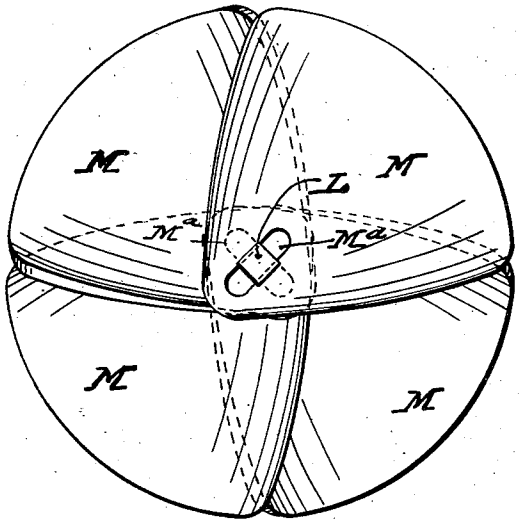


Fig. 3.

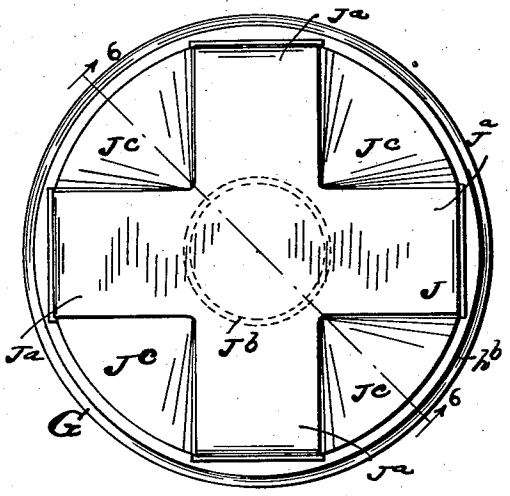


Fig. 4.

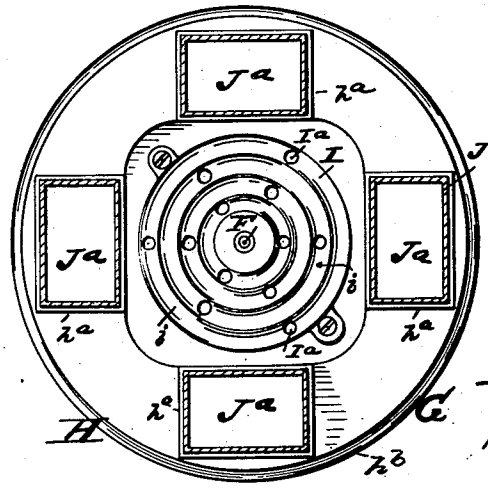


Fig. 5.

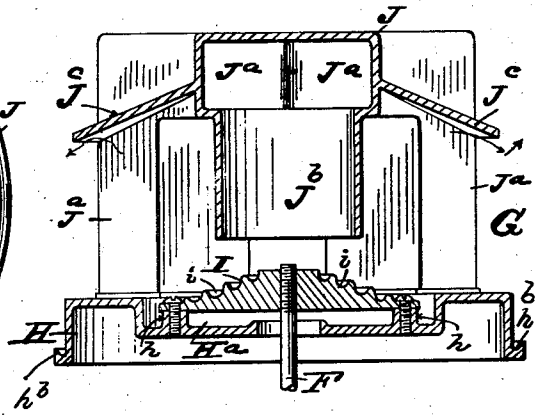


Fig. 6.

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UNITED STATES PATENT OFFICE.

RICHARD JAMES INCH, OF DETROIT, MICHIGAN.

OIL BURNER.

Application filed February 23, 1926. Serial No. 89,950.

My invention relates to an improvement in oil burners shown in the accompanying drawings and particularly described in the following specification and claims.

One of the objects of my invention is to provide an oil burner, inexpensive and simple in construction and capable of operating in a thoroughly satisfactory manner with a minimum consumption of fuel.

One feature of the invention consists in fitting the fuel feed pipe at its delivery end with a stepped disc having a series of concentric troughs or grooves perforated for the passage of air, the disc being inclosed within a fitting having a plurality of relatively large air-ducts connected with a central depending nipple having an open end through which the air is delivered downwardly against the flame,—the air-ducts being spaced apart by a cone-shaped deflector adapted to force the flame outwardly between the air-ducts that air passing through said ducts may be heated before delivery to the burner.

Another feature of the present invention consists in a plurality of arc-shaped deflector blades supported on a central post and spaced from each other, the purpose of which is to deflect the flame laterally toward the walls of a furnace, stove or other installation.

With the foregoing and other objects in view which will appear as the description proceeds the invention further resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed it being understood that changes may be made in the precise embodiment of the invention herein disclosed without departing from the spirit of the same.

In the drawings accompanying this specification:

Figure 1 is a diagrammatic sectional elevation of the burner installed in a furnace showing the pipe connection between the burner and the oil supply tank,—also means for automatically cutting off the delivery of oil to the burner under certain conditions.

Figure 2 is a vertical cross sectional view through the burner.

Figure 3 is a plan view of the deflector blades mounted upon the top of the burner proper.

Figure 4 is a plan view taken on or about line 4—4 of Figure 2, with the deflector removed.

Figure 5 is a horizontal sectional view taken on or about line 5—5 of Figure 2.

Figure 6 is a vertical cross sectional view taken on or about line 6—6 of Figure 4.

Referring now to the letters of reference placed upon the drawings:

A indicates diagrammatically a furnace, B its grate bars, C one of the furnace doors, D the usual uptake or smoke pipe. E is a fuel oil tank connected by a pipe F with the burner G. The burner includes an annular base plate H having a cup-shaped depression H^a with a central opening through which extends the discharge end of a fuel pipe F, fitted with suitable valves F^a and F^b for controlling the delivery of oil to a disc I secured at its outer edge to lugs *h*, extending upwardly from the bottom of the cup-shaped depression.

The disc I is of stepped formation and is provided with a plurality of concentric grooves *i* respectively formed in each of the steps and also a series of perforations I^a for the passage of air through the disc. J is a fitting supported on the base H and held against displacement by ribs h^a integral with the base. The fitting J includes a plurality of air passages J^a arranged in pairs surrounding the disc,—the respective pairs being at right angles to the other in the form of a cross,—see Figure 4—the passages being connected overhead with a central depending nipple J^b extending downwardly toward the stepped disc, but spaced therefrom that air delivered from the passages J^a may mingle with the fuel gases to support combustion. Between the walls of each of these air passages and integral therewith is a cone-shaped baffle plate J^c, designed to direct the flame between the air passages and toward the wall of the firepot

of the furnace. Mounted on the top of the fitting J is a plate K into which is screwed a rod L designed to support a plurality of adjustable arc-shaped baffle plates M, held in spaced relation by sleeves *m* on the rod. The purpose of the baffle plates M is to deflect the flame laterally as it impinges upon the baffle plates to retain the heat in the furnace.

The baffle plates have an elongated slot M^a, through which the supporting rod L projects to provide for radial adjustment of the baffle plates within the limits of the slot to meet the requirements of different installations.

The base plate H has a flange h^b inclined toward the wall of the plate in order to insure a sealing joint between it and the sand or asbestos filling covering the sheet metal plate h^c which rests upon the grate bars surrounding the burner against the passage of air through the grate bars outside of the walls of the burner.

It has been found in practice that after the moisture has left the sand or like filling the latter separates from the wall of the burner leaving an opening for air currents between the latter and the filling.

The inclined flange serves to direct the loose sand toward the wall of the base plate and thereby maintains a sealed joint between the same.

P is a return pipe, opening into the central cup-shaped depression H^a of the base plate H, and F^c is a suitable automatic valve, diagrammatically indicated, on the pipe line F, provided with a link *f* from which is suspended a bucket Q to receive any oil which may be discharged from the pipe.

It should now be explained that in the event of the flame being extinguished or the burner flooded with oil, the latter will flow through the pipe P and be discharged into the bucket Q, suspended from a weighted arm of the valve F^c which will be thus automatically closed against further delivery of oil to the burner as soon as the weight of the oil delivered to the bucket is sufficient to actuate the weighted arm of the automatic valve.

To light the burner the valves F^a and F^b are first opened to permit the delivery of a small quantity of oil to the disc I, which is then ignited;—the volume of oil delivered to the disc being regulated by the adjustment of the valves until a flame of proper size is developed.

The burner then requires no further attention, but if through accident the flame is extinguished and the burner becomes flooded with oil the automatic valve will promptly cut off further delivery of oil to the burner, in the manner previously indicated.

The opening from the cup H^a into the return pipe is surrounded by an annular rim h^d integral with the wall of the cup that sediment deposited in the cup may be trapped there and not flow into the pipe to close its passage.

Having thus described my invention what I claim is:

1. In an oil burner, a base plate having a cup-shaped depression with a central opening for a fuel supply pipe; a disc provided with a plurality of grooves to receive the oil discharged from the pipe; a fitting supported on said base plate having a plurality of vertically disposed air passages surrounding said disc with lateral extensions connected with a central depending nipple open at its lower end adjacent the upper face of the disc; a central post extending upwardly from the fitting; and a plurality of adjustable superposed baffle plates supported in spaced relation upon said post, whereby the flame may be deflected laterally toward the walls of the heater.

2. In an oil burner; a base plate having a cup-shaped depression with a central opening for a fuel supply pipe; a disc fitted to the discharge end of the pipe provided with a plurality of concentric grooves to receive the oil discharged from the pipe; a fitting supported on said base plate having a plurality of vertically disposed air passages surrounding said disc with lateral extensions connected with a central depending nipple open at its lower end adjacent the upper face of the disc; deflectors located between the air passages and integral with the walls of the latter; a central post extending upwardly from the fitting; and a plurality of adjustable arc-shaped baffle plates supported in spaced relation upon the post adapted to deflect the flame laterally toward the surrounding walls of the furnace.

3. In an oil burner; a base plate, adapted to be supported upon the grate bars of a heating unit, said base plate having an outwardly projecting inclined flange adapted to direct a surrounding air sealing mixture toward the wall of the base plate; a fuel supply pipe; a perforated disc fitted to the discharge end of the supply pipe provided with annular grooves to receive the oil discharged from the pipe; a fitting supported on the base plate having a plurality of vertically disposed inwardly directed air passages spaced from each other, whereby they may surround the disc, and integral with a central depending nipple open at its lower end adjacent the face of said disc; and inclined deflectors between the air passages integral with the walls of the latter.

4. In an oil burner; a base plate having a cup-shaped depression with a central opening for a fuel supply pipe; a fuel supply pipe; a disc screwed to the discharge end of the pipe provided with grooves to receive the

oil discharged from the pipe; a fitting supported on said base plate having a plurality of vertically disposed air passages surrounding said disc with lateral extensions connected with a central depending nipple open at its lower end adjacent the upper face of the disc; a baffle supporting post; and a plurality of adjustable arc-shaped segmental baffle plates supported in staggered spaced relation upon said post, whereby the flame may be directed laterally and in an indirect circuitous direction through the baffles.

In testimony whereof, I sign this specification.

RICHARD JAMES INCH.