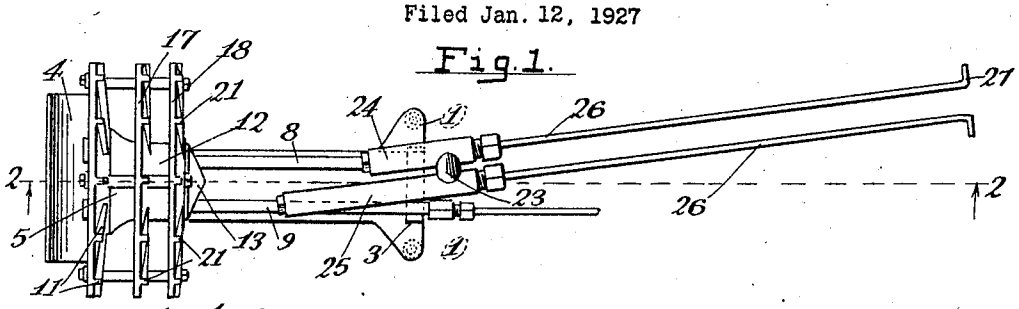
Jan. 29, 1929. 1,700,353

J. E. EVANS

OIL BURNER

Filed Jan. 12, 1927

Fig. 1.



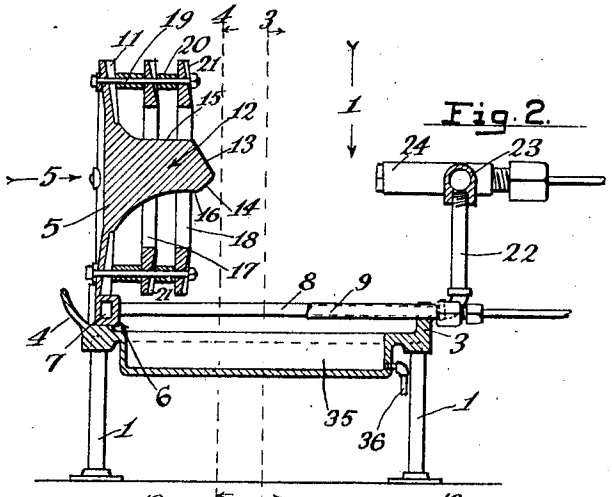


Fig. 2.

Fig. 3.

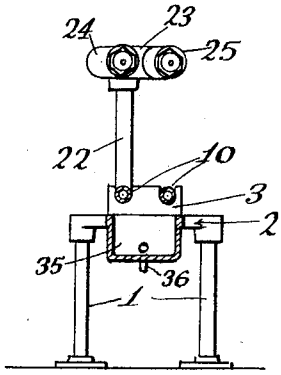


Fig. 5.

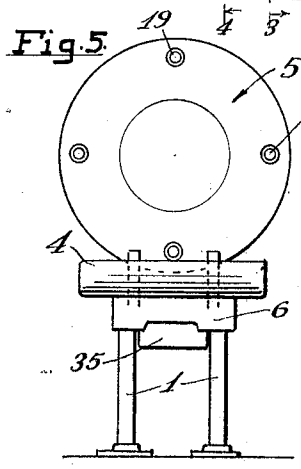
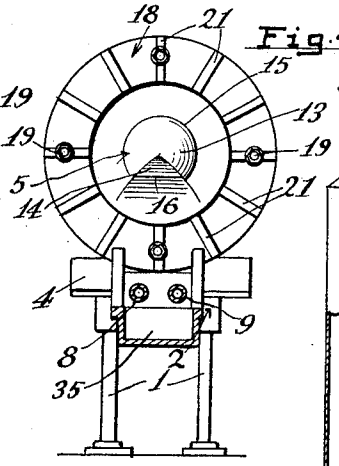


Fig. 4.



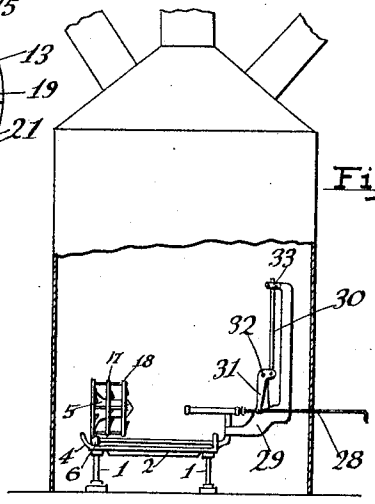


Fig. 6.

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Patented Jan. 29, 1929. 1,700,353

UNITED STATES PATENT OFFICE.

JAMES E. EVANS, OF ROSCOE, CALIFORNIA.

OIL BURNER.

Application filed January 12, 1927. Serial No. 160,597.

My invention is an oil burner, particularly adapted for installation in boilers, heating furnaces, or fire places of different types in which oil burners may be used. My invention may be considered as an improvement over that of my Patent No. 1,602,302, dated October 5, 1926, for an oil burner.

An object of my invention is the construction of a burner having a disc like baffle plate with a projection extending towards the burner, somewhat similar to my prior patent, and having one or more diffusing rings positioned in front of the baffle and surrounding the projection so that the flame after impinging on the projection will be diffused in different directions in the furnace.

Another object of my invention is the construction of a projection of such shape and the mounting of the burner in a suitable manner so that the major portions of the flame will be directed downwardly and hence brought into intimate contact with the air entering the furnace, giving complete combustion.

Another object of my invention is in using a plurality of burners, one being positioned relatively close to the baffle to be constantly burning and function as a pilot burner, the second burner being used when a greater heat is desired.

In constructing my oil burner I preferably form the rear baffle with a retort at the bottom so that the incoming oil is gasified, the gas returning by a bottom pipe to the second burner. The flame spreading downwardly functions to readily heat the retort as well as heating the oil pipe and the return gas pipe. The diffusing rings are clamped or bolted to the baffle. I also in some cases use a thermostatic control for the valves of the gas burners, these valves being of the needle type and actuated to open and close the valves in accordance with the temperature developed in the furnace.

My invention will be more readily understood from the following description and drawings, in which:

Figure 1 is a plan view of my burner taken in the direction of the arrow 1 of Fig. 2.

Figure 2 is a longitudinal section on the line 2—2 of Fig. 1 in the direction of the arrows.

Figure 3 is a vertical transverse section on the line 3—3 of Fig. 2, in the direction of the arrows.

Figure 4 is a vertical transverse section on the line 4—4 of Fig. 2, in the direction of the arrows.

Figure 5 is a rear elevation indicating in particular the baffle and back of the retort.

Figure 6 is a diagrammatical illustration of a furnace with my burner installed therein, showing the manner of attaching the thermostatic control.

The burner is provided with a fixed frame having a series of legs 1 supporting a base 2, there being a flange 3 on the front of the base to support the oil and gas pipes and the burners. The rear part of the base is provided with a curved rear wall 4 to catch the flame projected beyond the baffle. This structure may be inserted in a furnace in any desired manner.

The baffle and diffusing plate structure is sustantially as follows:

A disc like baffle 5 is supported on a retort 6, this retort having an open interior space 7 to which the oil pipe 8 is connected and from which the gas pipe 9 extends, these pipes being supported in recesses 10 in the flange 3. The retort and baffle are preferably made as an integral casting, the baffle preferably having a series of radial ridges 11. The baffle is also provided with a front extension 12 formed preferably of heavy metal, the front face of this projection having a cone surface 13, and the lower face 14 having a flat inclined surface. The projection is preferably cylindrical on the top, as indicated by the numeral 15, and has a flat lower surface 16 merging into a circular part.

A plurality of diffusing rings 17 and 18 are secured to the baffle by bolts 19 or the like, there being spacers 20 between the plates and between the plate 17 and the baffle. These plates are also provided with a series of radial ribs 21.

The burners are constructed and mounted substantially as follows:

A vertical gas tube 22 extends upwardly from the gas tube 9 leading from the retort and has a casting or the like 23 mounted thereon, this casting having a pair of burners 24 and 25. The burner 25 is positioned closer to the baffle and the projection than the burner 24. As illustrated in Fig. 1, the burners are controlled by a needle type of valve having valve stems 26 with crank ends 27 to allow turning of these from outside the furnace, the adjustment of the valves being by a screw threaded connection with a burner casting.

In the construction of Fig. 6 the valve stems 28 are indicated as a slidable type. A bracket 29 is secured to the gas pipe 22 or to any suitable fixed structure and has a thermostatic expansion rod 30 supported therein. This rod actuates a bell crank 31 pivoted at 32, one end of the bell crank being connected to the expansion rod and the other end being clamped on the valve stems 28. The rod is adjustable on its upper end 33 so that regulation can be made for the proper temperature control. This construction is such that when the temperature rises too high the thermostatic rod expands and thrusts the valve stems inwardly, thus shutting off the flow of gas, and on cooling the rod contracts and allows more gas to enter the furnace.

The manner of operation and functioning of my burner is substantially as follows:

The two burners 24 and 25 are positioned preferably so that the jet flame strikes the lower inclined surface 14 of the projection 12 and is deflected downwardly. The burner 25 is designed to be substantially always in use and if it is desired to have increased heat the burner 24 will be lit, this being ignited from the flame of the burner 25. The burner 24, being set back further, gives a hotter flame and care has to be exercised in proper positioning of this burner to avoid fusing the projection 12 and the baffle. The flame, as above described, is thrown downwardly by the inclined surface 14 and the flat surface 16. Some of the flame is caught by the diffusing rings and spread downwardly and laterally and part of the flame is carried down by the main portion of the baffle, subjecting the retort to an intense heat. Some of the gases pass on each side of the baffle and in the downward deflection will be caught by the rear wall 4 where it projects beyond the side of the baffle, as shown in Figs. 4 and 5, this flame being directed particularly against the retort and the oil and gas pipes. The flame being projected downwardly is brought into intimate contact with the air which has a rising motion in the furnace due to the continuous upward flow of the hot air and products of combustion, thus increasing the combustion of any unburnt gases after the flame impinges on the extension of the baffle.

The thermostatic rod is not intended to be subjected to the direct flame but receives radiant heat from the burner and flames as well as being subjected to the general heat of the furnace and thus may be regulated to control the burner valves.

It is to be understood that my burner may be installed in any suitable type of boiler furnace, domestic furnace, or other types of heating equipment.

It is desirable that the supporting base 2 have a trough 35 positioned below the oil and gas pipes so that oil may be placed in this trough and ignited to initially heat the oil and the gas to generate gas for starting the first flame. A drain pipe 36 is also used to drain oil to a suitable receptacle should, under some circumstances, oil be discharged from the nozzle instead of burning gas.

Various changes may be made in the principles of my invention without departing from the spirit thereof, as set forth in the description, drawings and claims.

I claim:

1. An oil burner comprising in combination a disc like baffle having a forward extension thereon projecting perpendicularly therefrom a distance substantially equal to the radius of the disc, a retort at the bottom of the baffle, an oil pipe feeding to the retort and a gas pipe feeding away from the retort, and a burner connected to the gas pipe, the flame being directed on the extension.

2. An oil burner comprising in combination a disc like baffle having an extension on the front, a plurality of diffusing rings positioned in front of the baffle and surrounding the sides of the extension, and a burner positioned to project a flame on the said extension.

3. An oil burner comprising in combination a disc-like baffle having a retort at the bottom and a forward extension, the retort having an infeeding pipe for oil and an outfeeding pipe for gas, a plurality of diffusing rings positioned in front of the baffle and surrounding the sides of the extension, and a burner on the gas pipe positioned to project a flame on the extension.

4. An oil burner comprising in combination a disc-like baffle having a forward extension projecting perpendicularly therefrom a distance substantially equal to the radius of the disc, said extension having an outer face inclined downwardly, a retort at the bottom of the baffle, an inlet oil pipe and an outlet gas pipe communicating with the retort, and a burner connected to the gas pipe positioned to direct a flame on the inclined face of the said extension.

5. An oil burner comprising in combination a circular baffle having a forward extension with a conical shaped front face on the upper side, the lower face being inclined downwardly and towards the baffle, a retort at the base of the baffle, an inlet oil pipe and an outlet gas pipe connected to the retort below the said extension, a plurality of diffusing rings secured to the baffle and positioned in front of same surrounding said extension, and a burner positioned to direct a flame against the lower face of the extension.

6. An oil burner, as claimed in claim 5, the retort being supported on a base and said base having a rear curved wall extending beyond the baffle on opposite sides in the path of flames passing the sides of the baffle.

7. An oil burner comprising in combination a ring like baffle having a forward extension thereon with inclined outer faces, the extension being somewhat cylindrical in shape, a retort at the base of the baffle, pipes connected to the retort from the front of the burner, one of the pipes being a gas pipe, and a pair of burners connected to said pipe, one burner being positioned closer to said extension than the other burner.

8. An oil burner, as claimed in claim 7, having a plurality of diffusing rings secured to the baffle and encircling the extension, said rings being spaced one from the other.

9. An oil burner comprising in combination a supporting frame having a base with a front flange and a curved rear wall, a circular baffle having a retort resting on the base adjacent the rear wall and a forward extension, said rear wall extending laterally beyond the baffle, an oil and a gas pipe connected to the retort in front of the baffle, said pipes being supported on the flange, a burner connected to the gas pipe positioned to project a flame on the said extension, and the rear wall being positioned to catch the flames passing beyond the baffle.

In testimony whereof I have signed my name to this specification.

JAMES E. EVANS.