Feb. 14, 1928. 1,659,537

S. ANGROVE

FIRE POT FOR LIQUID FUEL BURNERS

Filed Aug. 25, 1926

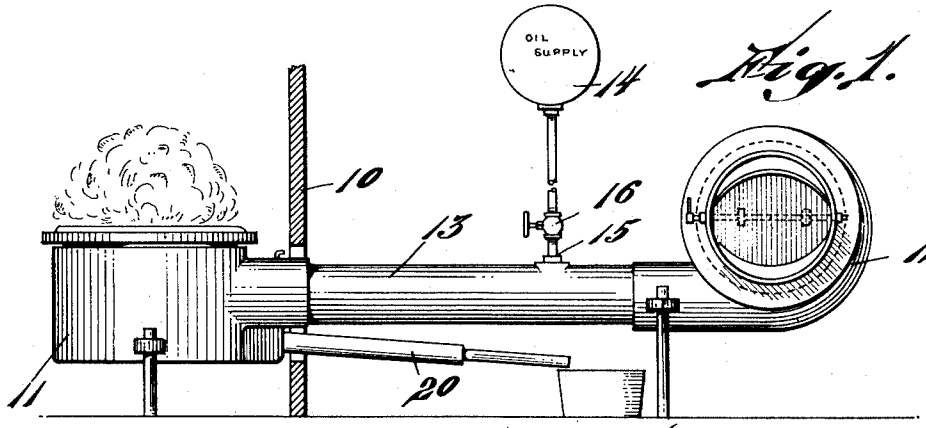


Fig. 1.

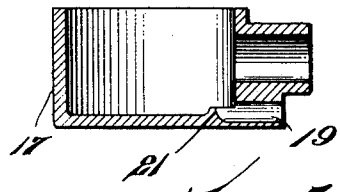


Fig. 2.

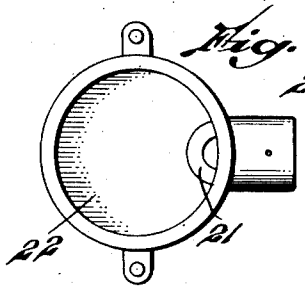


Fig. 3.

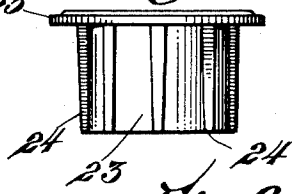


Fig. 4.

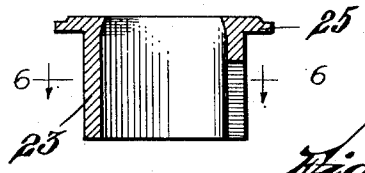


Fig. 5.

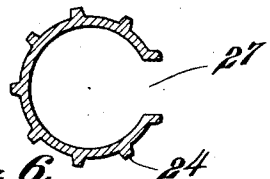


Fig. 6.

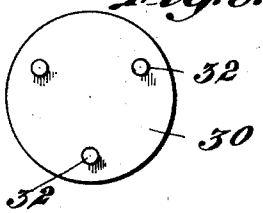


Fig. 8.

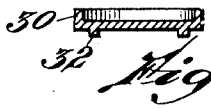


Fig. 7.

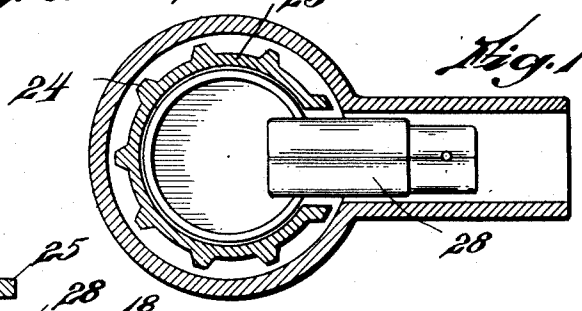
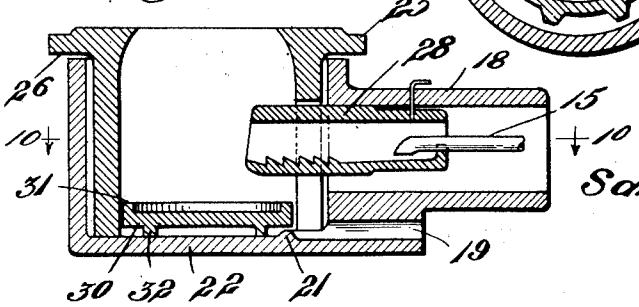


Fig. 10.

Fig. 9.



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UNITED STATES PATENT OFFICE.

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FIRE POT FOR LIQUID-FUEL BURNERS.

Application filed August 25, 1926. Serial No. 131,378.

This invention relates to an apparatus for burning liquid fuel such as hydrocarbon oil and has for its object to provide a firepot so constructed that the same will not become overheated and destroyed by the action of the fire therein.

A further object of the invention is to provide a lining in the firepot so located that air may circulate about the lining to cool the same and prevent excessive heat from destroying the lining or firepot.

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

In the accompanying drawings:

Figure 1 is a side elevation of the apparatus illustrating its relation to a furnace.

Figure 2 is a sectional side elevation of the combustion chamber.

Figure 3 is a plan view of the same.

Figure 4 is a side elevation of the lining for the combustion chamber.

Figure 5 is a sectional elevation of the same.

Figure 6 is a cross-sectional end view of the lining on line 6—6 of Figure 5.

Figure 7 is a sectional elevation of the plate within the lining the same being spaced from the bottom of the chamber.

Figure 8 is a bottom view of the plate showing an arrangement of projections thereon.

Figure 9 is a sectional elevation showing the lining and firepot in their operating relation.

Figure 10 is a sectional plan view taken on line 10—10 of Figure 9.

It is found in the practical operation of liquid fuel burners of this character that the firepot often becomes so overheated that the casting is burned or destroyed and to prevent such undesirable effects, I have provided a fire pot or combustion chamber in which there is a lining spaced from the sides of this chamber having heat discharging ribs to permit circulation of air about the same to permit sufficient air cooling to the lining to prevent the chamber and lining from being overheated and destroyed; and the following is a detailed description of the present embodiment of this invention and showing one construction of mechanism by which these advantageous results may be accomplished.

With reference to the drawings, 10 designates the outer front wall of a furnace in which is positioned a firepot 11 of a liquid fuel burner having a motor driven fan 12, air draft supply conduit 13 and oil supply chamber 14 discharging through a suitable pipe 15 controlled by valve 16.

This firepot consists of a combustion chamber 17 having a cylindrical protruding boss 18 to which the air draft conduit 15 is attached. This chamber is also provided with a discharge opening 19 and a discharge pipe 20, the discharge pipe being obstructed by means of a projecting portion 21 raised from the bottom 22 of the chamber to prevent any sediment or foreign matter from entering the discharge pipe to clog the same.

Within the combustion chamber or firepot there is a lining having side walls 23 provided with vertically disposed ribs 24 which are tapered slightly to be larger at their upper end adjacent the flange 25 than at their lower open end. The lining is substantially cylindrical in shape and rests upon the bottom wall 22 of the combustion chamber with the flange spaced as at 26 from the top edge of the combustion chamber to permit circulation of air about the lining and discharge of the heated air between the lining and the chamber.

An opening 27 is provided in the lining adjacent the air draft supply through which extends the oil discharge nozzle 28 which is made the subject of my copending patent application filed even date herewith.

In the bottom of the combustion chamber, there is a plate 30 provided with an upwardly-extending flange 31 into which the oil from the nozzle may drip to provide a pool of oil for initially starting the burner. This burner is of such type that it operates on a low flame continually and intermittently on a high flame when more heat is required, and needs only to be started by such method at the beginning of a season of use. The plate 30 is also provided with projections 32 to space the same from the bottom, which projections also act as heat discharging fins and cool the plate as the air circulates beneath the same.

From the foregoing it will be seen that I have provided a firepot which has a readily

removable lining about its side walls and a lining plate over its bottom both of which are provided with projections which are in such shape as to stiffen and strengthen the same and which also provide an increased surface for discharging heat into the air circulating about the lining of the plate to prevent these parts from overheating and being destroyed. It will be seen, moreover, that the arrangement of the parts of the present burner is such than an air current is provided between the combustion chamber 17 and the lining 23 which is separate from and in addition to the air required for combustion, thereby effectively cooling the lining.

It will also be noticed that the flange provided on the lining serves to strengthen and stiffen the lining to further resist strains and stress due to expansion and contraction.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In an oil burner, a combustion chamber, an inner lining for said chamber spaced from the side walls thereof, and projections on said lining extending towards said chamber for strengthening said lining and dispensing the heat thereof, said lining and chamber being constructed and arranged to pass a current of cooling air between them in addition to the air used for combustion.

2. In an oil burner, a combustion chamber, an inner lining for said chamber spaced from the side walls thereof to form an air passage and radially projecting vertically disposed ribs of a greater cross-sectional area at the top than the bottom carried by said lining for strengthening the same and increasing the heat discharging surface thereof.

3. In an oil burner, a combustion chamber, a lining of substantially the shape of said chamber resting on the bottom and spaced from the side walls thereof, and a flange on said lining extending outwardly therefrom and spaced from the top edge of said chamber whereby the air may circulate about the lining and prevent it from being destroyed.

4. In an oil burner, a combustion chamber, an inner lining for said chamber comprising a casting of substantially the shape of said chamber having an open bottom and spaced from the side walls of the chamber, projections on said lining extending towards said chamber, and a separate plate within said casting having projections resting on the bottom of the chamber to space it therefrom to complete the lining therefor and providing an air space between said chamber and lining, said lining and chamber being constructed and arranged to pass a current of cooling air between them in addition to the air used for combustion.

5. In an oil burner, a combustion chamber, an inner lining for said chamber comprising a wall of substantially the shape of said chamber spaced from the side walls thereof, and a separate plate spaced from the bottom of said chamber, said plate having an upwardly extending flange for retaining a predetermined quantity of oil therein for ignition to initially start the burner.

6. A burner including a chamber having an inlet for introducing air, a lining supported within the chamber and spaced therefrom, said lining having an aperture arranged to admit air from said inlet to support combustion, the lining and chamber being so arranged that the space between them connects with said inlet and with the atmosphere independently of the interior of the lining whereby a current of cooling air passes through said space in addition to and independently of the air used for combustion.

7. In an oil burner, a combustion chamber, an inner lining for said chamber spaced from the side walls thereof, and projections on said lining extending toward said chamber for strengthening said lining and dispensing the heat thereof, and a flange on said lining extending outwardly therefrom and spaced from the top edge of said chamber, whereby the air may circulate about the lining and prevent it from being destroyed.

8. In an oil burner, a combustion chamber, an inner lining for said chamber spaced from the side walls thereof, projections on said lining extending toward said chamber for strengthening said lining and dispensing the heat of said lining, the space between the lining and chamber being connected with the atmosphere independently of the interior of the lining whereby a current of cooling air may pass between the lining and the chamber.

In testimony whereof I affix my signature.

SAMUEL ANGROVE.