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F. MARION

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OIL BURNER

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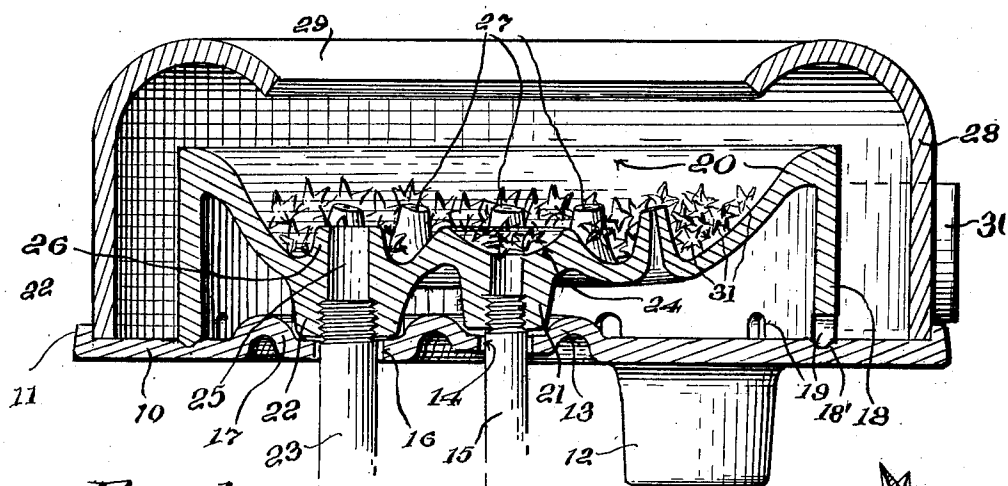
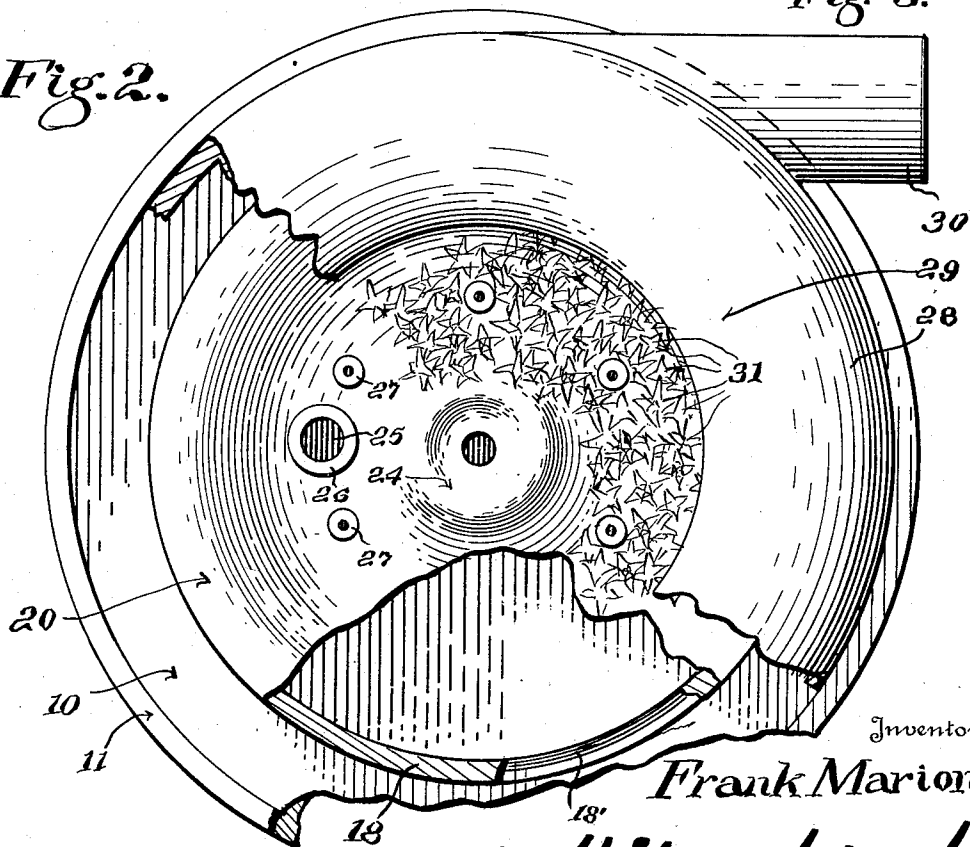


Fig. 1.



Fig. 3.

Fig. 2.



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OIL BURNER

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The invention is intended to attain a novel and simple construction in burners for low grade petroleum fuel oils and the like. It specially seeks to present a novel means for improving the vaporization of such oils in an open pan type of burner, in which the oil is fed to a bowl over which air is fed to support combustion, and the oil vaporized by the heat radiated from the flame of previously vaporized and ignited fuel.

A further important object is to simplify the assembly of parts involved in the embodiment of the bowl, to the end that they may be manufactured at low cost, and installation and repair of the equipment effected with a minimum of difficulty.

Additional objects advantages and features of invention reside in the construction arrangement and combination of parts involved in the embodiment of the invention, as may be more readily understood from the following description and accompanying drawings, in which

Fig. 1 is a vertical cross sectional view of a burner constructed in accordance with my invention;

Fig. 2 is a top view of this burner with parts broken away;

Fig. 3 is a detail view of one of the "jack stones" used in the burner bowl to increase the vaporizing efficiency of the device.

There is illustrated a burner comprising a circular base plate 10, having a circumscribing upstanding rib 11, and a lower socket boss 12 to receive a mounting pipe or leg not shown. A rib 13 is raised around the central opening 14 in the plate, a fuel supply pipe 15 being extended slidably through this opening and attached to the burner bowl 20 thereabove. A similar opening 16 and circumscribing rib 17 are formed in the plate outwardly of the rib 13. A cylindrical bowl-supporting wall 18 is formed integrally and flush with the periphery of a bowl 20, spaced a distance inwardly of the rib 11, openings 19 being formed in this wall by notching its lower edge.

The lower edge of the wall is V-shaped to set in an annular groove 18' in the plate 10. The bowl is formed with a central boss 21 on

its under side to set within the rib 13, the boss having an oil feed opening therethrough into the lower part of which the fuel pipe 15 is screwed. A similar boss 22 is formed on the bowl to set similarly within the rib 17 and having the drain pipe 23 screwed into its lower part. Around the upper part of the oil feed opening through the boss 21 a small bowl-like recess 24 is formed raised above the laterally adjacent bottom portions of the bowl, the bowl bottom sloping downwardly from the edge of the recess on all sides. Around the drain opening 25, a nipple 26 is formed extending abruptly above the lowermost part of the bowl proper, and it may be either higher or lower than the edge of the recess 24 though shown on the same level. A series of upwardly projecting nozzles 27 are formed integrally with the bowl between the recess 24 and the periphery of the bowl, having air passages therethrough.

An annular hood 28 is adjusted in circumscribing relation to the wall 18 and bowl. This hood comprises a cylindrical lower wall part set snugly on the plate 10, and within the rib 11, which serves to center it. The upper portion of the hood 28 is curved inwardly and downwardly as at 29, so as to direct air downwardly into the bowl, as will be explained. The wall 28 of the hood is spaced from the wall 18, and a tangential air inlet nipple 30 is formed thereon to which the conduit from a centrifugal blower may be attached, or other means used to supply air in volume at the desired rate, to the space between the wall 18 and hood. The nipple 30 is located to pass closely over the rib 11 and the opening through the nipple is below the upper edge of the wall 18.

Thrown loosely into the bowl, there is a suitable quantity of "jack stones" 31 so called, such as are used in the finishing of castings in tumbling barrels. Jack stones which have been discarded after use in tumbling may be used if desired. These are spread in the lower part of the bowl to a depth of an inch or more in a small burner, but preferably to such depth that some of the stones or parts thereof will be above the level of the edge 26 of the drain opening 25. It should also be

noted that the nozzles 27 extend higher than the drain edge 26.

In the use of the particular construction shown, the jacks are heated by any method employed for starting burners, as, by burning thereon waste, cloth or paper saturated with oil. Fuel may be admitted before or during or after this heating, and the vapor then produced will ignite so as to maintain the parts in suitably heated condition.

Owing to the forms of the jack stones they become heated very rapidly, and in the moderate operation of the burner the upper stones become red hot. At low fire operation they are still a material aid to vaporization though they may not be red hot. The jack stones are ordinarily formed of cast iron as is well known. Used as indicated, the jack stones form a matted mass subdividing the oil admitted to the bowl. By conduction of heat from stone to stone, and directly to the oil within the pool which may be formed initially a rapid vaporization of the oil is attained. After starting of the fire and while operated near maximum capacity there is less tendency of the fuel to form a pool, and it vaporizes almost immediately on reaching the recess 24. By having the stones over this recess they increase the good burning quality of the vapor, tending to crack it so that a better combination of the fuel and combustion supporting elements is effected.

When the bowl is assembled on the base plate, it is desirable to introduce into the recesses within the ribs 13 and 17 a furnace cement.

While the particular type of burner illustrated is adapted to use with a gravity feed fuel supply, a pressure supply may be employed, and in place of the recess 24. any approved means to introduce or spread the fuel or diffuse it, may be employed.

It is an advantage of the construction presented that the air admitted is heated considerably by the parts of the hood and bowl, and owing to the pressure on the air as admitted between the lower wall portion of the hood and the wall 18, it will enter in part through the apertures 19 and thus pass upwardly through the nozzles 27 improving the mixture. The space over the bowl may be termed a combustion chamber, for, although a mixing action occurs therein also, the flame propagates to the level of the inner edge of the hood. During low fire operation, small flames spring from among the jack stones.

I claim:

1. A burner comprising a base plate a circular bowl thereover, a bowl-supporting wall between the plate and bowl at the periphery of the bowl, said base plate extending beyond the wall, a second wall set on the base plate in concentric spaced relation to the first wall and having an inturned upper edge por-

tion projected inwardly and downwardly over and spaced from the bowl, and an air inlet on the second wall, said first wall having apertures therethrough, air ports being formed through the lower part of the bowl.

2. The structure of claim 1 in which said air inlet on the second wall is arranged tangentially with respect to the wall last named.

In testimony whereof I affix my signature.

FRANK MARION.