Sept 8, 1925. 1,552,677

M. S. CLAWSON

OIL BURNER

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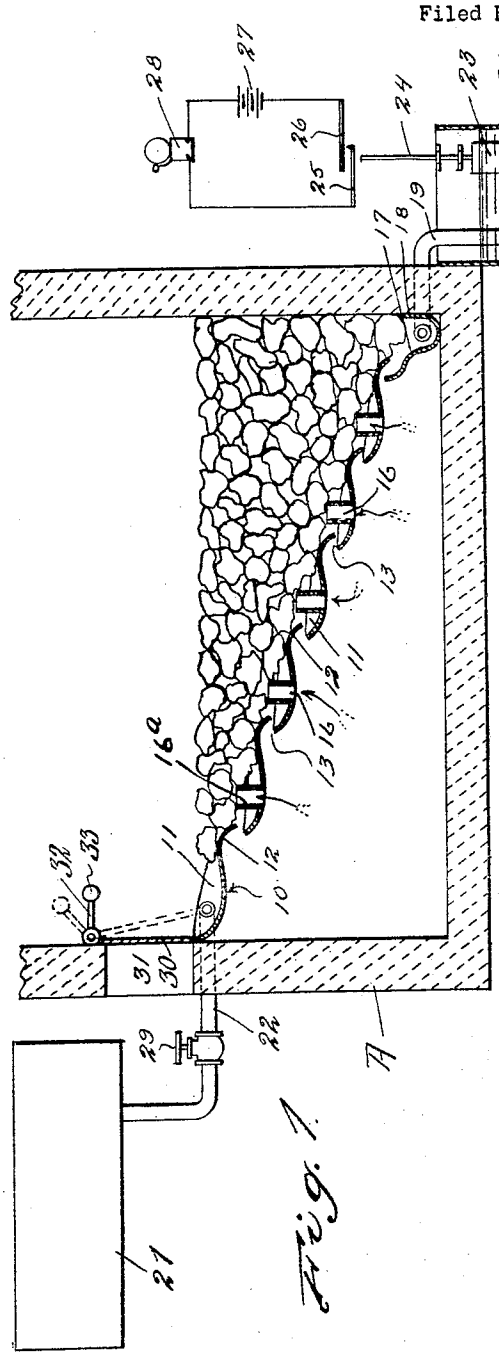


Fig. 1.

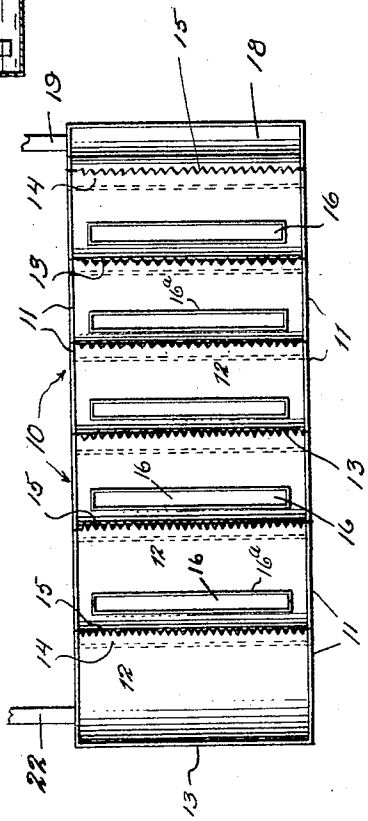


Fig. 2.

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MONROE S. CLAWSON, OF UPPER MONTCLAIR, NEW JERSEY.

OIL BURNER.

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To all whom it may concern:

Be it known that I, MONROE S. CLAWSON, a citizen of the United States, residing at Upper Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Oil Burners, of which the following is a specification.

This invention relates to furnaces employing liquid fuel and has for its object the provision of a novel burner device so constructed and arranged as to give maximum heat with minimum fuel consumption.

An important and more specific object is the provision of an oil burner device including a plurality of units arranged in cascade formation and each receiving the overflow from the preceding one, the ultimate one discharging into a reservoir from which return may be made to the feeding tank.

Another object is the provision of a burner structure of this character in which each unit is of pan-like formation and provided with a core for permitting an air draught therethrough whereby an automatic blast effect will be attained.

Yet another object of the invention is the provision of a burner structure in which each individual pan unit has its discharge edge serrated to insure more uniform distribution or flow to the next pan.

An additional object is the provision of a device of this character which will be simple and inexpensive in manufacture, easy to control and operate, positive in action, efficient and durable in service, and a general improvement in the art.

With the above and other objects and advantages in view, the invention consists in the combination and arrangement of the several parts to be hereinafter more fully described and claimed and illustrated in the accompanying drawings in which—

Figure 1 is a sectional view taken vertically through a furnace embodying my invention.

Figure 2 is a top plan view.

Referring more particularly to the drawings, the letter A designates, roughly, the outline or wall of a furnace equipped with my burner structure to be described. Mounted within the furnace structure which itself forms no part of the present invention, is a burner device which includes a plurality of similar pans 10 arranged in cascade relation and supported in any desired manner, this detail being immaterial. Each pan is here represented as being of elongated trough-like formation and includes ends 11 secured to a single combined back and bottom piece 12 which is of compound curved shape. The back edge 13 is higher than the forward edge 14 so that oil fed to each pan will, after reaching a certain level, flow from the forward edge into the next successive pan. For insuring uniformity in the distribution of flow from one pan to another the forward edge of each is toothed or serrated, as shown at 15.

All of the pans are of the same formation and each is formed in its bottom with an elongated slot 16 surrounded by upstanding flanges 16^a which define a core or flue through which air will pass for supplying the necessary oxygen to support combustion of the oil. It is quite true that the oil would probably burn with these cores or flues omitted but their presence insures a draught of air at the center of flame from each pan so that there will be an automatic blast effect.

The lowermost pan of the series is different from the others and is indicated by the numeral 17. This pan has its front wall 18 extended upwardly instead of downwardly, as in the case of the others and is intended to catch whatever oil passes from the lowermost one of the pans 10 and to conduct such excess oil through a pipe 19 into a tank 20 from which the oil might be pumped, by any suitable means, back to the supply tank 21 which has its outlet pipe 22 leading into one end of the first pan 10.

In some instances, especially if there be no pumping mechanism for thus returning the oil, I may find it advisable to provide a float 23 in the tank 20, which float is equipped with a stem 24 adapted to engage a movable contact 25 and force it into engagement with the fixed contact 26. In such an event both contacts might be connected in circuit with a source of current 27 and an alarm bell 28 or other signal device which would be energized and give an audible or visible signal as the case may be, in the event that the oil in the overflow tank 20 reaches a certain predetermined level. It is, however, preferable that the feed pipe 22 be equipped with a control valve 29 which is used to regulate the quantity of oil fed to the uppermost pan 10 and it is a simple matter to control this flow in such a way

that there will be no surplus oil to accumulate within the lowermost pan 17, all the fuel being preferably consumed before reaching this point.

While it is not imperative, it is a distinct convenience to equip the furnace embodying my burner structure with a movably mounted door 30 normally closing a lighting port 31, the door having an arm 32 equipped with a weight 33 which will normally hold the door in closed position. Obviously the door may be pushed inwardly, as shown by the dotted lines in Figure 1, for the purpose of igniting the oil and it is equally apparent that the door will automatically return to closed position when pressure thereagainst is discontinued.

In most instances it might be preferable to provide a mass of refractory material located upon and supported by all the burner pans, the refractory material being of any desired variety and being in the form of chunks or large pieces which will not interfere with the passage of air and flame therebetween.

While I have shown and described the preferred embodiment of my invention, it is of course to be understood that I reserve the right to make such changes in the form, construction and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. An oil burner structure comprising a plurality of pans arranged in cascade relation and discharging one into another, each pan including end walls, a back and a curved bottom, the bottom having its forward edge lower than the back and downwardly curved.

2. An oil burner structure comprising a plurality of pans arranged in cascade relation and discharging one into another, each pan including end walls, a back and a curved bottom, the bottom having its forward edge lower than the back and downwardly curved, the forward edge being toothed throughout its length.

3. An oil burner structure comprising a plurality of similar pans arranged in progressively higher planes with the forward edge of each extending forwardly beyond the rear edge of the one next below, each pan having its forward edge arranged in a plane intermediate the planes of the top edge and the bottom whereby a predetermined quantity of fuel is retained and the excess is permitted to flow into the pan next below.

4. In an oil burner structure, a pan having a combined back and bottom of compound curved formation and having end walls, the forward edge of the bottom being at a plane intermediate the lowest point of the bottom and the edge of the back whereby the pan will retain a certain predetermined quantity of fuel and permit the excess to overflow, the bottom being provided with an elongated slot surrounded by upstanding flanges defining an air admission flue.

5. In a furnace, a burner structure comprising a series of pans arranged in cascade relation with the lower edge of each etxending beyond the higher edge of the one next below, the uppermost pan being disposed against the inside of one wall of the furnace, said wall having an igniting port above said highest pan, means normally closing said igniting port, means for permitting flow of fuel into said highest pan, said series of pans extending to a point slightly spaced from the opposite wall of the furnace, a collecting trough at said opposite wall and at the bottom of the furnace receiving from the lowermost pan of the series, outlet means leading from said collecting trough, and a mass of lumpy refractory material resting upon all of the pans and said trough.

6. In a furnace, an oil burner structure comprising a plurality of pans arranged in stepped relation, a lighting port at the uppermost one of the series of pans, and a normally gravity-closed door mounted within said port.

In testimony whereof I hereto affix my signature.

MONROE S. CLAWSON.