Oct. 13, 1931. H. L. LE DAUM ET AL 1,827,294

OIL BURNER

Filed April 8, 1929

FIG 1

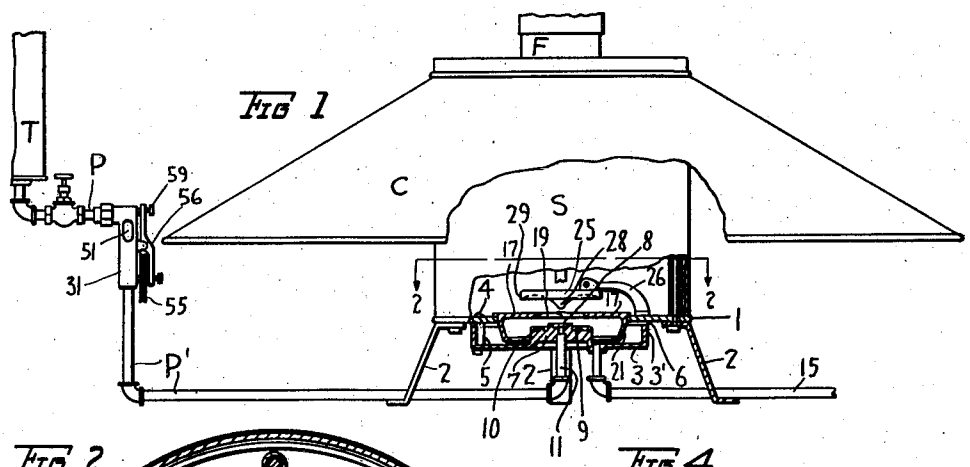


FIG 2

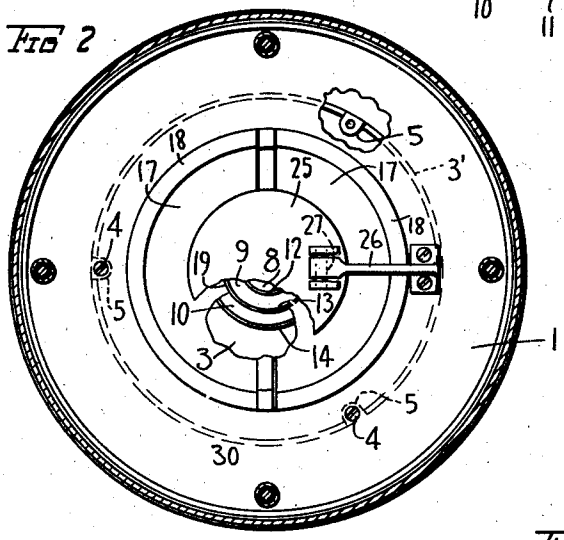


FIG 4

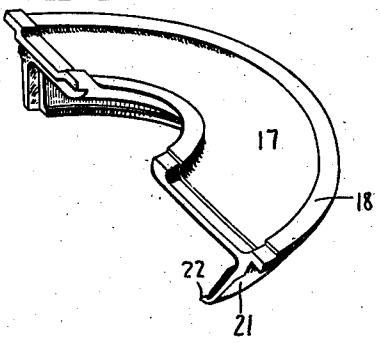
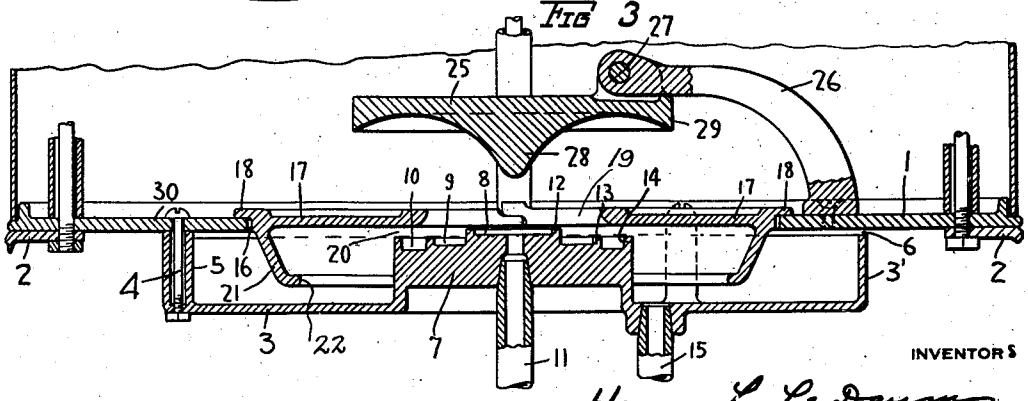


FIG 3



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UNITED STATES PATENT OFFICE

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OIL BURNER

Application filed April 8, 1929. Serial No. 353,312.

This invention relates to improvements in oil burners, it relating more particularly to oil burners for use in connection with brooder stoves.

One of the objects of the invention is to provide improved means for feeding the air forming the combustible mixture, a more specific object in this connection being to provide for the air to travel through a tortuous heated passage-way for the purpose of preheating the air.

Another object of the invention is to provide a construction for retarding back drafts through the passage which supplies the air for the combustible mixture.

A further object of the invention is to provide an air passage-way for the air for the combustible mixture so constructed that the air will be delivered to the flame in the most effective manner.

A further object is to provide an arrangement for deflecting the flame upon the lower portion or base of the stove to not only provide for heating the lower portion of the brooding space in a more effective way but also to heat those parts which form the air passage-way.

In the accompanying drawings:

Fig. 1 is an elevation of a brooder stove in which the improvements are embodied, partly broken away and shown in section.

Fig. 2 is an enlarged section on the line 2—2 of Fig. 1.

Fig. 3 is a further enlarged transverse sectional view, it being an enlargement of the section shown in Fig. 1.

Fig. 4 is an enlarged perspective view of a detail.

Referring to the drawings, S is a brooder stove of any well known type on which is supported a canopy or hover C, a flue F being employed to carry away the products of combustion.

In this invention our improvements are centered in the burner proper of an oil burning brooder stove, the arrangement as here shown and described being one which we have found efficient and effective, and one which may be substituted for burners of other types.

In the present instance, 1 is a flat, circular metallic base which forms the bottom of the stove, 2 being legs employed to support the entire structure. Beneath the base is an air chamber formed by a comparatively large circular dish-like member 3 concentrically secured to the under side of the base 1, by bolts 4, which pass through bosses 5 which are of greater length than the sides 3′ so that a space 6 is left between the upper edge of the sides 3′ and the lower side of the base 1, through which air may pass.

In the center of the member 3 is a raised boss 7 forming the burner proper in whose upper surface are a series of shallow concentric fuel wells 8, 9 and 10 of varying depths. To the central one, 8, the liquid fuel is supplied by means of a pipe 11, the liquid fuel flowing over the edge 12 into the well 9, and over the edge 13 into the well 10, and any excess overflowing the edge 14 is conducted from the stove by a pipe 15 to a suitable storage receptacle (not shown).

The base member 1 has a large central orifice 16 and in the orifice is placed a pair of mating auxiliary base members 17 so formed that when properly assembled the effect of an integral construction is attained, but, as here shown (Fig. 4) greater economy in manufacture and assembly and greater accessibility in any necessary disassembling, as for cleaning, is obtained. The members 17 when mated are essentially a simple, flat disk having a flange 18 on its outer edge by which the disk is supported in the orifice 16, its purpose being to close the orifice 16 in the base which is large for the purpose of enabling the operator to have access to the pan 3 but so formed as to provide a smaller orifice 19, concentric with and directly above the burner wells 8, 9 and 10. The diameter of the orifice 19 is approximately equal to the outer diameter of the well 9 and when in place the height of the edge 14 is such that a comparatively small space 20 is left for the passage of air.

Within the air chamber 3 an air baffling wall 21 is provided, and it will be obvious that from the standpoint of economy in manufacture, a convenient manner is as here shown, wherein the baffling wall 21 is an

integral part of the base members 17. The wall 21 depends downwardly and inwardly at an angle terminating in an inturned annular flange 22 and extends to a position closely adjacent the upper surface of the pan 3, but in spaced relation therewith.

Besides forming a tortuous passage for the air through the air chamber to enable the air to be preheated to a considerable degree, and to also more effectively direct the air to the flame, another purpose of the wall 21 is to retard back drafts. Due to the angular arrangement of the wall 21 air is permitted to flow more freely from outside atmosphere to the burner than in the opposite direction, flow of air backwardly through this passage being resisted by eddy currents in the space between the wall 21 and burner 7.

Superimposed directly and concentrically above the central wall 8 is a flame spreader 25 supported by a bracket 26 secured to the base 1. Referring to Fig. 3 it will be seen that the spreader 25 is hinged on a pin 27 in the upper end of the bracket 26 and may be swung upwardly and rearwardly, for better access in cleaning. The spreader 25 has a central inverted rounded end portion or boss 28 the side of which conforms to an arc of a circle, forming in effect, a cone, at the base of which the curvature is continued to form an annular down-turned flange 29 at the outer edge of the spreader.

The effect and purpose of the spreader is to turn the flames issuing upwardly from the orifice 19, and to cause them to impinge on the base 1 at about the point indicated by the character 30 in order to heat this portion of the base and to supply a quantity of reflected warmth downwardly to the floor below the stove. The dimensions of the pan 3 are such that the sides 3′ approach the base at the point 30, this being done so that the incoming air must pass near this heated area. A further object of the spreader 28 is to prevent the effects of back draft to a certain extent since by its position downward currents are prevented from passing directly into the orifice 19. The control of the heat is effected by the thermostatic element 55 which is placed in the usual manner near the edge of the canopy C and is responsive to the warm currents of air and operates the lever 56 which is operatively connected with the needle valve 59 which controls the flow of fuel from the tank T through the casing 31 and pipes P′ to the burner; the casing being preferably provided with a sight feed opening 51.

Having thus described our invention, we claim:

1. The combination of a base member having an aperture, a burner member including a fuel well on its upper side located beneath said base in comparatively close proximity thereto and in line with said aperture, an air chamber below said base and surrounding said burner member, an annular wall depending from said base into said chamber and spaced from the bottom thereof, said wall surrounding said burner member in spaced relation therewith and extending to a point beneath the fuel well of said burner member, there being a passage from outside atmosphere communicating with said chamber on the outside of said depending wall, the wall of said aperture partly overlying the oil well portion of the burner member to cause the air to be deflected over the same

2. The combination of a base having an aperture, a burner including a fuel well on its upper side located beneath said base in comparatively close proximity thereto and in line with said aperture, an air chamber below said base and surrounding said burner, an annular wall depending from said base into said chamber and spaced from the bottom thereof, said wall being inclined inwardly in a downward direction and surrounding said burner in spaced relation therewith and extending to a point beneath the oil well of said burner, there being a passage from outside atmosphere communicating with said air chamber on the outside of said depending wall.

3. The combination with a base member having an aperture, a burner member located beneath and in line with said aperture, an air chamber below said base member and surrounding said burner member, the upper portion of said chamber opening to atmosphere, and an inclined annular wall having an inturned flange on its lower edge depending into said chamber and spaced from the bottom thereof, said wall surrounding said burner but spaced therefrom, there being an annular air passage communicating with said chamber and the aperture of said base member, said wall being inclined inwardly from top to bottom.

4. The combination of a main base member having an aperture, a pair of mating base members seated in said aperture forming a structure having a central aperture, a burner supported beneath and in line with the aperture of said mating base members, an air chamber beneath said base members and surrounding said burner, a downwardly and inwardly inclined annular wall depending from said mating base members and spaced from the bottom of said air chamber, said wall surrounding said burner but spaced therefrom, the upper surface of said burner being spaced from said mating base members to permit passage of air, the upper edge of said air chamber being spaced from said main base member to provide an air passage leading from outside atmosphere.

5. The combination of a main base member having a central aperture, a pair of auxiliary mating base members seated in said aperture forming a structure having a central

aperture, an air chamber supported from said main base member on the under side thereof but spaced therefrom to provide an air passage, and a burner member integrally formed with said air chamber and located beneath the aperture of said mating base members but spaced from said base members to provide an air passage, each of said mating base members having a downwardly projecting wall inclined inwardly but spaced from said burner and also spaced from the bottom of said chamber.

In testimony whereof, we have hereunto set our hands this 27th day of March, 1929.

HENRY L. LE DAUM.
LA VERNE C. STURGIS.