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2,513,682

LIQUID FUEL BURNER

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FIG. 1

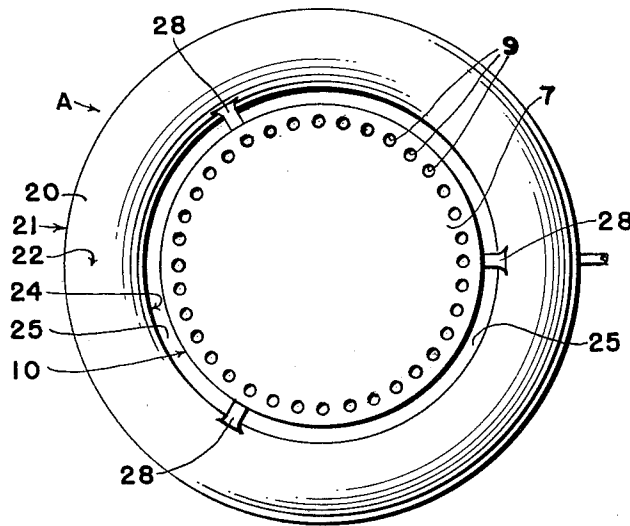
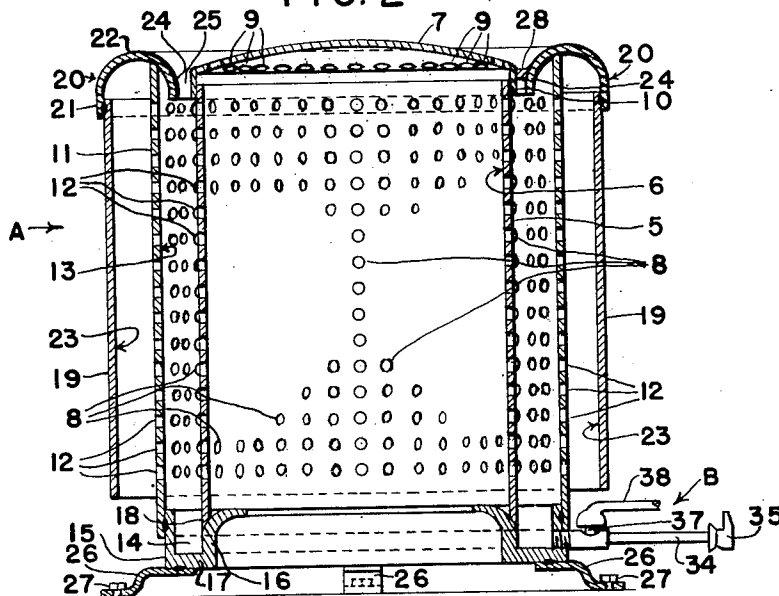


FIG. 2



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LIQUID FUEL BURNER

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1 Claim. (Cl. 158—87)

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This invention relates to wickless burners for fluid fuel-fed cooking stoves and the like.

An important object of the invention is to provide a new wickless burner constructed and arranged to promote steady economical combustion of fuels with a resultant steady, high heat.

Another important object is to provide a wickless burner including no complicated parts, nor a burner difficult to assemble and disassemble. The novel burner disclosed, may be quickly disassembled for cleaning, repairs and the like, and readily reassembled.

Still another important object is to provide a wickless burner in which parts have dual functions, thus reducing the number of parts but without minimizing the efficiency of the burner.

A major object of the invention is to provide a burner which utilizes the fuel so efficiently that there is no odor resulting from the fuel's combustion, nor are deposits of the products of combustion left upon the burner to create odors.

Other objects and advantages of the invention will be apparent during the course of the following detailed description of the invention, taken in connection with the accompanying drawing, forming a part of this disclosure and in which drawing:

Fig. 1 is a top plan of the novel burner.

Fig. 2 is a vertical section thereof.

In the drawing, wherein for the purpose of illustration is shown a preferred embodiment of the invention and wherein similar reference characters designate corresponding parts throughout the several views, the latter A designates the new wickless burner and B, a valve structure for association therewith.

The burner A includes a main, inner, upwardly-extending, wall 5, which is, preferably, cylindrical, defining an air passageway 6, since the lower end of the cylindrical wall is open and, while the upper end is closed by a, preferably, domed and removable upper wall 7, both the walls 5 and 7 are provided with a plurality of openings providing air passageways, those in the wall 5 being designated as 8 and those, in the wall 7, as 9. Preferably, the openings 8 and 9 are perforations and while the openings 8 extend, in spaced-apart relationship, over substantially all of the wall 5, there is a circular row only of the openings 9 and these are disposed closely adjacent the rim of the wall 7, as may be seen in Fig. 1. Depending from this rim is a short flange 10 which preferably extends about the upper extremity of the outer face of the wall 5 and may be secured thereto, as by welding.

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Spaced outwardly from the wall 5 is a main, upwardly-extending intermediate wall 11, surrounding the wall 5, and may also be cylindrical and it is provided with a plurality of openings 12, providing air passageways, there being substantially as many openings 12 as there are openings 8 and they may be perforations. The space between the walls 5 and 11 constitutes a combustion chamber 13.

Below the combustion chamber 13 and opening directly thereto, is a fuel reservoir 14. This is, preferably, a shallow, cylindrical one, defined by an outer, upwardly-extending wall 15; an inner wall 16, and a bottom wall 17. The inner wall 16, as may be seen in Fig. 2, extends upwardly and then inwardly so that a shoulder 18 is provided upon which the lower end of the main inner wall 5 may rest, while the main outer wall 11 may be secured to the outer wall 15 of the reservoir, as by welding.

Spaced outwardly of the main intermediate wall 11 is a third main or an outer wall 19, extending upwardly, may be cylindrical, is open at both ends, and is imperforate. The upper end of the wall 11 is provided with an upper wall 20, preferably substantially inverted U-shaped in transverse section, as may be seen in Fig. 2. That is, there is an outer skirt portion 21 which is secured, as by welding, to the outer face of the main wall 19, an intermediate portion 22 arching over and closing the upper end of the space 23 between the main walls 11 and 19 and an inner, short, outwardly convex, skirt portion 24 which extends over and contacts the upper end of the wall 11 and, spaced from the inner face of the wall 11, projects slightly into the combustion chamber 13, and faces the flange 10 but is spaced therefrom, as may be seen in Fig. 2, the flange 10 and skirt portion defining a space 25 for dual purposes, as will be detailed subsequently.

It will be noted, in Fig. 2, that the wall 19 does not extend downwardly as far as the lower ends of the walls 5 and 11.

In order to raise the reservoir 14 and provide a substantial passageway to the air passageway 6, the reservoir 14 is mounted upon suitable legs 26, having means to secure them to a suitable support. This means may be bolts 27 with the shanks thereof extending through openings in the legs.

In order that the axial center of the outer cylindrical wall 19 will coincide with the axial center of the inner cylindrical wall 5, a plurality of lugs 28 may be provided, secured to the skirt

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portion 24 and extending across the space 25 to about the outer face of the flange 10.

The walls 5, 7, 11, 19 and 20 may be of iron or steel plate.

The reservoir 14 is not a fuel storage and supply reservoir and, in order to conduct a measured volume of fuel thereto from a suitable source (not shown), there is provided a valve structure B. This may include a valve housing 30, screw threaded at one end to be inserted into a suitable screw threaded opening in the reservoir wall 15, with the valve controlled by a valve stem 34, extending exteriorly of the housing 30 and terminating in a suitable handle 35. A suitable nipple 37 extends exteriorly of the housing 30 for attachment to the nipple of a suitable conduit, as a rubber tube 38 leading to the fuel supply.

In use and before fuel is supplied to the reservoir 14 from the valve 30, a priming fuel is introduced into the reservoir 14. This may be a small volume of alcohol and it is poured over the outer face of the dome-shaped upper wall 7, as outwardly of the zones of the opening 9, and allowed to trickle through the space 25 until it accumulates in the reservoir 14, and may commence to volatilize. During this time, it should be noted, air has free access to the combustion chamber through the openings 8 and 11. In the first case, the air entering the air passageway 6, from below, flows through the openings 8 and in the second case air, entering the space 23 from below, flows through the openings 12.

One way of igniting this alcohol is to drop a lighted match through the space 25. When the alcohol is ignited, it will soon raise the temperature of the walls 5 and 11 to such a degree that, when the valve 30 is opened, allowing fuel to enter the reservoir 14 the fuel will ignite since it will be well supplied with oxygen entering the combustion chamber 13 as described.

It has been found that the walls 5 and 11 will be raised to incandescence and the heat emerging from the upper end of the space 25 will provide an efficient, quick medium for cooking purposes.

Since a current of cool air will enter the lower end of the space 23 and flow upwards, the main wall 19 will be maintained at a relatively low temperature so that very little heat will be lost by radiation.

The arcuate skirt portion 24 additionally functions as a splash guard, since the priming fuel outwardly of the zones of the openings 9, poured upon the upper wall 7, will splash against the portion 24 and not be lost, since it will run down the upper face of the portion 24 and trickle into the combustion chamber.

The burner herein disclosed is readily disassembled for cleaning, repairs or renewal of parts. Aside from the connection of burner A and valve structure B, there are no screw-threaded parts, nor parts requiring twisting and turning in order to assemble and disassemble. In addition there are no parts requiring precise adjustments.

In disassembling, the operator may lift off the

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outer wall 19 carrying the wall 20 and lugs 23 and then remove the inner wall 5 with the upper wall 7. This permits a suitable instrument to be readily employed to remove foreign matter from the reservoir, since there is plenty of space to manipulate the instrument and the inner and outer faces of each wall is readily accessible for brushing or the like.

Various changes may be made to the form of the invention herein shown and described without departing from the spirit of the invention or scope of the following claim.

What is claimed is:

In a wickless burner, two upwardly-extending cylindrical, spaced-apart walls, one being inwardly of the other, defining a combustion chamber and each perforated to provide a plurality of air openings, said inner wall defining a central air passageway; an annular trough-shaped reservoir having inner and outer upwardly-extending walls with one of said cylindrical walls resting upon one of said reservoir walls and the other cylindrical wall secured to the other of said reservoir walls, said reservoir having an upwardly opening mouth facing said combustion chamber; an outer wall surrounding said cylindrical walls and provided with an outwardly convex upper annular portion with an intermediate portion thereof disposed upon the upper end of the outermost of said cylindrical walls and projecting, away from said outermost of said cylindrical walls, and thence downwardly into and medially of the width of said combustion chamber; means carried by said innermost cylindrical wall to partly close the upper end of said air passageway and to provide with said annular portion a surface to receive a priming fuel, said means comprising a dome shaped wall extending toward said outwardly convex portion and spaced therefrom; and means to convey controlled volumes of fuel directly to said reservoir.

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