July 3, 1928. 1,676,080

H. A. DAVIS

LIQUID FUEL BURNER

Filed Oct. 26, 1927

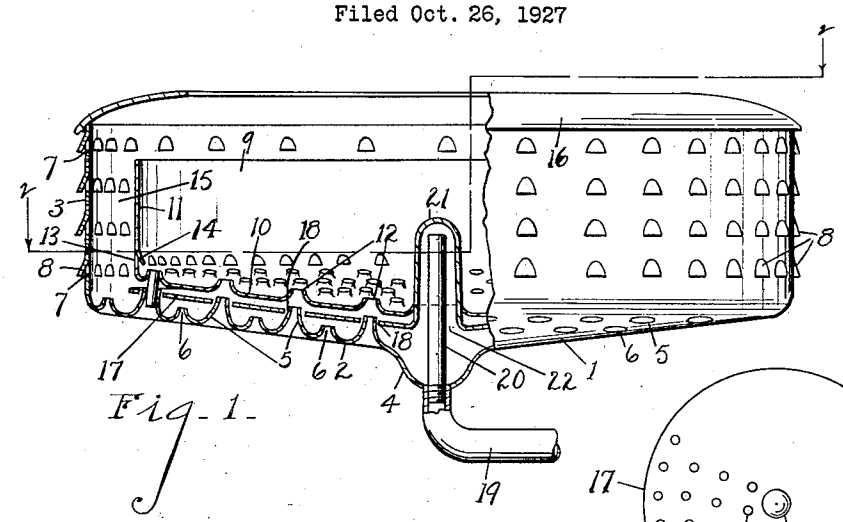


Fig. 1.

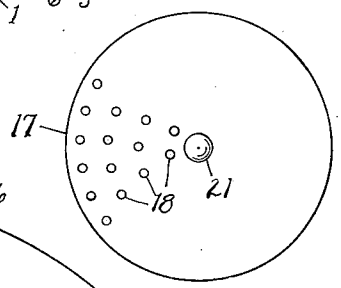


Fig. 3.

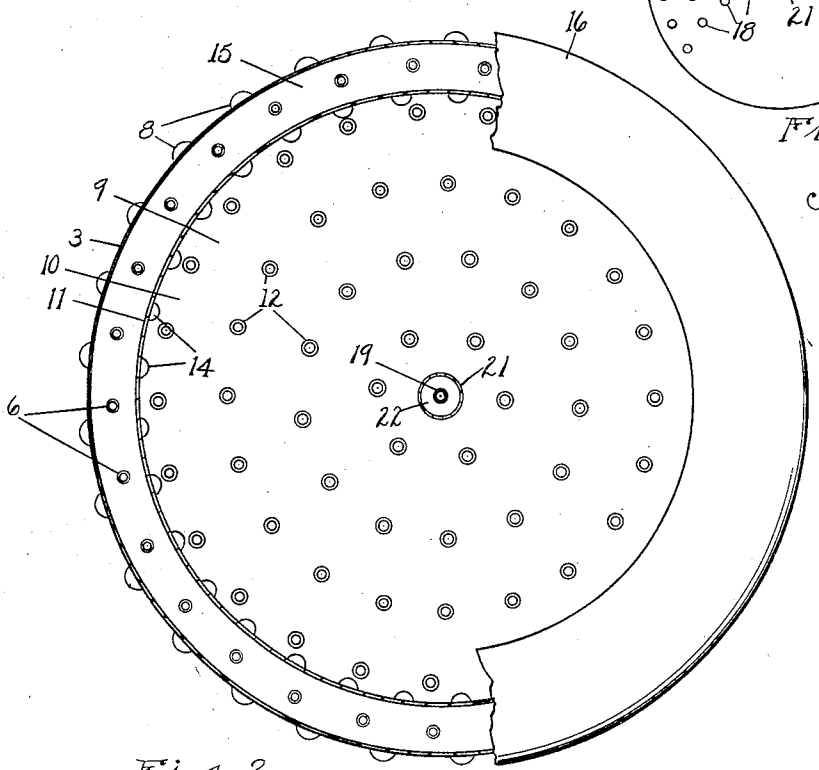


Fig. 2.

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Patented July 3, 1928. 1,676,080

UNITED STATES PATENT OFFICE.

HENRY A. DAVIS, OF JEFFERSONVILLE, INDIANA.

LIQUID-FUEL BURNER.

Application filed October 26, 1927. Serial No. 228,837.

The main objects of this invention are:

First, to provide an improved liquid fuel burner burning with a blue flame and dispensing with wicks.

Second, to provide an improved liquid fuel burner which is very efficient, the fuel being thoroughly mixed with air.

Third, to provide a structure having these advantages which is simple and compact in its parts and durable in use.

Objects pertaining to details and economies of my invention will definitely appear from the description to follow. The invention is defined in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Fig. 1 is a side elevation partially in vertical section of a burner embodying the features of my invention.

Fig. 2 is a plan view partially in horizontal section on a line corresponding to line 2—2 of Fig. 1.

Fig. 3 is a plan view of the baffle member of my improved burner.

Referring to the drawing, my improved burner consists of an outer dish-shaped member 1 comprising an inwardly inclined bottom 2 with a surrounding side wall 3, the bottom and side wall being preferably formed as an integral stamping. The bottom 2 is provided with a central fuel well 4 and has a plurality of upwardly projecting air nozzles 5 and air inlet openings 6 interspersed between the air nozzles. The side wall is provided with a plurality of air inlet openings 7 having outwardly projecting hoods 8, the openings being formed by striking portions of the wall outwardly thereby also forming the hoods.

The inner burner member designated generally by the numeral 9 is also of a dish-shape comprising a bottom 10 and surrounding wall 11. The bottom of the inner member has upwardly projecting jet tips 12 disposed in alinement with the air nozzles 5, the side wall 11 having air inlet openings 13 at the base thereof provided with inwardly projecting hoods.

The edge of the wall 3 projects substantially above the edge of the wall 11 as shown, the walls being concentrically disposed providing a space 15 between the walls. The bottom 2 has a row of the air inlet openings 6 below and delivering to this space 15.

An annular top member 16 rests upon the wall 3 to overhang the wall 11. Between the bottom 2 of the outer member and the bottom 10 of the inner member, I arrange a baffle 17 which has openings 18 therein through which the nozzles 5 project, the openings being of such diameter as to provide an annular port around the nozzles. This baffle coacts with the bottom 2 to provide a generating and distributing chamber for the vaporized fuel, air passing through the opening 6 to mix therewith and further air being mixed with this carbureted air as it is delivered through the ports formed by the openings 18.

The fuel supply pipe 19 has an upwardly projecting nozzle 20 disposed centrally of the well 4, this pipe projecting into a housing 21 on the baffle member. The bottom 10 has an opening 22 therein to receive the extension. The extension being closed at its upper end forms a part of the generating chamber and the nozzle and this extension constitute a return passage for the incoming fuel, bringing it into the heat zone so that it is readily vaporized as it passes through the vaporizing or generating chamber and is effectively distributed and mixed with the air. Portions of the mixture will pass into the space 15 wherein auxiliary air is supplied, the openings 13 in the inner wall permitting the ignition of the mixture in this space.

My improved burner is highly efficient. It is especially designed for kerosene, although it may be used successfully with certain of the heavy distillates. In starting, alcohol or the like is supplied to the well 4 through the fuel supply pipe 19, suitable valves being provided to control the admission of alcohol or fuel, these however not being illustrated.

I have illustrated my improvements as designed for cooking and heating burners of the stove type. The same may be readily embodied for use in larger burners. It is believed, however, that the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a liquid fuel burner, the combination of an outer burner member comprising a bottom and a side wall, the bottom being in-

wardly inclined and provided with a central fuel well and with a plurality of upwardly projecting air nozzles and upwardly flanged air inlet openings interspersed between said air nozzles, the side wall having a plurality of air inlet openings therein, an inner burner member comprising a bottom and a side wall spaced from the bottom and side wall of said outer member, the bottom of the inner member having a central opening above said well and a plurality of upwardly projecting jets alined with said air nozzles, the wall of the inner member having a plurality of openings at the base thereof, the bottom of the outer member having a plurality of air inlets delivering between the side walls of said burner members, a baffle member arranged between said burner members in spaced relation to both and coacting with the bottom of the outer burner member providing a generating and distributing chamber, said baffle member having openings therein to receive said air nozzles, the openings being of a size providing annular ports surrounding the air nozzles, said baffle member having a tubular extension closed at its upper end projecting through the central opening in said inner member bottom, a fuel supply nozzle disposed centrally of said fuel well and projecting into said baffle member extension, and an annular top member extending inwardly from the upper edge of said outer burner member side wall and overhanging the side wall of said inner burner member.

2. In a liquid fuel burner, the combination of an outer burner member comprising a bottom and a side wall, the bottom being inwardly inclined and provided with a central fuel well and with a plurality of upwardly projecting air nozzles and upwardly flanged air inlet openings interspersed between said air nozzles, the side wall having a plurality of air inlet openings therein, an inner burner member comprising a bottom and a side wall spaced from the bottom and side wall of said outer member, the bottom of the inner member having a central opening above said well and a plurality of upwardly projecting jets alined with said air nozzles, the wall of the inner member having a plurality of openings at the base thereof, the bottom of the outer member having a plurality of air inlets delivering between the side walls of said burner members, a baffle member arranged between said burner members in spaced relation to both and coacting with the bottom of the outer burner member providing a generating and distributing chamber, said baffle member having openings therein to receive said air nozzles, the openings being of a size providing annular ports surrounding the air nozzles, said baffle member having a tubular extension closed at its upper end projecting through the central opening in said inner member bottom, and a fuel supply nozzle disposed centrally of said fuel well and projecting into said baffle member extension.

3. In a liquid fuel burner, the combination of an outer burner member comprising a bottom and a side wall, the bottom being inwardly inclined and provided with a central fuel well and with a plurality of upwardly projecting air nozzles and upwardly flanged air inlet openings interspersed between said air nozzles, the side wall having a plurality of air inlet openings therein, an inner burner member comprising a bottom and a side wall spaced from the bottom and side wall of said outer member, the bottom of the inner member having a plurality of upwardly projecting jets alined with said air nozzles, the wall of the inner member having a plurality of openings at the base thereof, the bottom of the outer member having a plurality of air inlets delivering between the side walls of said burner members, a baffle member arranged between said burner members in spaced relation to both and coacting with the bottom of the outer burner member providing a generating and distributing chamber, said baffle member having openings therein to receive said air nozzles, the openings being of a size providing annular ports surrounding the air nozzles, and an annular top member extending inwardly from the upper edge of said outer burner member side wall and overhanging the side wall of said inner burner member.

4. In a liquid fuel burner, the combination of an outer burner member comprising a bottom and a side wall, the bottom being inwardly inclined and provided with a central fuel well and with a plurality of upwardly projecting air nozzles and upwardly flanged air inlet openings interspersed between said air nozzles, the side wall having a plurality of air inlet openings therein, an inner burner member comprising a bottom and a side wall spaced from the bottom and side wall of said outer member, the bottom of the inner member having a plurality of upwardly projecting jets alined with said air nozzles, the wall of the inner member having a plurality of openings at the base thereof, the bottom of the outer member having a plurality of air inlets delivering between the side walls of said burner members, and a baffle member arranged between said burner members in spaced relation to both and coacting with the bottom of the outer burner member providing a generating and distributing chamber, said baffle member having openings therein to receive said air nozzles, the openings being of a size providing annular ports surrounding the air nozzles.

5. In a liquid fuel burner, the combination of an outer burner member comprising a bottom and a surrounding side wall, the bottom having a plurality of upwardly project-

ing air nozzles and a plurality of upwardly flanged air inlet openings interspersed between said air nozzles, the side wall having a plurality of air inlet openings therein, an inner burner member comprising a bottom and a surrounding side wall spaced from the bottom and side wall of the outer member and having a plurality of jet openings alined with said air nozzles, the wall of the inner member having openings therein, a baffle member arranged between said burner members in spaced relation to both and coacting with the bottom of the outer member providing a generating and distributing chamber, said baffle member having openings therein alined with said air nozzles, and means for delivering fuel centrally of the bottom of the outer member.

6. In a liquid fuel burner, the combination of an outer burner member comprising a bottom and a surrounding side wall, the bottom having a plurality of upwardly projecting air nozzles, the side wall having a plurality of air inlet openings therein, an inner burner member comprising a bottom and a surrounding side wall spaced from the bottom and side wall of the outer member and having a plurality of jet openings alined with said air nozzles, the wall of the inner member having openings therein, a baffle member arranged between said burner members in spaced relation to both and coacting with the bottom of the outer member providing a generating and distributing chamber, said baffle member having openings therein alined with said air nozzles, and means for delivering fuel centrally of the bottom of the outer member.

7. In a liquid fuel burner, the combination of an outer burner member comprising a bottom and a surrounding side wall, the bottom having a plurality of upwardly projecting air nozzles and a plurality of upwardly flanged air inlet openings interspersed between said air nozzles, the side wall having a plurality of air inlet openings therein, an inner burner member comprising a bottom and a surrounding side wall spaced from the bottom and side wall of the outer member and having a plurality of jet openings alined with said air nozzles, the wall of the inner member having openings therein, and means for delivering fuel centrally of the bottom of the outer member.

8. In a liquid fuel burner, the combination of an outer burner member comprising a bottom and a surrounding side wall, the bottom having a plurality of upwardly projecting air nozzles, the side wall having a plurality of air inlet openings therein, an inner burner member comprising a bottom and a surrounding side wall spaced from the bottom and side wall of the outer member and having a plurality of jet openings alined with said air nozzles, the wall of the inner member having openings therein, and means for delivering fuel centrally of the bottom of the outer member.

9. A liquid fuel burner provided with an outer member having a plurality of upwardly projecting air nozzles and upwardly flanged air inlet openings interspersed between said air nozzles, an inner burner member disposed above and in spaced relation to said outer member and provided with jet openings alined with said air nozzles, a baffle member arranged between said burner members in spaced relation to both to coact with the outer member to provide a generating and distributing chamber, said baffle member having openings therein to receive said air nozzles, the openings being of a size providing annular ports surrounding the air nozzles, and means for delivering fuel centrally to said outer bottom member.

10. A liquid fuel burner provided with an outer member having a plurality of upwardly projecting air nozzles, an inner burner member disposed above and in spaced relation to said outer member and provided with jet openings alined with said air nozzles, a baffle member arranged between said burner members in spaced relation to both to coact with the outer member to provide a generating and distributing chamber, said baffle member having openings therein to receive said air nozzles, the openings being of a size providing annular ports surrounding the air nozzles, and means for delivering fuel centrally to said outer bottom member

11. A liquid fuel burner provided with an outer member having a plurality of upwardly projecting air nozzles and upwardly flanged air inlet openings interspersed between said air nozzles, an inner burner member disposed above and in spaced relation to said outer member and provided with jet openings alined with said air nozzles, and means for delivering fuel centrally to said outer bottom member.

12. A liquid fuel burner comprising an outer dish-shaped burner member, said burner member having a plurality of upwardly projecting air inlet nozzles in the bottom thereof, an inner dish-shaped burner member disposed within and in spaced relation to the outer burner member and having a bottom provided with upwardly projecting nipples alined with the nipples of said outer burner member, the side wall of the outer burner member having air inlet openings therein, the side wall of the inner member having openings therein permitting the ignition of the combustible mixture between the side walls of said burner members from within said inner burner member, said outer burner member having a plurality of air inlet openings in the bottom thereof for admitting air to the space between the side walls of said burner members.

13. A liquid fuel burner comprising an outer dish-shaped burner member having a fuel feed well at the center thereof, said burner member having a plurality of upwardly projecting air inlet nozzles in the bottom thereof, an inner dish-shaped burner member disposed within and in spaced relation to the outer burner member and having a bottom provided with upwardly projecting nipples alined with the nozzles of said outer burner member, the side wall of the outer burner member having air inlet openings therein, the side wall of the inner burner member having openings therein permitting the ignition of the combustible mixture between the side walls of said burner members from within said inner burner member.

14. A liquid fuel burner comprising an outer dish-shaped burner member having a fuel feed well at the center thereof, said burner member having a plurality of upwardly projecting air nozzles in the bottom thereof, an inner dish-shaped burner member disposed within and in spaced relation to the outer burner member and having a bottom provided with upwardly projecting nipples alined with the nozzles of said outer burner member, said outer burner member having a plurality of air inlet openings in the bottom thereof for admitting air to the space between the side walls of said burner members.

In witness whereof I have hereunto set my hand.

HENRY A. DAVIS.