F. C. BINKLEY.

BURNER FOR LIQUID FUEL.

APPLICATION FILED APR. 27, 1911.

1,000,229. Patented Aug. 8, 1911.

FIG. 1.

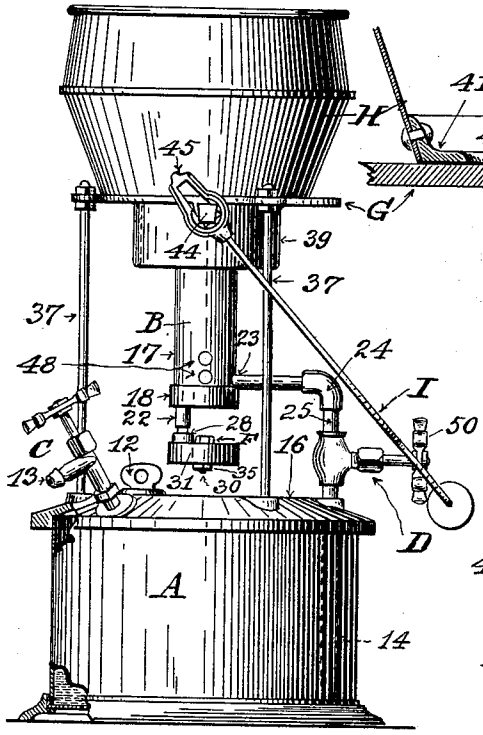


FIG. 2.

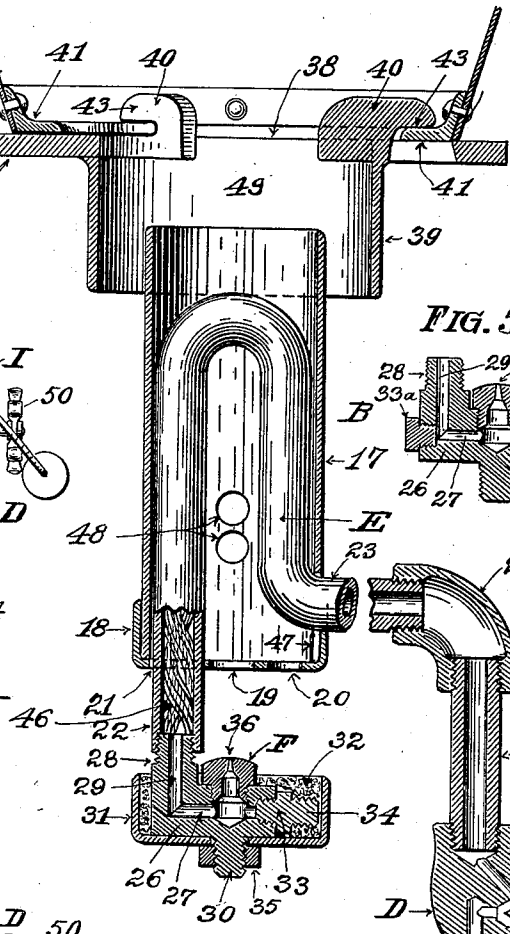


FIG. 5.

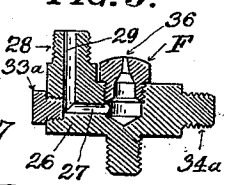


FIG. 3.

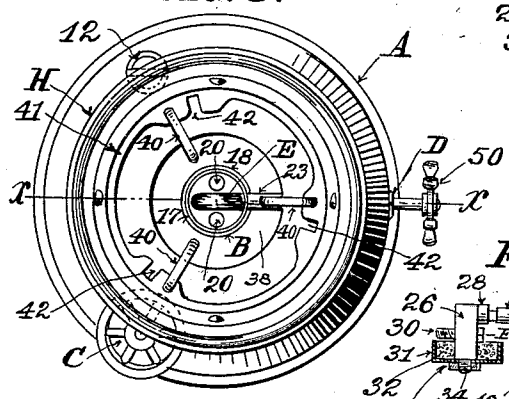
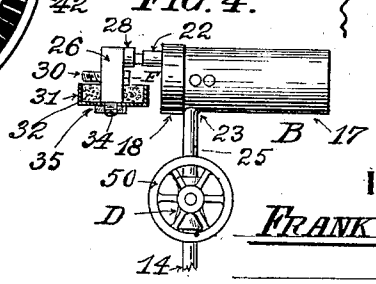


FIG. 4.



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BURNER FOR LIQUID FUEL.

1,000,229. Specification of Letters Patent. Patented Aug. 8, 1911.

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To all whom it may concern:

Be it known that I, FRANK C. BINKLEY, a citizen of the United States, and resident of Sycamore, in Dekalb county, State of Illinois, have invented certain new and useful Improvements in Burners for Liquid Fuel; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which said invention appertains to make and use the same.

This invention has general reference to improvements in liquid fuel burners for gasolene torches, tinners' and plumbers' heating and melting furnaces and similar uses, and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described and then pointed out in the claims.

In the drawings already mentioned, which serve to illustrate this invention more fully, Figure 1 is an elevation of a tinner's and plumber's furnace embodying my invention. Fig. 2 is a longitudinal vertical section of the burner and portions of the furnace, on line *x x* of Fig. 3, the view being drawn on an increased scale. Fig. 3 is a plan of the device, the bail by which the same is carried about being omitted. Fig. 4 is an elevation of the burner detached and illustrating it in horizontal position. Fig. 5 is a sectional view of a modified form of construction of the angular body carrying the tip and drip cup, shown in Figs. 2 and 3.

Like parts are designated by the same characters and symbols of reference in all the figures.

A in the drawings denotes a tank of suitable construction adapted to contain liquid fuel, such as gasolene and other hydrocarbon liquids, which is introduced to the tank through a filling opening, closed by a filler-plug, so-called, 12. This liquid fuel is forced from the tank A to a burner B, by means of an air compressor, such as a pump, rubber bulb, or other well-known devices, not shown, applied to a connecting member C, having a nozzle 13, to which said air compressor is suitably fastened. From near the bottom of this tank there leads a conducting pipe 14, upwardly, said pipe engaging at its upper end the internally screw-threaded bore of a boss 15, formed on the under side of the top 16 of said tank, and from the upper end of this bore there leads a stop valve D, by means of which communication between the tank A and the burner B, may be established and interrupted and the flow of the liquid fuel to the burner regulated, by turning the hand wheel or handle 50.

The burner B comprises a tube 17, of suitable diameter and length, having at one end a cup-shaped cap 18, formed preferably from a sheet metal stamping or spinning and fitting the outside of said tube by a snug driving fit. In the botton of this cap there are a number of openings or holes of which the centrally-located one, 19, affords an opening for the ascending vapor, while several side-wise located holes 20 serve to admit air to the interior of the tube 17, which may properly be termed combustion tube, and one more hole 21, for the passage of the end 22 of a generating tube E, which latter tube or pipe is located in the tube 17 and is bent into U-shape, the member 22 whereof projects from the cap 18 downwardly, a suitable distance, the other end of said generating pipe E being bent at right angles at 23, and passing through the wall of the mixing tube 17, enters an elbow 24, at one of its tapped openings, the other tapped opening of said elbow 24 being engaged by one end of a stand-pipe 25, the other end of which engages the said stop valve D.

The end of the generator pipe, designated by the reference number 22 is internally tapped to receive a fitting comprising an angular body 26, having a longitudinal passage or vein 27, said body 26 having a side-wise projecting nipple 28, which is in screw-threaded engagement with the internal screw-thread of the end 22 of the generator pipe E, there being a vein 29, in said nipple that connects with the vein 27 in said body 26. This body has centrally a downwardly projecting, externally screw-threaded nipple 30, upon which is located a drip cup 31, which surrounds the fitting 26 and which is preferably packed with an absorbent, non-combustible material 32. The vein 27 is tapped at its outer end to receive a plug 33, which closes this end of said vein 27. This plug has also an externally screw-threaded nipple 34, which is precisely the same as the nipple 30, and which is adapted to receive a nut 35, by which the drip cup 31 is

held in proper position. The wall of the angular body 26, opposite the nipple 30, is bored and tapped to receive a tip F, which tip has a minute orifice 36, communicating with the vein 27, said tip being in axial alinement with the tube 17 and removable from said body 26, for obvious reasons.

Above the tank A there is supported a platform G, by a number of rods 37 fastened in the top 16 of the tank, said platform having a central opening 38, and below a downwardly pending tubular member 39, affording an expansion chamber 49, into which the upper end of the mixing tube 17 enters a proper distance. Upon the upper surface of this platform G there are formed, preferably three, radially disposed and upwardly projecting lugs 40, which lugs enter the opening 38 a short distance and serve primarily as a support for a melting kettle, soldering irons, or other article to be heated, and also as a means for removably attaching to said platform a hood H. This hood has at its lower extremity an inwardly projecting rim or flange 41, in which there are three radial notches 42, corresponding in position to that of the three lugs 40, so that the hood H may be passed over these lugs and then revolved in either direction to bring the rim 41 underneath the free ends 43 of said lugs 40 and thereby to removably secure said hood to said platform G. At diametrically opposite places the platform G has buttons 44, wherewith engage the eyes 45 of a bail I, by which the entire apparatus may be carried about.

In the bore of the member 22 of the generator pipe E there is placed a heat-conducting and filtering material 46, consisting, by preference, of a piece of metallic cable, (copper being the most suitable metal) whereby the liquid in the generator pipe is assisted in its conversion into the gaseous state, and at the same time any solid matter contained in said liquid prevented from reaching the burner tip F, which would have a tendency to clog the minute escape orifice 36.

In Figs. 1, 2, and 3, I have shown the burner B in vertical position in which it is best adapted for use in a furnace for heating solder, lead, etc., and in which position the drip cup 31 is secured to the nipple 30 to catch any drippings, but mainly to receive liquid fuel to initiate the heating of the burner. But when the burner is to be used in horizontal position, such as illustrated in Fig. 4, the drip cup 31 is placed upon the nipple 34, and secured in position by a nut 35. It will thus be observed that this burner can be used in either the vertical or the horizontal position without any further change than to change the position of the drip cup 31.

In Figs. 2 and 4, I have illustrated the preferred form of construction of the angular body 26, but in Fig. 5 I have shown a modification of this part of my burner. In this construction I drill the vein 27 from the end of the body 26 opposite the one having the nipple 34, and close this vein by a plug 33^a, and then form the nipple 34^a integral with said body, a form of construction which is fully as effective as the preferred form, and probably a trifle cheaper in cost of manufacture. In assembling this burner I pass the U-shaped generator pipe E into the tube 17, a notch 47, therein admitting the bent portion 23 thereof, and then force the cap 18 upon the lower end of said tube, the end 22 of said pipe being passed through the hole 21 in the bottom of said cap 18. All the other parts of the burner may then be readily screwed together and to the tank A.

In operation, the liquid fuel in the tank A is caused to ascend in the conducting pipe 14, thence through the stop-valve D, pipe 25, elbow 24, the generator pipe E and through the veins in the angular body 26 to finally issue in a fine stream from the orifice 36. Liquid fuel having been poured into the drip cup 31 and ignited, the heat of this flame will cause the liquid fuel in the generator pipe E to be turned to gas which passes through the central opening 19 in the cap 18 and through the combustion tube 17, the gas taking up or rather combining with the oxygen in the surrounding atmosphere to produce the blue flame necessary for perfect combustion, air being also admitted to the combustion tube 17 through the openings 20 in the bottom of the cap 31, and through additional openings 48 in the wall of said combustion tube 17. When the heated gases pass out of the combustion tube 17, they expand in the expansion chamber 49 and take up more oxygen which enters the expansion chamber past the tube 17.

I desire to call special attention to the fact that this burner is so simple in construction, comprising, as it does, but a few parts which are readily produced in large quantities, that it can be manufactured and sold at a very low price.

I am aware that many of the details of construction illustrated in the drawings and heretofore described may be changed by persons skilled in the art to which this invention appertains without departing from the scope of the claims. I, therefore, desire it understood that I do not wish to confine myself to these specific details, but to the combination of parts and details of construction as set forth in the following claims—

1. A heating burner for liquid and gaseous fuel, comprising, in combination, a combustion tube, a generator pipe in said combustion tube, said generator pipe being bent into U-shape one member of said pipe

passing through the wall of said combustion tube, the other member thereof projecting from the lower end of said combustion tube, a perforated cap at the lower end of said combustion tube, an angular body having a screw-threaded nipple engaging the bore of said projecting end of the generator pipe, veins in said angular body, a tip in screw-threaded engagement with the upper central portion of said angular body, two screw-threaded nipples on said angular body in angular relation, a drip cup adapted to engage either one of said latter nipples, and a nut constructed to retain said drip cup in position.

2. A tank, said tank having a top provided with a downwardly projecting boss, there being an internally screw-threaded passage in said boss, a conducting pipe engaging the lower part of said passage, a stop valve engaging the upper part of said passage, a conducting pipe at the upper end of the said valve, an elbow at the end of the latter conducting pipe, a U-shaped generating pipe engaging said elbow at one end, a slotted tube surrounding said generating pipe, a perforated cap at the lower end of said slotted tube, an angular fitting at the other, lower, end of said generator pipe, a tip in said fitting, and a drip cup surrounding said fitting, said fitting having two nipples constructed to receive said drip cup, as described.

In testimony that I claim the foregoing as my invention, I have hereunto set my hand in the presence of two subscribing witnesses.

FRANK C. BINKLEY.

Witnesses:
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E. W. NEILL.