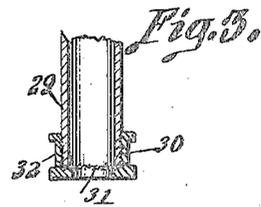
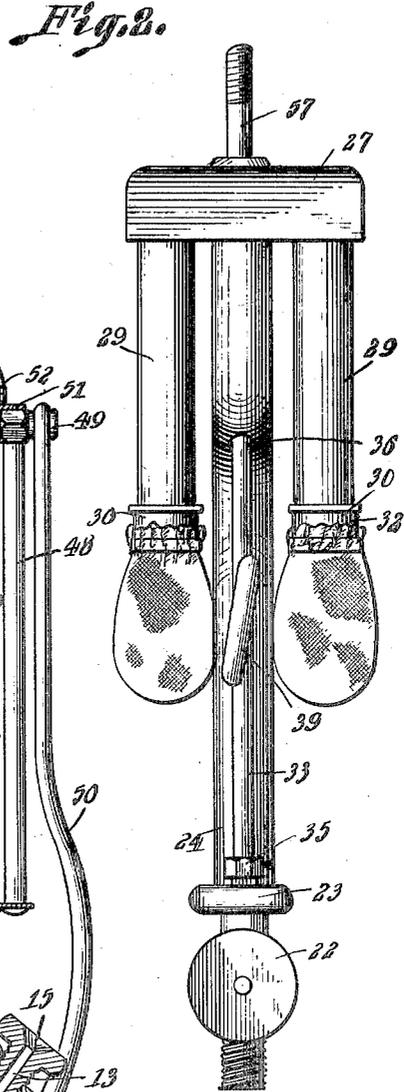
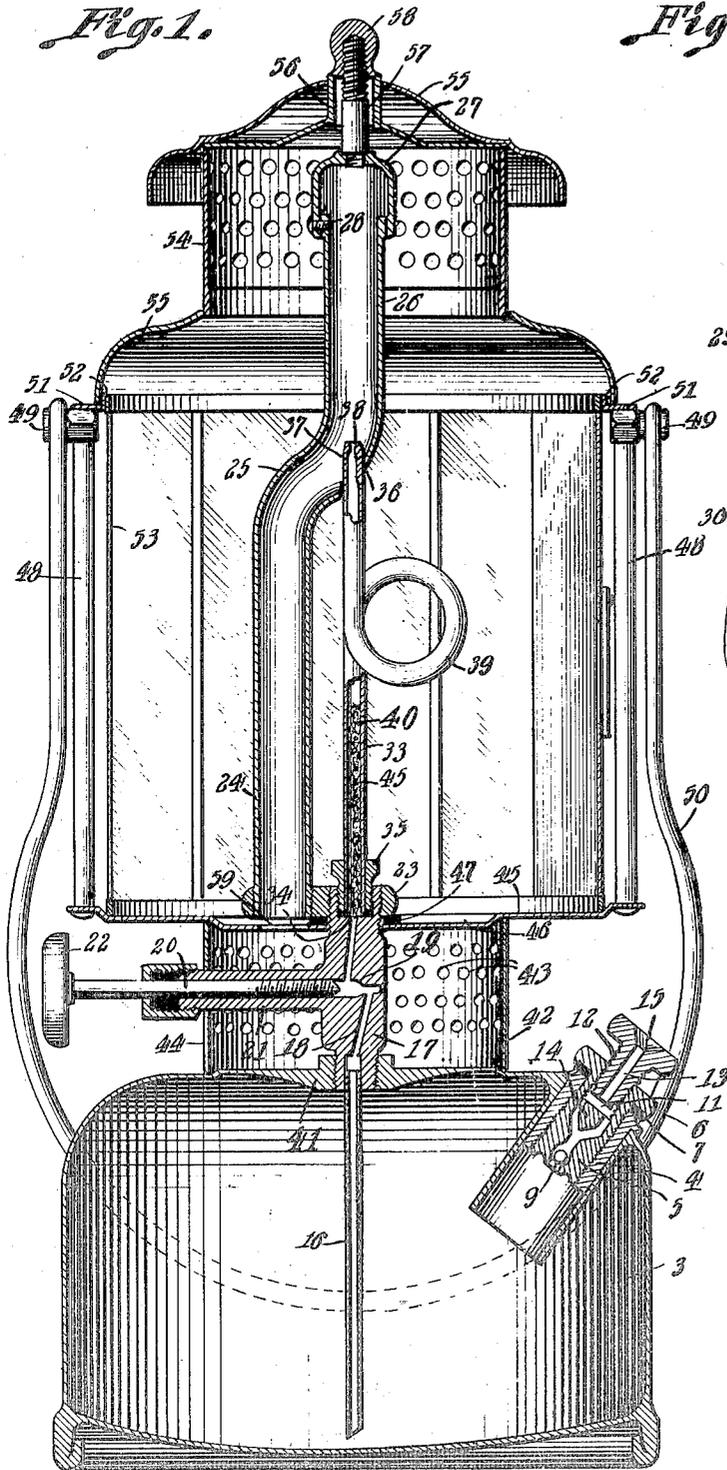


W. C. COLEMAN,
VAPOR BURNER.
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1,303,462.

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UNITED STATES PATENT OFFICE.

WILLIAM C. COLEMAN, OF WICHITA, KANSAS.

VAPOR-BURNER.

1,303,462.

Specification of Letters Patent. Patented May 13, 1919.

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To all whom it may concern:

Be it known that I, WILLIAM C. COLEMAN, a citizen of the United States, residing at Wichita, in the county of Sedgwick and State of Kansas, have invented certain new and useful Improvements in Vapor-Burners, of which the following is a specification.

The present invention relates to means for utilizing vaporized hydrocarbon or other fuel for an illuminant, and particularly to that type of lamp in which an incandescing mantle or similar material is utilized.

One of the primary objects of the present invention is to provide an exceedingly simple and thoroughly practicable structure of a novel character, in which the initial vaporizing action can be secured by the use of ordinary matches, thus doing away with the necessity of an alcohol torch or a means for holding a burning liquid fuel.

A further and important object is to provide a structure that is very simple in its character, and in which the standard is so constructed that it also performs the function of an air supply tube.

A still further object is to provide a vaporizing tube of a type that is elementary in character and is so associated with the remaining elements that it can be easily removed for the purpose of cleaning, repair or replacement, and is so constructed that while compact and relatively short in so far as the distance between its ends is concerned, is nevertheless so arranged that the vaporizing zone is at a relatively great distance from the discharge nozzle or end, thereby materially lessening the danger of the latter becoming stopped or choked by carbon.

While the invention may be embodied in various forms, there is illustrated in the accompanying drawing, a lantern having the improvements, Figure 1 being a vertical sectional view through said lantern, and Fig. 2 a detail front view showing the arrangement of the burners with respect to the air tube and vaporizer.

Fig. 3 is a detail view of one of the burner tubes.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, a suitable base in the form of a font 3 is employed having a filling opening which is the bore of a sleeve 4 fitted into the upper portion of the

font at one side of its center, this bore being internally threaded to receive a detachable plug 5 having an upper outstanding flange 6 beneath which is placed a packing gasket 7. The plug 5 contains a passageway 8 therethrough, the lower end of which is enlarged to receive an upwardly closing check valve 9. The upper portion of this passageway is branched, as shown at 10, said branches opening into a bore 11. A second plug 12 is threaded into the bore 11 and is provided with a passageway 13 therethrough of less diameter than the portion 14 between the branches 10, said portion 14 thus constituting a closure for the inner end of the plug 13 when said plug is screwed down upon the same. The outer end of the bore 13 has a flared or tapered seat 15 designed to receive the correspondingly tapered end of an air pump delivery nozzle.

With this arrangement if it is desired to fill the font 3 the plug 5 is unscrewed from the sleeve 4, and fuel can thus be introduced through the bore of said sleeve. The plug is then replaced. To place the fuel under pressure the tapered delivery nozzle of the pump is simply pressed into the socket 15, the plug 12 having first been raised from the seat 14. Air can thus be pumped through the plug 12 and plug 5 into the font, and this air will be prohibited from returning by the check valve 9. When sufficient air has been introduced, the plug 12 is screwed inwardly until its inner end is seated upon the part 14, so that the air passageway is sealed.

From the bottom of the font 3 a centrally disposed vertical conduit 16 extends upwardly, and has its upper end connected to the lower end of a nipple 17 that is threaded centrally into the top of the font, said nipple having a passageway 18 therethrough, which includes a transversely disposed valve seat 19. A needle valve 20 threaded into a transverse stem 21 projecting from one side of the nipple 17, coöperates with the seat, and thus controls the passageway 18. This controlling valve has an exposed operating handle 22.

The upper end of the nipple 17 is externally threaded and has screwed thereupon a horizontally disposed offset coupling 23, into the offset end of which is threaded the lower end of a combined standard and air supply tube 24. The lower and upper portions of

this tube are vertically disposed and are connected by an intermediate curved offset 25, the upper portion 26 constituting a part of a mixing chamber, which chamber includes a transversely disposed head 27 threaded upon the upper end of the tube and held against turning by a set screw 28. The portion 26 of the tube, it will be noted, is substantially in line with the nipple 17.

Depending from the head 27 are one or more burners, the present embodiment showing two. These burners include tubes 29 threaded into the under side of the head 27 and having caps 30 threaded on their lower ends, said caps clamping suitable screens 31 at the lower ends of the tubes 29 and having external annular grooves 32 which constitute means whereby the mantles can be securely fastened in place. The burners, it will be noted, are disposed on opposite sides of the tube and are slightly below the offset portion 25.

The upper end of the nipple 17 has a socket that is internally threaded. In this socket is detachably fitted the lower end of a fuel conducting and vaporizing tube 33, said lower end being flanged as shown at 34, and being held in place by a plug 35 surrounding the tube and screwed into the socket. The upper end of the tube 33 detachably enters an opening 36 formed in the under side of the offset 25, said upper end being disposed axially of the portions 26 of the combined standard and air tube 24, so as to deliver longitudinally upward into said tube. This upper end of the tube 33 has a discharge nozzle 37 containing a minute delivery orifice 38. Between its ends the tube 33 is provided with a coil 39 which, in the present embodiment, is vertically disposed, extends away from the tube 24, and lies in a plane between the burners 30 and the mantles suspended from said burners, but being directly adjacent thereto. The lower end of the tube 33 preferably contains a wick or fuel strainer and retarder 40. In this structure, the size of the tube, the thickness of the walls and the character of the coil are such that it may be initially heated by ordinary matches. In the practical embodiment of the invention a tube formed of brass three-sixteenths of an inch in diameter with walls 24 B. & S. gage .020 of an inch thick, and a coil one and three-sixteenths inches outside diameter, has proven entirely satisfactory for the purpose.

The top of the font 3 is provided with an upstanding boss 41, and surrounding the same and bearing upon said font is a collar 42 provided with perforations 43 and a slot 44. Through said slot the stem 21 and controlling valve project. Supported on this collar is the bottom plate 45 of a globe holder having a central depending boss 46 that fits within the collar. The plate 45 is

provided with a central opening through which the stem 17 projects, said opening being surrounded by a reinforcing flange 47 that is borne upon by the coupling 23. The plate, it will be noted, thus is securely clamped between the collar 42 and coupling and serves to secure said collar in place. Secured to the margins of the bottom plate 45 are standards 48 having outstanding pintles 49 on which the handle bail 50 is pivotally mounted. These standards also engage and secure a top ring 51 having an upstanding flange 52. Resting on the bottom plate 45 between the standards 48 and within the flange 52 is a suitable globe 53.

Extending over the said globe is a hood or ventilator comprising a perforated collar 54 having a flanged portion 55 at its lower end that rests upon the ring 51 outside the flange 52. The upper end of this collar carries a cap 55 having a central opening 56 therethrough that receives a stem 57 carried by the mixing chamber head 27. A nut 58 threaded upon the upper projecting end of the stem bears upon the cap 55 and serves to hold the ventilator in place while permitting of its ready removal.

It is believed that the operation of the device will be readily apparent. Assuming that there is fuel under pressure in the font, the same will flow upwardly through the nipple 17 and through the vaporizer tube 33 if the valve 20 is open. If the burners are in operation the heat therefrom will vaporize the fuel as it passes into the coil 39 and the vapor will be delivered through the nozzle 37 upwardly into the mixing chamber 26-27. This upward flow will cause the air to pass upwardly through the combined air tube and standard 24, the bottom plate 45 having an opening 59 directly below the tube 24 to permit the air to flow freely into said tube. The vapor and air will of course mix in the chamber 26 and 27 and be delivered downwardly to the burners. In starting the lamp, it is only necessary to hold one or two burning matches at the coil 39, whereupon said coil will be sufficiently heated to vaporize the fuel admitted thereto until the burners begin to operate. This, as will be obvious, has proven a very great advantage as it eliminates the necessity of an alcohol torch with the essential paraphernalia accompanying the same, and also the necessity of a cup or other fuel holder with means for supplying it with the necessary fuel. The structure also is obviously simple, the tube 24 performing a plurality of functions, in that it constitutes a supporting standard for the burner, an air conducting tube and also part of the mixing chamber. The particular form of construction of this tube also provides a compact structure in connection with the vaporizing tube, said tube being readily removable for the purposes of cleans-

ing, repair or renewal. Another decided advantage in the structure is that by reason of the coil 39 being disposed between the lower and the upper ends of said tube, the vaporizing action, which really takes place at the entrance of the coil, places the vaporizing zone at a relatively great distance from the nozzle when the path of the vapor is considered, for said vapor of course necessarily has to traverse the coil before reaching the nozzle. Consequently the danger of carbon collecting at the nozzle and choking the small delivery orifice 38 is materially reduced. The structure, however, considering its length over all, is really short, thus securing the desired compactness.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In a vapor lamp, the combination with a font having upstanding delivery means, of an upstanding standard comprising a tube having its lower end at one side of the delivery means and having an offset between its ends that places its upper end in upstanding alinement with and above the delivery means, a burner supported on the upper portion of the tube, means for fixedly securing the lower end of the tube, whereby it constitutes means for supporting the burner on the font, and a fuel conducting tube extending from the delivery means of the font and having its upper end delivering into the tube at the offset and into the upper end of said tube, the weight of the burner being carried by the first-mentioned tube and the fuel conducting tube being substantially free from said weight.

2. In a vapor lamp, the combination with a font having an upstanding delivery nipple, of an offset bracket carried thereby, an upstanding standard comprising a tube having its lower end secured in the bracket at one side of the nipple and having an integral offset between its ends that places its upper end in upstanding alinement with the nipple, a burner suspended from the upper end of the tube and disposed alongside said tube, and a fuel conducting tube having its lower end detachably secured in the nipple and having its upper end slidably extending through the offset and projecting fuel longitudinally into the upper end of the tube.

3. In a vapor lamp, the combination with a base, of an upstanding tubular support

comprising a single piece tube constituting an air supply tube and having an open inlet, a burner supported by said tubular support, and means communicating with the interior of the tube between its ends for supplying fuel to the burner.

4. In a vapor lamp, the combination with a font, of an upstanding tubular support comprising a single piece tube mounted at its lower end on the font and constituting an air supply tube and having an open inlet, a burner supported by said tubular support, and means connected with the font and communicating with the tube between its ends for supplying fuel thereto and to the burner.

5. In a vapor lamp, the combination with a base, of an upstanding tubular air conducting supporting standard comprising a single piece tube mounted on the base and having a lower open inlet end, said base having an integral offset between its ends, a vaporizing fuel conducting tube delivering into the air conducting tube and standard at the offset, and a burner connected to the tube.

6. In a vapor lamp, the combination with a font, of an upstanding tubular air conducting standard mounted on the font and comprising a single piece tube having an open lower inlet end, said standard having an integral offset between its ends, a burner depending from the upper end of the standard, and a fuel conducting and vaporizing tube connected to the font and disposed alongside the lower portion of the standard and adjacent to the burner, said tube delivering into the offset portion of the standard.

7. In a vapor lamp, the combination with a font, of means for conveying fuel therefrom, including a nipple projecting above the font, an offset coupling mounted on the nipple, a combined standard and air conducting conduit comprising a single piece tube having a lower open end mounted in the coupling and having an integral offset between its lower and upper ends, a mixing chamber head mounted on the upper end of the tube, a burner depending from said chamber, and a fuel conducting tube connected to the nipple and having an upwardly directed delivery end projecting into the air conducting tube at the offset, said vaporizing tube having between its ends an integral coil of relatively small cross sectional area and of thin material, said coil being disposed adjacent to the burner.

8. In a vapor lamp, the combination with a font having an upstanding fuel delivery conduit, of a collar surrounding the conduit, a burner support mounted on the conduit, and a globe support clamped between the mounting for the burner support and the collar.

9. In a vapor lamp, the combination with a font, of means for delivering fuel therefrom including an upstanding valved nipple, a perforated collar surrounding the nipple and supported on the font, an offset coupling mounted on the nipple, a standard supported by the coupling, a burner connected to the standard, means connected to the nipple for delivering fuel from the font to the burner, and a globe support clamped between the collar and the coupling.

10. In a vapor lamp, the combination with a font, of means for delivering fuel therefrom including a nipple projecting above the font, a transversely disposed valve in the nipple, a perforated collar surrounding the nipple, said valve projecting beyond the collar, an offset coupling mounted on the nipple, a combined standard and air supply tube mounted on the coupling, a burner depending from the upper end of the tube, a vaporizing fuel conducting tube connected to the nipple and delivering into said standard, the lower end of the standard being open, and a globe support clamped between the collar and coupling and having an opening in communication with the interior of the collar and directly below the lower end of the standard.

11. In a vapor lamp, the combination with a lower font, of a tube constituting a combined air supply conduit and standard, means for fixedly mounting the lower end of the tube on the font, a mixing chamber head carried by the upper end of the tube, a burner depending from the mixing chamber head, said head and means being supported from the font by the conduit and standard, a vaporizing tube communicating with the font and delivering into the mixing

chamber head, and a globe holder mounted on the upper end of the head.

12. In a vapor lamp, the combination with a lower font, of a combined air supply tube and standard, means fixedly securing the lower end of the tube and standard to the font, a mixing chamber head carried by the upper end of the tube, a burner depending from the mixing chamber head, a vaporizing tube communicating with the font and delivering into the mixing chamber head, an upstanding stem carried by the mixing chamber head, a globe holder including a cap fitted over the stem, and a securing device on the stem bearing upon the cap, said tube and standard carrying the weight of the head and globe holder and the vaporizing tube being substantially free therefrom.

13. In a vapor lamp, the combination with a font, of an upstanding standard thereon having an upper portion constituting a mixing tube, means for supplying air to the mixing tube, means for supplying fuel from the font to the mixing tube, including a fuel conducting tube of small cross sectional area and of thin material interposed between the font and the mixing tube and having a coil between its ends, a burner connected with the mixing tube and disposed adjacent to the coil, and an inclosure for the burner, said inclosure having means for permitting the application of an ordinary match directly to the coil for the purpose of effecting a preliminary heating thereof.

In testimony whereof, I affix my signature in the presence of two witnesses.

WILLIAM C. COLEMAN.

Witnesses:

D. S. COLEMAN,

B. F. WOHLGEMUTH.