No. 626,930. Patented June 13, 1899.

W. S. PROSKEY.

HYDROCARBON VAPOR LAMP FOR INCANDESCENT LIGHTING.

(Application filed Dec. 20, 1898.)

(No Model.)

Fig. 1.

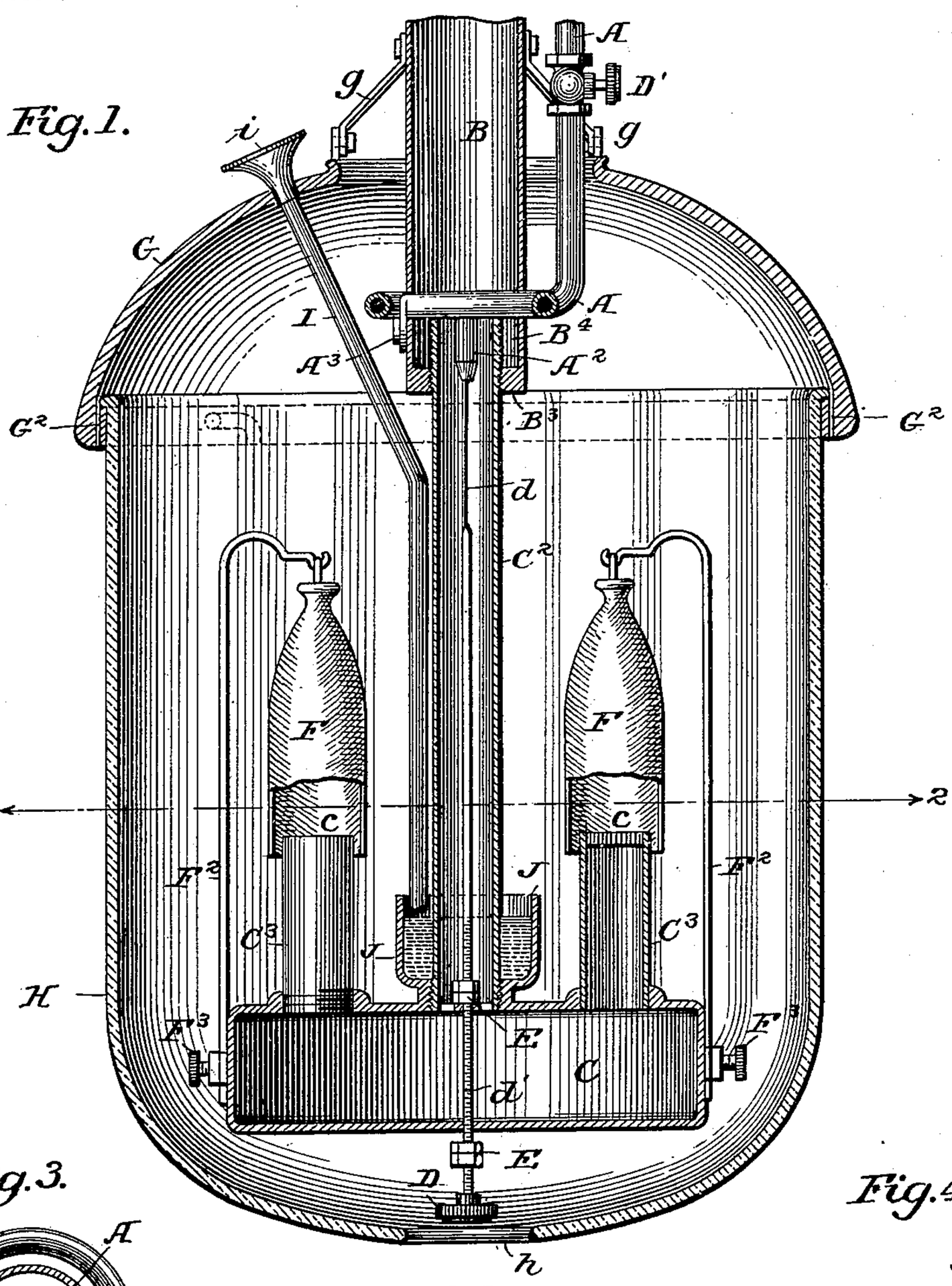


Fig. 3.

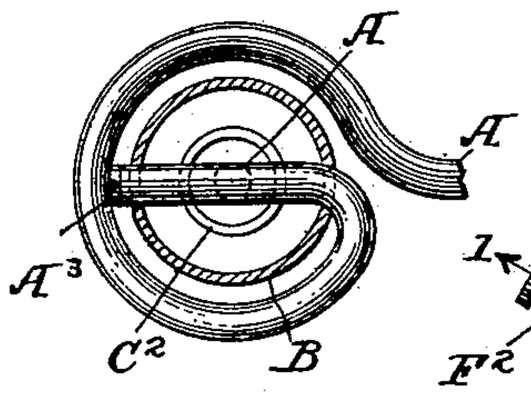


Fig. 2.

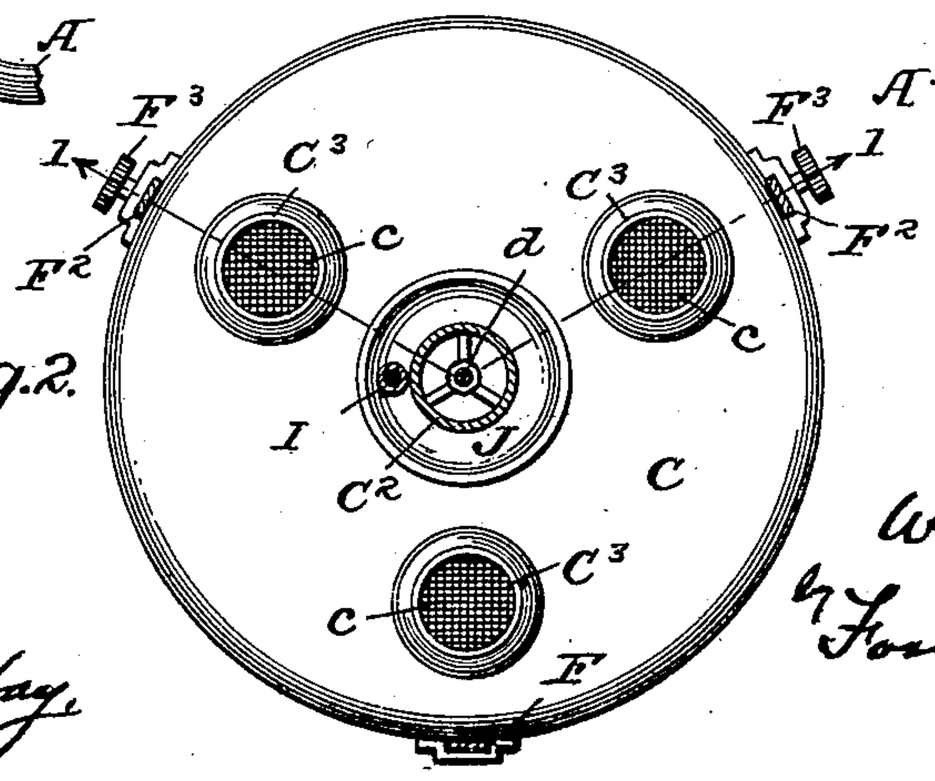
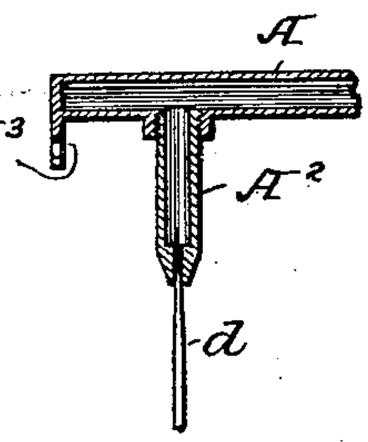


Fig. 4.



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UNITED STATES PATENT OFFICE.

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HYDROCARBON-VAPOR LAMP FOR INCANDESCENT LIGHTING.

SPECIFICATION forming part of Letters Patent No. 626,930, dated June 13, 1899.

Application filed December 20, 1898. Serial No. 699,865. (No model.)

To all whom it may concern:

Be it known that I, WINFIELD SCOTT PROSKEY, of Ocala, Florida, have invented certain new and useful Improvements in Lamps, of which the following is a description.

This invention relates to hydrocarbon-vapor lamps for incandescent lighting, the object of the invention being to provide an improved construction of parts with the view of not only facilitating their manufacture, but also improving their mode of operation; and to these general ends my invention consists in a lamp embodying the various features of construction and arrangement of parts operating substantially in the manner hereinafter set forth.

Referring to the accompanying drawings, wherein is shown an embodiment of my invention, Figure 1 is a vertical section showing the lamp. Fig. 2 is a transverse section on the line 2 2, Fig. 1, the globe being removed. Fig. 3 is a detail view of the vaporization coil or tube, and Fig. 4 is a vertical section of a portion of the vaporization-tube and valve connected therewith.

In the drawings there is shown a single vaporization-coil A, adapted to be connected with the source of supply of a suitable hydrocarbon and having a suitable cut-off valve D', by which the supply of hydrocarbon may be discontinued when the lamp is not in use. The vaporization-coil is shown as coiled around the air-intake tube B and having a portion entering said tube and extending across the same, and the coil may be held in position by suitable means, as a screw A^3, passing through an extension on the end of the coil and engaging the wall of the air-intake tube B, so that the parts are held in suitable relations to each other. This vaporization-coil is provided with a suitable nozzle A^2, attached to the tube, as by being screwed into the same, and extending practically at right angles thereto.

The air-intake tube B is shown in the form of a cylinder supporting the vaporization-coil, as above set forth, and receiving at its bottom the mixing-chamber tube C^2, the tubes being shown as connected together by screw-threads B^2. It will be observed that the mixing-chamber tube C^2 passes through a head in the air-intake tube B and extends upward toward and in practical contact with the vaporization-coil A, thus forming a recess or chamber between the walls of the two tubes below the vaporization-coil A, which recess or chamber opens into or forms a part of the air-intake tube B. The nozzle A^2 is shown as extending downward to a greater or less extent from the vaporization-coil into the mixing-chamber tube C^2. By this construction and arrangement of parts the nozzle A^2 is protected from the extreme heat from the mantles and is kept relatively cool, thus preventing the formation and deposit of carbon in the nozzle, as more particularly described hereinafter.

Connected to the mixing-chamber tube C^2 is the mixing-chamber C, (shown in this case as a cylindrical chamber,) the central portion of the upper surface of which is provided with an opening adapted to receive the screw-threaded end of the mixing-chamber tube C^2. This mixing-chamber serves an important function in thoroughly mixing the vapor of the hydrocarbon and the air, as hereinafter described, insuring the formation of a hydrocarbon gas in the chamber. Connected to the mixing-chamber is a series of burners C^3, (shown in the form of tubes,) screwed or otherwise fastened in openings in the upper side of the mixing-chamber and provided with caps *c*, shown in the present instance as being of thick perforated metal designed to allow the hydrocarbon gas to flow freely through the openings and burn off their tops; but the depth of the perforations in the relatively thick material prevents the flame from flashing back into the lower part of the burner or mixing-chamber, thereby obviating the noise and breakage of mantles due to such shocks or explosions.

Arranged in suitable relation with the burners are the mantles F, and in the present instance they are shown as being supported by the uprights F^2, adjustably secured to the outside of the mixing-chamber by suitable sockets and screws F^3.

Arranged to operate in connection with the nozzle A^2 is a valve-stem *d'*, carrying at its upper end a needle-valve *d*, fitting the open-

ing in the nozzle A^2 and having a thumb-nut D at its lower end. This valve-stem extends through the mixing-chamber tube C^2 and through the mixing-chamber C, so that it is adapted to be operated from the bottom of the lamp, and it is shown as being provided with nut-locks E E, adjustable on the valve-stem and adapted to limit the extreme opening and closure of the valve. It will be observed that the needle is arranged so that it is on the low-pressure side of the vaporization tube or coil, thus tending to avoid any leakage of oil and its attendant odors, and, further, the needle is arranged so that it is protected (especially at its point of junction with the nozzle) from extreme heating, thereby avoiding the formation and deposit of carbon thereon. Further, if perchance any foreign substance is delivered with the oil and reaches the nozzle the needle can readily be used as a cleaner for the nozzle without disturbing the adjustment of the parts.

The operative parts of the lamp are incased, and I have shown a hood G, connected to the air-intake tube B in any suitable way, as by bracket-arms *g*, and adapted to support the globe H, which is shown as having an opening *h* and as being attached to the hood through the medium of an encircling ring G^2 by a bayonet-joint or other adjustable fastening.

In this class of lamps some suitable means must be provided for securing the initial temperature to vaporize the hydrocarbon, and I have shown a cup J connected to the mixing-chamber tube C^2, and there is a tube I, shown as provided with a funnel-shaped mouth *i*, extending beyond the hood, through which alcohol or other material may be supplied to the cup.

Such being the construction and arrangement of the lamp shown, its operation will be largely understood from what has been said above, and briefly it is as follows: The alcohol or other material in the cup being ignited and the cut-off valve D′ being opened, the vaporization-coil A becomes heated and the hydrocarbon therein is vaporized and upon the opening of the valve D passes downward through the mixing-chamber tube C^2 in the form of a jet of vapor, and this draws in through the air-intake tube B the requisite supply of air. The vapor and air being thus forced downward into the mixing-chamber C, they are thrown violently together and a perfect mixture of hydrocarbon gas is provided, which, passing upward through the burners C^3, is ignited, burning with a violet-blue flame, heating the mantles F to incandescence, and furnishing thereby an intensely luminous white light, and the resulting heat continues the vaporization of the hydrocarbon in the coil.

In this class of lamps it is extremely desirable to avoid the buzzing or humming noise due to the inrush of air, and it will be observed that the air-intake tube B is a straight tube providing a free passage of air to and around the nozzle and through the mixing-chamber tube, and the ultimate mixing of the air and gas is thoroughly accomplished in the mixing-chamber by the two elements being violently thrown together therein. Another disadvantage in this class of lamps results from the formation and deposit of carbon in the nozzle and on the needle-point, thereby materially interfering with the perfect operation of the lamp, and it will be observed that in my construction the nozzle and needle-point are located in a relatively cool position and are protected from the intense heat from the burners. Thus it will be seen that the nozzle is immediately surrounded by the upward extension of the mixing-chamber tube C^2 entering the air-intake tube B, and this in turn is surrounded by the latter tube, forming the chamber B^4 between the two tubes, and this chamber being constantly supplied with cool air forms an additional protecting-wall for the nozzle and needle without materially interfering with the vaporization of the hydrocarbon in the coil surrounding the air-intake tube. It will also be observed that by thus arranging the coil it is in the most advantageous position in my lamp to obtain the maximum vaporization with the minimum heating-surface. It is further to be remarked that in this lamp as above described the air passes to the mixing-chamber in a practically right line, avoiding any curved passages liable to produce disagreeable noises, and, further, the air-intake tube and mixing-chamber tube are relatively large, permitting the free flow of the vapor and air to the mixing-chamber, and by using a relatively large supply-pipe for the hydrocarbon and properly proportioning the parts (there being no undue mechanical obstruction to the flow of the vapor and air) I am enabled to operate my lamp under exceedingly low pressure with high-test hydrocarbon, which is an extremely desirable feature in this class of lamps. It is further to be observed that the parts composing the lamp are simple in character, requiring little special manipulation, and that the parts are adjustably connected and can be assembled or separated, and the whole can be made without special tools being required to form the different parts.

What I claim is—

1. In a vapor-lamp for incandescent lighting, the combination with the mixing-chamber, of an air-intake tube directly open to the atmosphere and connected in a right line to said chamber, and a vaporization-coil surrounding and closely conforming to the external contour of the air-intake tube, substantially as described.

2. In a vapor-lamp for incandescent lighting, the combination with the mixing-chamber, of an air-intake tube directly open to the atmosphere and connected in a right line to said chamber, and a vaporization-coil sur-

rounding and closely conforming to the external contour of the air-intake tube and having an extension projecting into said tube, substantially as described.

3. In a vapor-lamp for incandescent lighting, the combination with the mixing-chamber, of an air-intake tube directly open to the atmosphere and connected in a right line to said chamber, a vaporization-coil surrounding the air-intake tube and closely conforming to the external contour of said tube and having an extension projecting into the tube, a nozzle delivering in said tube, and a needle-valve on the low-pressure side of the vaporization-coil, substantially as described.

4. In a vapor-lamp for incandescent lighting, the combination with the mixing-chamber, of an air-intake tube having a head, a mixing-chamber tube connecting the mixing-chamber and air-intake tube and extending into the latter forming a chamber between the two, and a nozzle extending into the mixing-chamber tube and surrounded by said chamber, substantially as described.

5. In a vapor-lamp for incandescent lighting, the combination with the mixing-chamber, of an air-intake tube having a head, a mixing-chamber tube connecting the mixing-chamber and air-intake tube and extending into the latter forming a chamber between the two, a vaporization-coil having an extension extending into the air-intake tube, and a nozzle projecting into the mixing-chamber tube, substantially as described.

6. In a vapor-lamp for incandescent lighting, the combination with the mixing-chamber, of an air-intake tube having a head, a mixing-chamber tube connecting the mixing-chamber and air-intake tube and extending through the head of the same forming a chamber at the lower end of the air-intake tube, a vaporization-coil surrounding the air-intake tube and having an extension projecting into the tube above the mixing-chamber tube, and a nozzle connected to the extension and projecting into the end of the mixing-chamber tube, substantially as described.

7. In a vapor-lamp for incandescent lighting, the combination with the mixing-chamber, of an air-intake tube directly open to the atmosphere, a mixing-chamber tube connecting the chamber with the air-intake tube, a vaporization-coil surrounding and closely conforming to the external contour of the air-intake tube and having an extension projecting into the air-intake tube, a nozzle extending into the mixing-chamber tube, and a valve extending through the mixing-chamber and mixing-chamber tube coöperating with the nozzle, substantially as described.

8. In a vapor-lamp for incandescent lighting, the combination with the mixing-chamber, of an air-intake tube, a mixing-chamber tube connecting the chamber with the air-intake tube, a vaporization-coil having an extension projecting into the air-intake tube, a nozzle extending into the mixing-chamber tube, a valve extending through the mixing-chamber and mixing-chamber tube and cooperating with the nozzle, and lock-nuts arranged to limit the movements of the valve, substantially as described.

9. In a vapor-lamp for incandescent lighting, the combination with the mixing-chamber, of an air-intake tube directly open to the atmosphere, a mixing-chamber tube connecting the mixing-chamber and air-intake tube, a vaporization-coil surrounding the air-intake tube and having an extension projecting therein, and a nozzle centrally arranged within the air-intake tube, the air-intake tube and mixing-chamber tube being arranged in a right line, whereby the air is drawn directly in through the air-intake tube and passes with the vapor through the mixing-chamber tube, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WINFIELD SCOTT PROSKEY.

Witnesses:
E. C. STERLING,
THOMAS H. ROTHWELL.