C. HALSTEAD.

VAPOR LAMP.

APPLICATION FILED OCT. 16, 1909.

960,011.

Patented May 31, 1910.

Fig. 1.

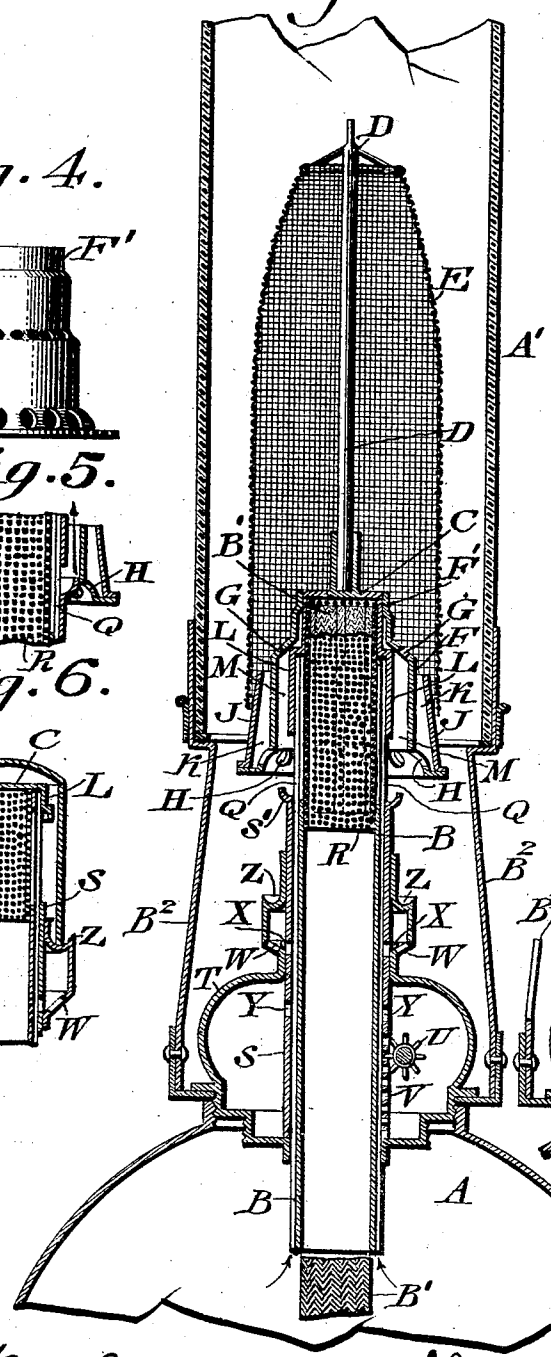


Fig. 2.

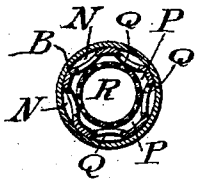


Fig. 4.

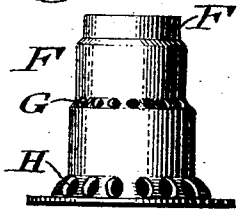


Fig. 5.

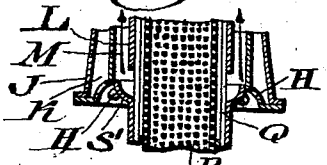


Fig. 3.

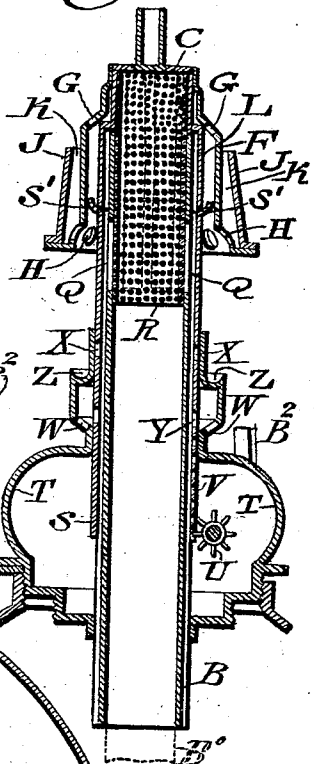
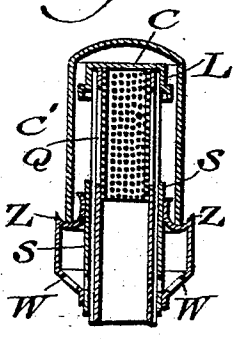


Fig. 6.



WITNESSES

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VAPOR-LAMP.

960,011. Specification of Letters Patent. Patented May 31, 1910.

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To all whom it may concern:

Be it known that I, CHARLES HALSTEAD, a citizen of the United States, residing at Brooklyn, in the county of Kings, State of New York, have invented a new and useful Vapor-Lamp, of which the following is a specification.

My invention consists of a vapor lamp adapted for use with an incandescent-mantle to cause a most brilliant light, and for heating purposes.

In order to explain the invention, the accompanying drawing illustrates a satisfactory reduction of the same to practice, but the important instrumentalities thereof may be varied, and so it is to be understood that the invention is not limited to the specific arrangement and organization shown and described.

Figure 1 represents a vertical section of a vapor lamp embodying my invention. Fig. 2 represents a transverse section of the wick tube. Fig. 3 represents a vertical section of a portion of the same, the shutter of the lamp being in closed position. Fig. 4 represents a side elevation of one of the caps employed. Fig. 5 represents a vertical section of a portion of the lamp, the shutter being in operative position. Fig. 6 represents a vertical section of a modification.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings:—A designates the fount of an alcohol or other vapor lamp, and B designates the wick tube thereof, the top C of which is closed and from which rises the vertically arranged rod D, for supporting the mantle E of suitable order.

F designates a cap whose upper end is reduced, forming a neck F′, which is supported on the upper end of the wick tube and depends therefrom. In the side of said cap at or below the neck thereof, are the ports or jet openings G, and in the base of the cap are the ports or air openings H. Rising from said base is the sleeve J, which encircles the lower portion of the cap F and is separated therefrom, forming the passage K.

Within the cap F is the collar L, which surrounds and closes the upper portion of the wick tube, it being noticed that a passage M exists between said collar and cap forming a communication for the ports H and jet openings G, it being noticed that the wick tube is vertically corrugated so as to form ducts N on its exterior and ducts P on its interior, the walls of the corrugations having ports Q therein, the latter providing communications for said exterior and interior ducts N, P, as most plainly shown in Fig. 2.

Within the upper portion of the wick tube is the finely perforated tube R, which embraces the corresponding portion of the wick B′ and extends below the base of the ports Q, it serving to protect the wick from an excess of heat in what may be termed the burner head, since the wick is removed by said tube R from contact with the inner surface of the wick tube.

S designates the shutter of the lamp, the same encircling the wick tube below the collar M, it being adapted to be raised and lowered, and when in closed position to have its upper end S′ which is of the form of a gutter to abut against the lower end of said collar, as most plainly shown in Fig. 3, it being noticed that said shutter and the adjacent portion of the wick tube are contained in the cap T, which is adapted to be screwed or otherwise connected with the fount A, said cap having mounted therein the wheel U, which is adapted to engage the rack V on the side of the shutter, whereby the latter may be raised and lowered. In the neck or upper portion of said cap T, are ports W, which as shown in Fig. 1, communicate with the atmosphere and with ports X in the shutter, the latter also having ports Y, which as shown in Fig. 3, are below said ports X, and are adapted when the wick tube is raised to be placed in communication with the ports W, in which case the ports X are closed by the surrounding wall of the neck of the cap, and so cut-off from the atmosphere. On the top of said neck is the gutter Z, which is adapted to be supplied with alcohol or other inflammable fluid for heating the portions of the lamp above the same for primarily vaporizing the fluid, said portions comprising the burner head of the lamp.

A′ designates the chimney of the lamp, which is supported by the arms B^2, the latter being rested on the fount and engaged by the cap T in any suitable manner.

The operation is as follows—The fount is supplied with alcohol or other suitable fluid and the wick B′ is accordingly saturated

with the same, the vapor whereof passes through the perforated tube R and ports Q, the shutter S being lowered and the burner head being primarily heated by a small quantity of fluid placed in the gutter Z and ignited. The vapor now burns below the bottom of the cap F and the shutter is raised so that its upper end S′ enters the base of the cap F, so as to close the bottom of the passage M, as shown in Fig. 6, when the vapor from within the wick tube is directed through the ports Q into said passages, and from the latter into and through the jet openings G, where it mingles with air admitted to the passage K by the uncovered ports H, the resultant vapor then burning in the mantle E. Meanwhile, air flows through the ports W, in the neck of the cap T, into the ports X of the shutter and through the ducts between the wick tube and the shutter, and mingles with the vapor in the passage M, thus supplying a large volume of air to the vapor for perfect combustion in the mantle and a consequent brilliant light.

When the light is to be extinguished, the shutter is raised so as to abut against the collar L, when the supply of vapor from the wick tube ceases, see Fig. 3. As the ports X are closed, and the ports Y are opened, any existing vapor in the wick tube and top of the fount will escape to the atmosphere through said ports Y and the ports W, thus preventing explosion of the lamp.

Should it be desired to use the lamp for heat instead of light, the cap F, the sleeve J, the mantle E and mantle support D are removed, when the cup C′ is placed over the top of the wick tube, when the lamp is inverted and some of the fluid flows through the passages of the wick tube into said cup, when on again turning the lamp to normal condition, the fluid leaves the cup and enters the gutter Z, where as a primer, it may be ignited and so heat the top of the wick tube, to cause effective vaporization of the fluid in the latter, the resultant vapor escaping through the ports Q, where it may be burned.

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

1. In a vapor lamp, a wick tube having a port in its side, a mantle over the upper end of said wick tube, a sleeve surrounding said wick tube, and communicating with said mantle, and a movable shutter adapted to cover the port in said wick tube.

2. In a vapor lamp, a wick tube, a cap thereon, said tube having a port in its side, the same being adapted to be in communication with said cap, a mantle above said wick tube and within which said cap extends, said cap being adapted to be in communication with the interior of said mantle and said wick tube, and a shutter adapted to be raised and lowered and cover the port in said wick tube.

3. In a vapor lamp, a wick tube having passages on the exterior and interior thereof, and an outlet port in its side, and a cap on said tube, said cap having its lower end open adjacent to said port, and its upper end provided with an outlet port and a movable member independent of the cap and providing a vent when the lamp is extinguished.

4. In a vapor lamp, a wick tube having passages on the exterior and interior thereof, an outlet port in its side, a cap on said tube, a collar encircling the cap, with passages respectively between the tube and cap and the cap and collar, said cap having its lower end open adjacent to said port, and its upper end provided with an outlet port, and a shutter which is adapted to close said outlet port of the wick tube.

5. In a vapor lamp, a wick tube, a cap encircling said tube and a collar encircling said cap, with passages respectively between said tube and cap and said cap and collar, said passages being in communication below with said wick tube and the atmosphere.

6. In a vapor lamp, a wick tube, a mantle thereover, a cap encircling said tube, and a collar encircling said cap, with passages respectively between said tube and cap and said cap and collar, said passages being in communication below with said wick tube and the atmosphere and above with said mantle.

7. In a vapor lamp, a fount, a wick tube with a port in its side, a movable shutter, and an abutment on said tube, said shutter being adapted to engage said abutment and cover said port, a member on said fount in which portions of said tube and shutter are contained, said shutter and member having ports therein adapted to be placed in and out of communication with each other and the atmosphere.

8. In a vapor lamp, a wick tube, the latter having a port in its side, a shutter on said tube adapted to close said port, said shutter having a port and a priming gutter around said tube with a port beneath said gutter.

9. In a vapor lamp, a wick tube, a cap with a reduced neck thereon, a passage on the outside of the wick tube between the said tube and cap below said neck, said wick tube having a port in its side communicating with said passage, and an outlet port in the side of the cap and a movable member independent of the cap and providing a vent when the lamp is extinguished.

10. In a vapor lamp, a wick tube, a cap around the same forming a passage, a shutter surrounding said tube adapted to be

raised and lowered and to close the bottom of said passage and a movable member independent of the cap and providing a vent when the lamp is extinguished.

11. A wick tube, a cap with a reduced neck thereon, a passage between the wick tube and cap below the neck of the cap, said wick tube having a port in its side communicating with said passage, an outlet port in the side of the cap, the latter having a port in its base, and a sleeve on said base forming a passage between the said sleeve and cap in communication.

12. In a vapor lamp, a wick tube, a collar surrounding said wick tube and closing its upper end, a cap with a reduced neck thereon, a passage between the wick tube and cap below the neck of the cap, said wick tube having a port in its side in communication with said passage, a port in the side of the cap, said cap having a port in its base, and a shutter surrounding said wick tube and adapted to be raised and lowered and to enter and close the bottom of said passage.

13. In a vapor lamp, a wick tube having a port in its side, a cap around the same forming a passage on the exterior of said tube, a shutter adapted to be raised and lowered to cover the port in the wick tube and having a port in communication with the latter, said shutter being receivable within said cap.

14. In a vapor lamp, a fount, a wick tube with a port in its side, a movable shutter having ports in its central portion in communication with its interior and adapted to be placed in and out of communication with the atmosphere, said shutter being adapted to cover said port of the wick tube, a cap on said fount closing its mouth, said cap being adapted to receive and support said wick tube and shutter, and a depression forming a gutter on the top of said cap.

15. In a vapor lamp, a wick tube, a cap thereon, said tube having a port in its side, the same being adapted to be in communication with said cap, and a mantle above said wick tube and within which said cap extends, said cap being adapted to be in communication with the interior of said mantle and said wick tube, and a movable member provided with a port and independent of the cap forming a vent when the lamp is extinguished.

16. In a vapor lamp, a fount, a wick tube with a port in its side, a shutter adapted to be raised and lowered and cover the port in said wick tube, a cap on said port adapted to close its mouth and to receive said support, wick tube and shutter.

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Witnesses:
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JOHN P. DAVIS.