

W. S. HAMM AND F. A. SCHUETZ.

LANTERN BURNER.

APPLICATION FILED MAR. 4, 1919.

1,341,122.

Patented May 25, 1920.

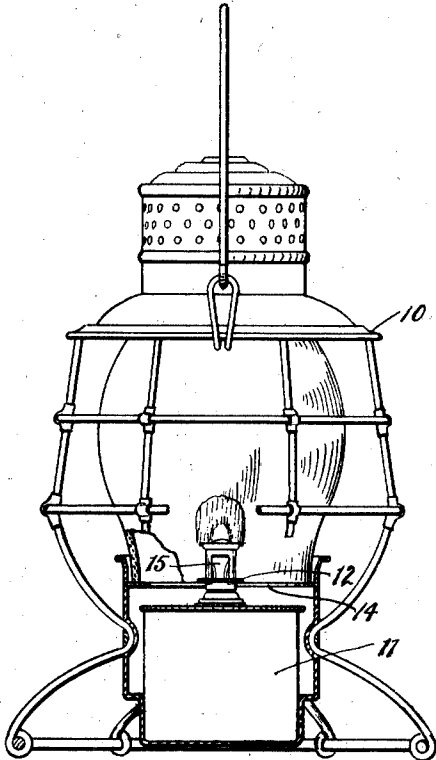


Fig. 1.

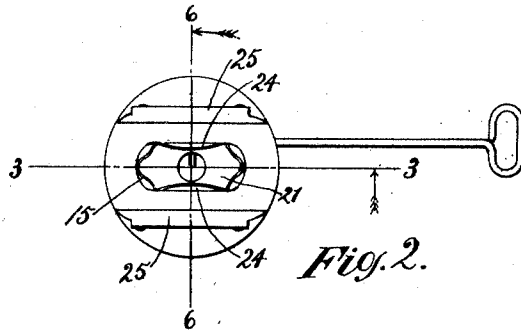


Fig. 2.

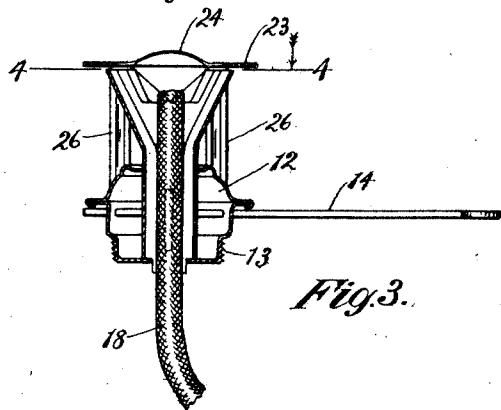


Fig. 3.

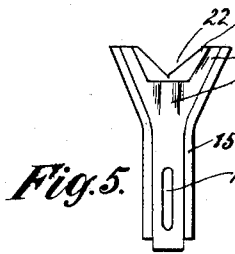


Fig. 5.

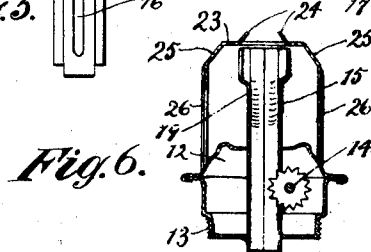


Fig. 6.

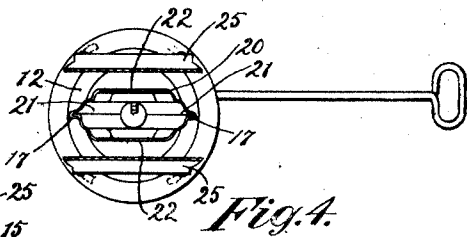


Fig. 4.

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# UNITED STATES PATENT OFFICE.

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## LANTERN-BURNER.

1,341,122.

Specification of Letters Patent.

Patented May 25, 1920.

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*To all whom it may concern:*

Be it known that we, WILLIAM S. HAMM and FRANK A. SCHUETZ, citizens of the United States, and residents, respectively, of Hubbard Woods, county of Cook, State of Illinois, and Chicago, county of Cook, State of Illinois, have jointly invented certain new and useful Improvements in Lantern-Burners, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to burners for hand lanterns, particularly such as are used by trainmen.

The object of the invention is to provide a burner adapted for use in connection with kerosene, and by means of which a reliable and smokeless flame may be maintained under the trying conditions of the service to which a trainman's lantern is subjected.

It has been found exceedingly difficult to devise a burner for use in such service with which kerosene could be successfully employed, and it has heretofore been necessary to make use of a heavier fuel. Kerosene is a most desirable illuminant, not only because of its low cost but also because it will produce a larger and brighter flame than the oils heretofore depended upon. A kerosene flame is, however, exceedingly difficult to control and maintain, because of the volatile character of the fluid. Unless the burner is provided with a chimney it is difficult to secure a sufficiently near approach to complete combustion to prevent the deposit of carbon. A kerosene flame is very sensitive to air currents playing upon it, and consequently is apt to be extinguished or driven down into the burner in the giving of signals. While many attempts have been made to produce a burner with which kerosene could be used in a signal lantern, none of them, so far as we are aware, have heretofore been successful, while the burner forming the subject of this application has proved so.

The invention consists of a structure such as is hereinafter described, and as illustrated in the accompanying drawings, in which—

Figure 1 shows in elevation a lantern provided with the improved burner, some portions of the lantern body being broken away;

Fig. 2 is a plan view of the burner removed from the lantern;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a sectional view on the line 4—4 of Fig. 3;

Fig. 5 is a view in elevation of the burner tube; and

Fig. 6 is a sectional view on the line 6—6 of Fig. 2.

The drawings show a hand lantern 10, of the type used by switchmen and trainmen and being provided with a bail by which it is carried, and a font 11 for holding the fuel.

The burner comprises a body section 12 of ordinary form, adapted to fit within a suitable aperture in the top of the font 11,—being shown as provided with a threaded stem 13 for engagement therewith. The usual star wheel for raising and lowering the wick is mounted within the body 12, and is carried by a spindle 14 adapted to project outwardly through the base ring of the lantern. The burner tube, generally designated by the numeral 15, extends axially through the body 12, and has a slot 16 into which the star wheel projects. This tube is preferably formed of two pieces of sheet metal seamed together, as indicated at 17, the lower portion of these plates being bowed outwardly to form, when united, a circular passage for accommodating a round wick 18.

The upper end of the wick tube flares outwardly to substantially fan shape, diametrically opposite portions of the cylindrical body being, however, continued a substantial distance above the base of the fan, as indicated at 19, to form a wick guide. The side walls of the upper portion of the fan-shaped section are offset outwardly, as shown at 20, this offset, however, being of slightly less width than the portion of the burner tube within which it is formed, thereby providing at each margin of the fan-shaped section a channel or groove, as indicated at 21. A V-shaped notch 22 is formed in the upper margin of each of the offset portions 20, the base of the notch being approximately at the line of offset and its upper end being of such width as to extend approximately to the line of the margins of the channel 21.

A flat apertured shield plate 23 is located immediately above the upper end of the tube 15, its aperture being approximately the same size as the extreme end or flare of the wick tube. The aperture of the plate 23 is

flanked on each of its longer sides by an upstanding and slightly inwardly inclined lip 24. At each of its side margins the plate 23 is provided with a downturned and outwardly flaring flange 25, the lower margin of such flange being approximately in line with the lower margin of the offset 20 of the wick tube. The plate 23, while contiguous to the upper end of the wick tube, is preferably out of actual physical contact therewith, and in the embodiment shown is supported by legs, as 26, depending from the flanges 25 and being firmly secured to the burner body 12.

As shown in Fig. 3, the upper end of the wick 18, when positioned for service, is approximately at the level of or slightly above the apexes of the notches 22. It is therefore supported by the continuations 19 of the cylindrical portion of the wick tube, but intermediate of these supports is exposed within the channels 21 which extend to the base of the fan-shaped section of the burner tube.

A flame being established at the upper end of the wick is supplied with air entering under the flanges 25 and through the V-shaped notches 22. The heat of the flame, conducted through the metal of the wick tube walls, causes the volatilization of the fluid carried up by the wick, the vapor escaping into the channels 21 and igniting as they rise. The flame is spread beyond the limits of the upper end of the wick tube and overlaps onto the end portions of the shield plate, and is flattened by the upstanding lips 24. The shield plate 23 and the lips 24 protect the base of the flame from downwardly or transversely moving air currents, and the vapors, being highly combustible, are certainly ignited from the combustion which is reliably maintained at the end of the wick.

Although when under adverse conditions, such as the prevalence of a high wind or by reason of the rapid movement of the lantern in the giving of signals, air enters the body of the lantern from above, the flame may be buffeted about, it is not extinguished, nor does it lose its luminous characteristic. The supply of air to the upper end of the wick is adequate to insure the requisite degree of combustion to prevent the escape of uncombined carbon and the consequent deposit of soot.

The support for the flame shield independent of the wick tube prevents the undue heating of the burner body and a volatilization of the illuminating fluid in the burner body and in the font. This result is secured also by reducing the size of the supporting legs 26 as much as practicable, consistent with rigidity,—it being important that relative vibration of the shield plate and burner tube be avoided.

While an operative and preferred form of construction is shown and herein described, various changes of detail may be made without departing from the scope of the invention.

We claim as our invention—

1. A burner for lanterns and the like, comprising a wick-tube having its upper end flared to fan shape, the portions of the side walls of the flaring portion which are in line with the more contracted portion of the tube being spaced apart a distance equal to the internal diameter of such contracted portion to form a lateral support for the upper end of the wick.

2. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion having their upper margins notched and being spaced apart below the notch a distance equal to the internal diameter of the more contracted portion of the tube to form a lateral support for the wick adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube.

3. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion having the middle section of their upper portions outwardly offset, such offsets being continuations of the more contracted portion of the tube, and being adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube.

4. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion being notched and being spaced apart a distance less than the diameter of the tube, their middle portions being bowed outward and forming continuations of the more contracted portion of the tube having the middle section of their upper portions outwardly offset and notched and being adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube.

5. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, and an approximately flat shield plate above the tube and having an aperture corresponding approximately in size and shape to the open end thereof and being supported independently of the tube, the burner being laterally open to permit the free entrance of air.

6. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, and an approximately flat shield plate above the tube and having an aperture corresponding approximately in size and shape to the open end thereof and being supported independently of the flar-

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ing portion of the tube, the burner being laterally open to permit the free entrance of air.

7. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the sides of the fan-shaped portion being open for the admission of air, and an approximately flat shield plate above the tube and having an aperture corresponding approximately in size and shape to the open end thereof and being supported independently of the flaring portion of the tube, and being provided with upstanding lips at the side margins of its aperture.

8. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the sides of the fan-shaped portion being open for the admission of air, and an approximately flat shield plate above the tube and having an aperture corresponding approximately in size and shape to the open end thereof and being supported independently of the flaring portion of the tube and having depending wings at its side margins.

9. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the sides of the fan-shaped portion being open for the admission of air, and an approximately flat shield plate above the tube and having an aperture corresponding approximately in the size and shape to the open end thereof and being supported independently of the flaring portion of the tube and being provided with upstanding lips at the side margins of its aperture and having depending wings at its side margins.

10. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion being adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube, and a shield plate mounted above the tube and having an aperture corresponding approximately in size and shape with the end thereof.

11. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion having means to support the upper portion of a wick projecting beyond the more contracted part of the tube and being ported for the admission of air, and a shield plate mounted above the tube and having an aperture corresponding approximately in size and shape with the end thereof and having upstanding lips at the side margins of its aperture.

12. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion being adapted to support

the upper portion of a wick projecting beyond the more contracted part of the tube and being ported for the admission of air, and a shield plate mounted above the tube and having an aperture corresponding approximately in size and shape with the end thereof and having depending wings at its side margins.

13. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion being adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube and being ported for the admission of air, and a shield plate mounted above the tube and having an aperture corresponding approximately in size and shape with the end thereof and having upstanding lips at the side margins of its aperture and having depending wings at its side margins.

14. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion having the middle section of their upper portions outwardly offset and notched and the portions of such side walls below the offset being adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube, and a shield plate above the tube and having an aperture of approximately the size and shape of the end thereof.

15. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion having the middle section of their upper portions outwardly offset and notched and the portions of such side walls below the offset being adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube, and a shield plate above the tube and having an aperture of approximately the size and shape of the end thereof, and upstanding lips at the margins of its aperture.

16. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion having the middle section of their upper portions outwardly offset and notched and the portions of such side walls below the offset being adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube, and a shield plate above the tube and having an aperture of approximately the size and shape of the end thereof and depending wings at its side margins.

17. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of the flaring portion having the middle section of their upper portions outwardly offset and

- notched and the portions of such side walls below the offset being adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube, and a shield plate above the tube and having an aperture of approximately the size and shape of the end thereof and upstanding lips at the margins of its aperture and depending wings at its side margins.
18. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of their upper portions outwardly offset and notched and being adapted to support the upper portion of a wick projecting beyond the more contracted part of the tube, and a shield plate above the tube and having an aperture of approximately the size and shape of the end thereof and upstanding lips at the margins of its aperture and depending wings at its side margins, such plate being supported independently of the tube.
19. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, the side walls of such portion being in part cut away, and an approximately flat shield plate at the upper end of the tube and having an aperture corresponding approximately in size and shape to the end thereof.
20. A burner for lanterns and the like comprising a round wick tube having its upper end flared to fan shape, the side walls of such portion being in part cut away, and an approximately flat shield plate at the upper end of the tube and having an aperture corresponding approximately in size and shape to the end thereof.
21. A lamp burner comprising a wick tube having its upper end flared and ported on two opposite sides, a horizontal plate above the tube and apertured for the passage of the flame and provided with depending wings overhanging the ports, the margins of the plate intermediate of the wings being unflanged.
22. A burner for lanterns and the like comprising a wick tube having its upper end flared to fan shape, and an approximately flat shield plate above the tube and having an aperture corresponding approximately in size and shape to the open end thereof, the burner being laterally open to permit the free entrance of air.
23. In a lamp burner, in combination, a wick support, an oblong cup for inclosing the end portion of a wick and being of such size as to have its walls out of contact therewith, the side walls of the cup being ported, and a shield plate above the cup having a flame opening, the sides of the burner being open for the admission of air.
24. In a lamp burner, in combination, a wick support, an oblong cup for inclosing the end portion of a wick and being of such size as to have its walls out of contact therewith, and a shield plate above the cup having a flame opening, the sides of the burner being open for the admission of air.

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