No. 836,809. PATENTED NOV. 27, 1906.

W. S. HAMM.

LANTERN.

APPLICATION FILED MAR. 11, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

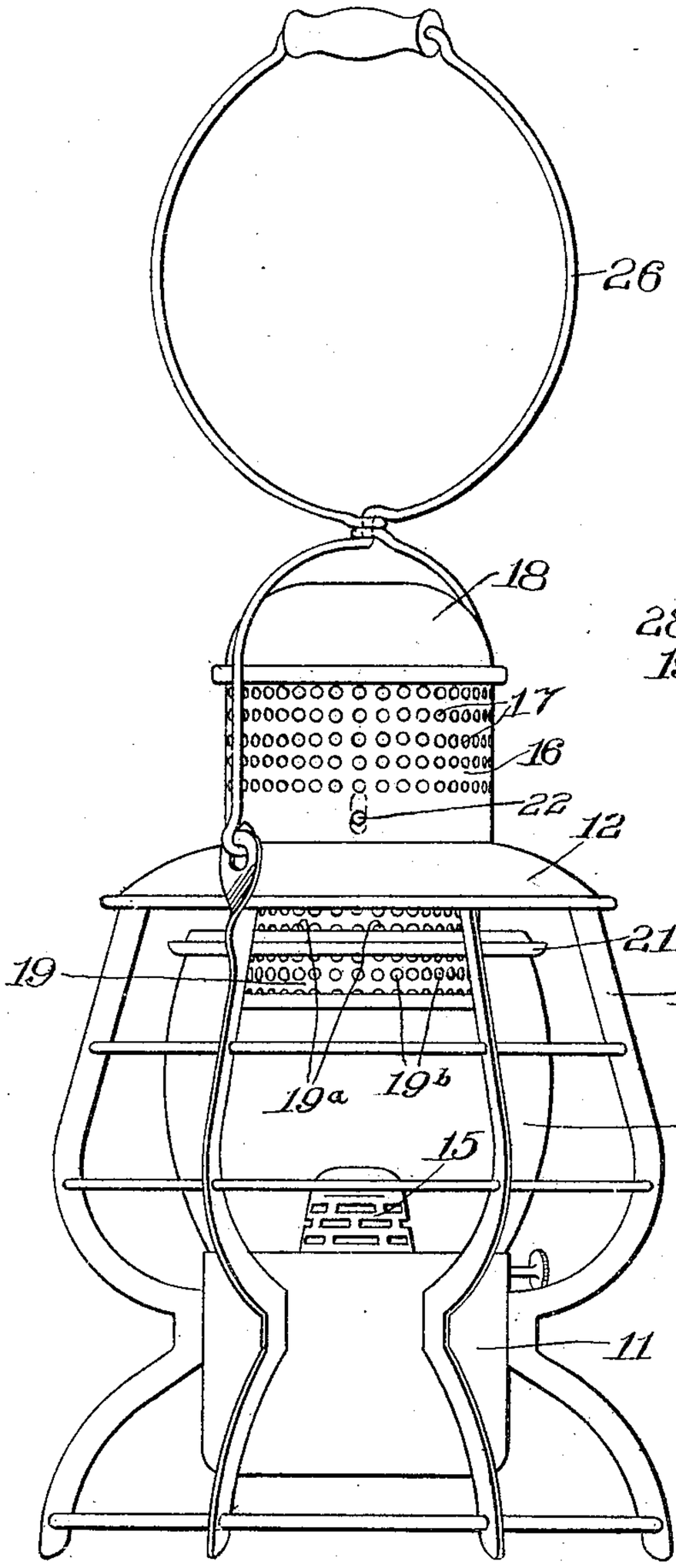
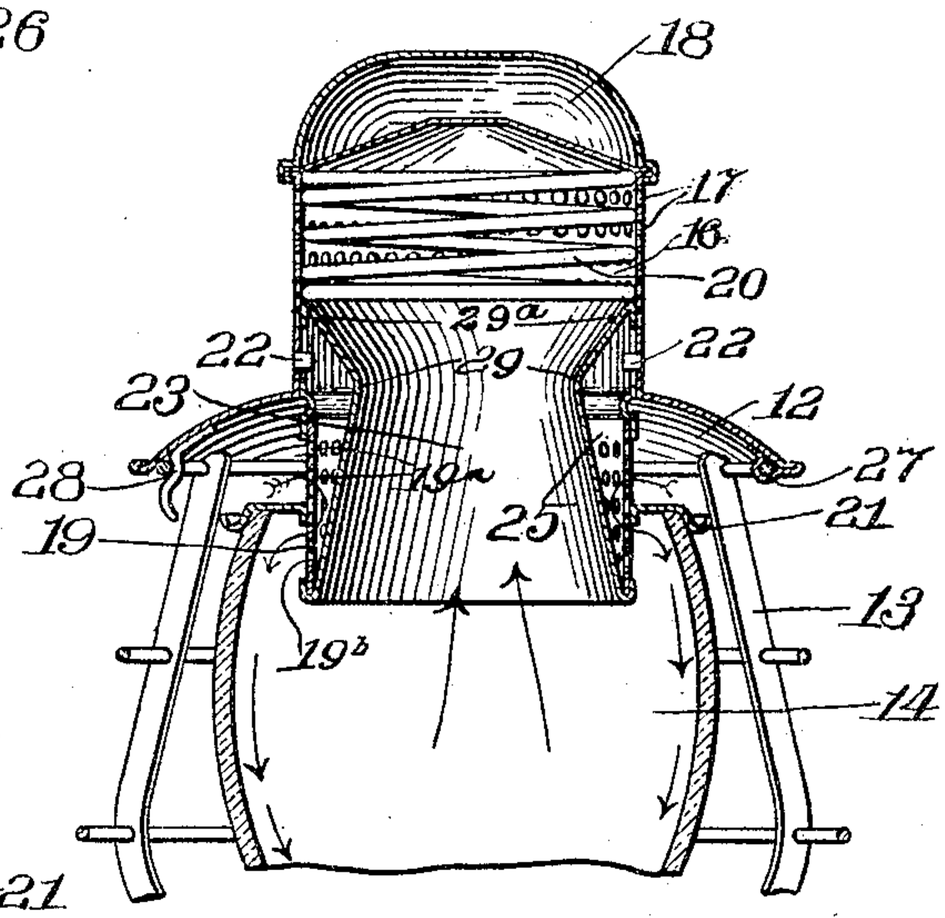


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

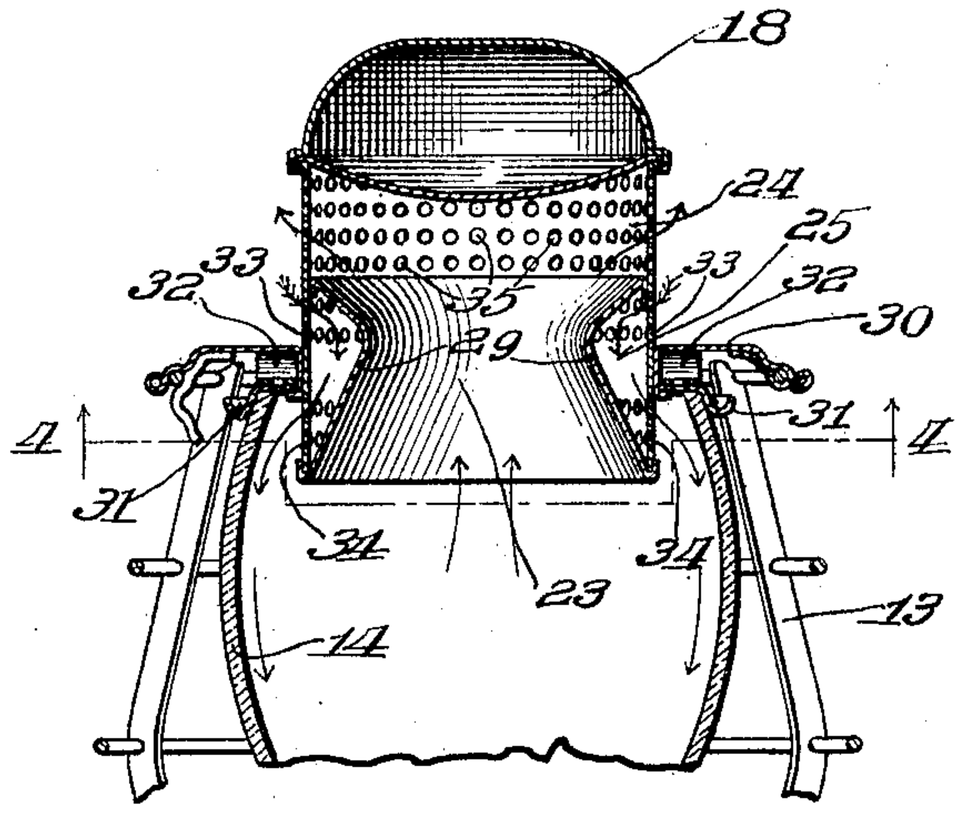
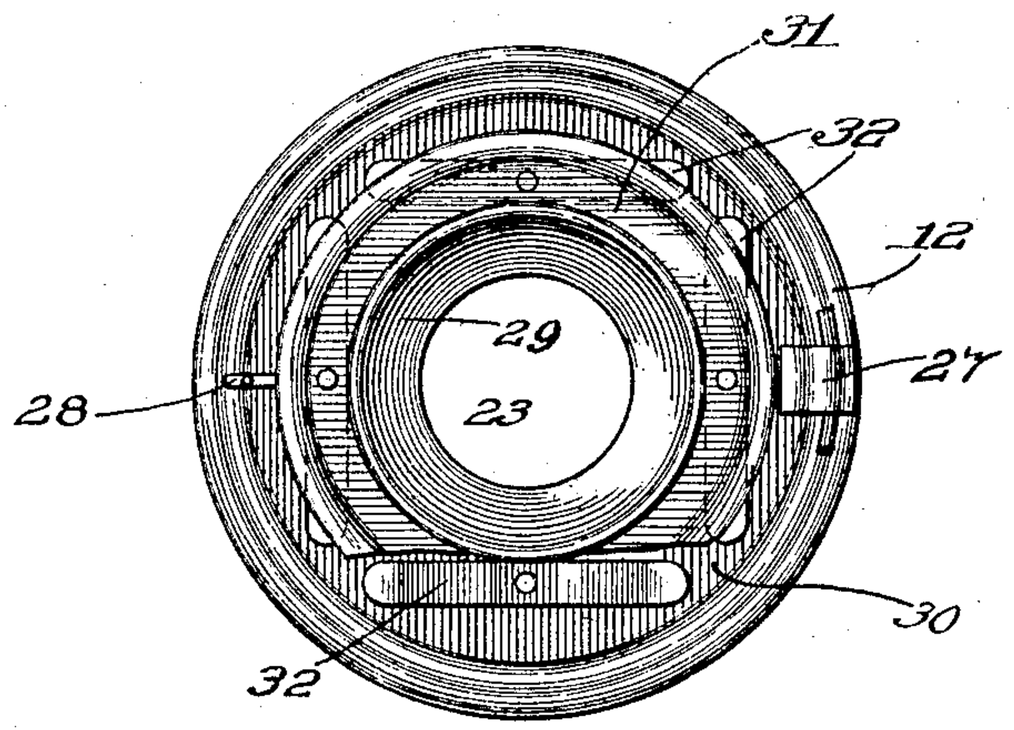


Fig. 4.



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LANTERN.

No. 836,809. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed March 11, 1905. Serial No. 249,597.

To all whom it may concern:

Be it known that I, WILLIAM S. HAMM, a citizen of the United States, and a resident of Lakeside, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Lanterns, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

This invention relates to lanterns intended for the use of trainmen, and more particularly to lanterns of this class known as "top-draft" lanterns, in which the supply of air for supporting combustion at the burner enters near the dome of the lantern and is delivered to the interior of the globe by means of an annular passage surrounding a central flue provided for the escape of the products of combustion.

The object of the invention is to provide a lantern of the type described in which the air-supply to the burner will not be interrupted when the lantern is being swung back and forth for the purpose of signaling.

The invention consists in the construction hereinafter described and which is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of a lantern constructed in accordance with the invention. Fig. 2 is a detail central vertical section of the same. Fig. 3 is similar to Fig. 2, but showing a modified construction; and Fig. 4 is an inverted plan section on the line 4 4 of Fig. 3, some of the parts being removed.

The body of the lantern 10 resembles in general contour an ordinary trainman's lantern, having an oil-font 11, which is joined to the top flange 12 by means of the guard-frame 13. The globe 14 is seated on the font and held in place at the top by an appurtenance of the flange 12. The usual burner 15 is provided.

The lantern is of the so-called "top-draft" type, the air for supporting combustion being introduced through the walls of the dome. In lanterns of this kind serious difficulty has been found in practice in securing a construction adapted for all of the exigencies of the use to which the lantern is subjected. It will be understood that the lantern must be capable of use at rest or in violent motion. It is sometimes carried on the top of a train moving at a high rate of speed, and hence it must not be affected by wind of high velocity. It is also used in the giving of signals, which involve the swinging of the lantern through circles in vertical or in other plane whereby it may be completely overturned, or its swaying back and forth and sometimes its sudden and abrupt movement in vertical line. These signals give rise to a variety of air-currents, and some of them result in the complete reversal of the currents from the normal, the air entering through the eduction-ports and being discharged through the induction-ports.

In order to prevent the lantern from being blown out when used in a high wind, it has been found necessary to in some way cramp or restrict the eduction-passage against incoming currents, as by the use of baffle-plates, deflecting-plates, &c. These precautions, however, militate against the successful action of the lantern when used for signaling purposes. For example, when the movement of the lantern has resulted in the reversal of the currents just referred to the inflow of air through the normal eduction-passage would not be sufficient to properly maintain combustion and the flame would be very much dimmed and sometimes entirely extinguished. The difficulty has been, generally speaking, to provide a proper balance of pressure as between the induction and eduction ports under all circumstances, so as to insure an ample supply of air to maintain combustion and yet prevent an oversupply and a setting up of currents within the lamp-body which would blow and perhaps extinguish the flame.

In the lantern herein shown and described the desired ends have been secured by such an arrangement of the induction-ports as to provide an ample supply of air and deliver it to the burner in such manner as not to conflict with the outgoing vapors and by providing a commodious and free eduction-flue discharging into a dome provided with a large number of minute ports, which, while of sufficient aggregate area to allow for the free discharge of the vapors and for an ample inflow of air when the currents are reversed, will nevertheless so break up the incoming currents that they will not rush down upon the flame and blow it out. The upper end of the central draft-flue is so formed as to facilitate the entrance of air when the currents are reversed. To this end the dome 16 is cylindrical in form and has its side walls freely perforated, as shown at 17, and ex-

tends downwardly from the flange 12 into the body of the globe 14. The cap 18 of the dome is preferably imperforate.

In the form of construction shown in Figs. 1 and 2 the cylindrical portion of the dome is in two sections, the lower section 19 telescopically fitting within the upper section and carrying a lateral flange 21, which fits upon the upper end of the globe 14. The dome-section 19 is forced downwardly by means of a helical spring 20, reacting between its upper end and a suitable stop at the top of the dome, thereby forcing the flange 21 into engagement with the globe. Stop-lugs 22, setting inwardly from the upper section of the dome, extend through suitable longitudinal grooves in the dome-section 19 and limit its downward movement when the dome is turned backwardly on its hinge 27. A spring-catch 28 is shown for locking the lantern-top in its closed position. An eduction-flue 23 is provided in the body of the dome by means of a tube 29, the lower end of which is in contact with and preferably secured to the walls of the lower dome-section 19, this tube tapering upwardly. The tube is joined at its upper end with the walls of the dome, and, as shown, this juncture is accomplished by flaring the upper end of the tube, as at 29^a, this section being an integral part of the tube. While I regard this form of flue, comprising the two sections 29 29^a, each having the form of a truncated cone, as being advantageous, any construction wherein a draft-flue is located within and is of less diameter than the dome, but has its ends united with the walls thereof, thus forming an annular chamber, as 25, comes broadly within the scope of the invention. The air-supply for supporting combustion enters the chamber 25 through the perforations 19^a in the dome-section 19 between the flange 21 and the flange 12 and is discharged from this chamber into the interior of the globe 14 through the perforations 19^b in the dome-section 19 below the flange 21, the air-currents following the side walls of the globe 14, as indicated by the arrows in Fig. 2. The products of combustion are carried off through the flue 23 and discharged through the perforations 17.

In the form of construction shown in Figs. 3 and 4 the body of the dome 18 is shown as being an integral cylinder 24, extending down into the body or globe 14. The inner partition 29, inclosing the flue 23, is of the same form as shown in Fig. 2. Its lower end is joined to the lower ends of the walls 24 and its upper end meets these walls above the top flange 30. The latter projects radially from the side walls of the dome and is hinged to the guard-frame 13, as usual. A ring 31 slidingly encircles the dome-walls below the flange 30 and yieldingly bears upon the upper end of the globe 14, closing the space between it and the dome. The ring 31 is carried by springs 32, secured to the flange 30. The side walls of the dome are freely perforated, as in the other form of construction, except that there are no perforations between the ring 31 and the flange 30. The air-supply enters the air-chamber 25 through the perforations 33 above the flange and passes therefrom into the globe of the lantern through the perforations 34 below the ring 31. The products of combustion escape through the flue 23 and the perforations 35 in the upper portion of the dome-walls.

The action in the two forms of construction illustrated is the same, except that there is no inflow of air below the top flange in the construction illustrated in Figs. 3 and 4, as there is in the construction illustrated in Figs. 1 and 2. This is regarded as an advantage for the reason that when the induction and eduction ports are similarly seated, as in the construction of Figs. 3 and 4, there is necessarily a uniform pressure on the two sets of ports. This, indeed, is one of the advantages of the top-draft over the bottom-draft lantern, as in the latter the movement of the lantern as it it swung in signaling may produce a different pressure upon the induction than is present at the eduction-ports, and thereby disturb the normal conditions of combustion. If the pressure is excessive at the eduction-ports, the flame is smothered and dimmed and may be extinguished.

As between the two forms of construction herein illustrated it will be seen that in that of Figs. 3 and 4 the external pressure must be necessarily the same upon the induction and eduction ports, while in that of the other two figures the conditions may be slightly different, owing to the deflection of the air-currents by the top flange of the lantern.

The structural differences between the two forms of lantern herein shown are in other respects immaterial. It is essential that means be provided for introducing air and discharging the products of combustion through the dome. The two currents should not be intermingled or brought into conflict.

The internal partition providing for the flue 23 and the air-chamber which conducts the inflow of air through the dome is preferably, but not necessarily, of a single piece and preferably, but not necessarily, strictly annular in form. It is shown as being in the form of two truncated cones united at their smaller ends, and this form has advantages not only of cheapness of construction, but also as conveniently providing with the walls of the dome the air-chamber and as providing guide-surfaces for the air-currents which facilitate the inflow and so direct it that it shall not interfere with the outgoing vapors.

I claim as my invention—

1. In a lantern, in combination, a dome

having perforated walls, a draft-tube within and of less diameter than the dome and being joined to the walls thereof at its upper end to form a guide for entering air-currents from the upper dome-perforations to the draft-tube, and being also joined to the walls thereof below the dome-perforations.

2. In a lantern, in combination, a body, a dome having its side walls extended into the body and perforated above and below the top thereof, and a draft-tube within and of less diameter than the dome and being joined to the walls thereof at its upper end and also within the lantern-body below the dome-perforations.

3. In a lantern, in combination, a body; a dome having foraminous side walls; a central draft-tube leading from within the body and flaring at its upper end to the walls of the dome; and a globe-cover extending outwardly from the wall of the dome, intermediate of the ends of the draft-tube.

4. In a lantern, in combination, a body; a dome having foraminous side walls extending into the body; and a central draft-flue flaring at its top and bottom and joining the side walls of the dome within and without the body, the upper connection being below the top of the dome.

5. In a lantern, in combination, a globe, a globe-holding flange, a dome carrying the flange and extending above and below the same and entering the globe, and having foraminous side walls; and a partition contacting with the interior walls of the dome above and below the flange and spaced apart from such walls intermediate of such points of contact.

6. In a lantern, in combination, a globe, a dome closing the upper end of the globe and entering the same, a partition contacting with the interior walls of the dome above and below the top of the globe and being spaced apart from such walls intermediate of such points of contact, the dome-walls being perforated between the ends of such partition and above and below the top of the globe.

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