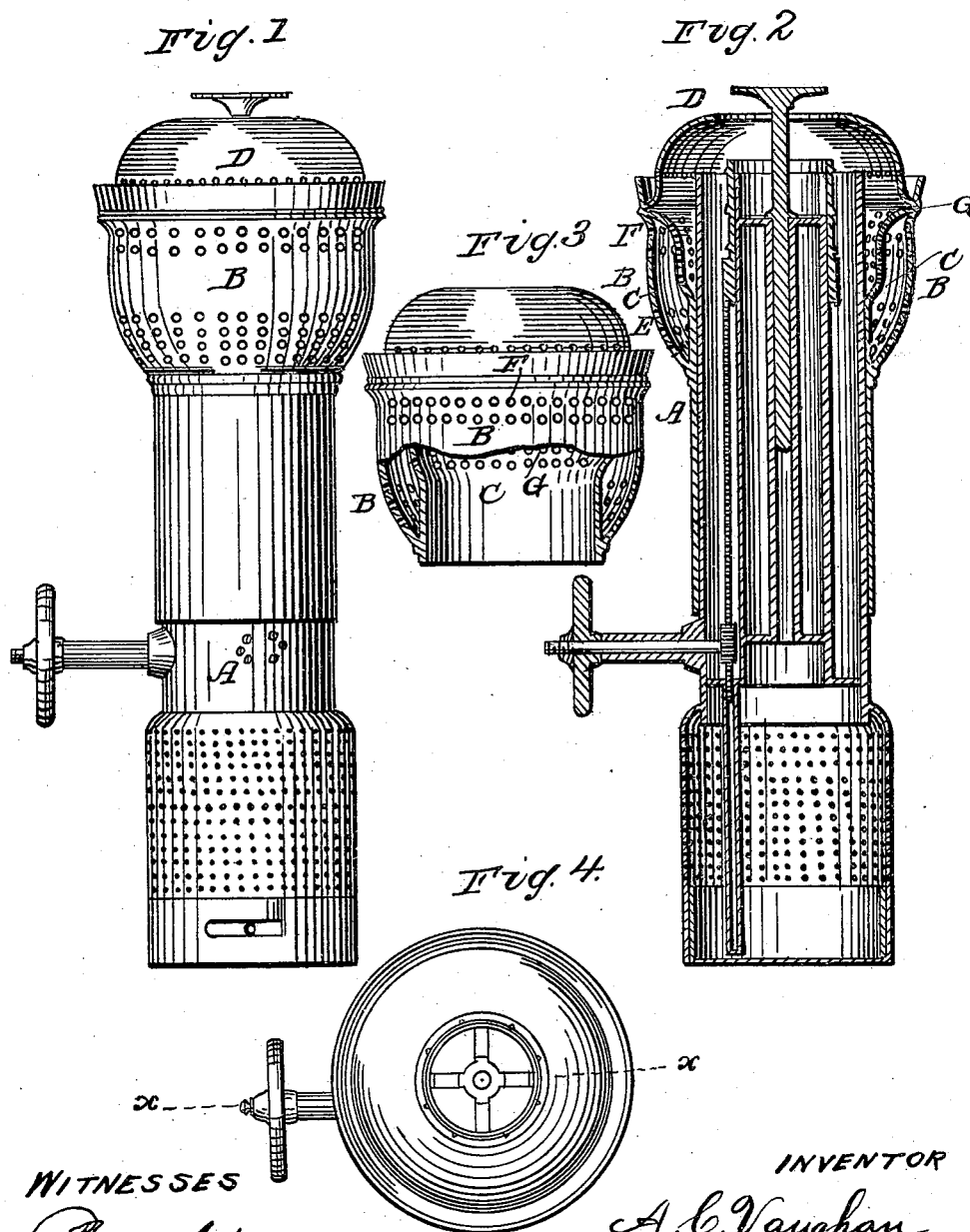


A. C. VAUGHAN.
Locomotive-Head-Light Burner.

No. 106,971.

Patented Aug. 30, 1870.



WITNESSES

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AARON C. VAUGHAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
JAMES M. SELLERS AND A. K. McCLURE, OF SAME PLACE.

Letters Patent No. 106,971, dated August 30, 1870.

IMPROVEMENT IN BURNERS FOR LOCOMOTIVE HEAD-LIGHTS.

The Schedule referred to in these Letters Patent and making part of the same.

To whom it may concern :

Be it known that I, AARON C. VAUGHAN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have, as I believe, invented certain new and useful Improvements in Burners for Locomotive Head-Lights and Light-Houses; and I do hereby declare the following to be a full and exact description of the same, reference being had to the drawing that accompanies and forms a part of these specifications.

The object of my invention is to provide for such an equal, gentle, and constant supply of air to the flame as shall make combustion perfect, and thus avoid throwing off unconsumed carbon, that I may obtain that brilliancy of flame, and a consequent illuminating power, that the hydrocarbon oils are able to afford when these conditions are secured and maintained.

It has been found very difficult, even with lamps that remain at rest, to secure the most perfect combustion and attendant brilliancy of flame. The difficulty is much greater with lamps that are subject to motion and jars, and violent and ever-varying currents of air.

To secure the desired results in burners for locomotive head-lights, lights for light-houses, and the like, I provide (and in this my invention consists) such a surrounding of the upper portion of the wick-channel with shields, and such a system of perforations to or in these shields, that, in whatever direction the wind may blow, an equitable and constant supply of air is kept up to the blaze, and, if the lamp is upon a locomotive, the same, whether the rate of speed is fast or slow.

In the drawing—

Figure 1 represents a full view of my burner, in elevation.

Figure 2, longitudinal bisection, presenting all the interior parts.

Figure 3, view of the upper and detachable portion, with some parts of the front outer walls broken away, to represent the relation of parts within, and their structure and provisions.

Figure 4, a cross-section of the parts on the line *x x*.

Letter A is the outer wall of the wick-channel, (see fig. 2.)

Letter B, a metal shield, closing around the tube A at *z*, and extending upward, the form and termination of which fig. 2 well illustrates.

Letter C is an inner shield, having its base with that of B, and, rising upward in a line different from that of B, rests its upper edge in a groove in the inner side of B, near its top, (see fig. 2.)

D, a deflector, whose base rests in the same groove as the upper edge of C.

E, a series of perforations through the walls of the shield B, near its base.

F, like perforations in this shield near its top.

G, a series of perforations, very numerous, and distributed throughout the central portion of shield C.

The space between the shields B and C provides a reservoir, from which air is constantly fed, through the perforations G, to the flame, openings E and F operating as hereinafter described.

In operation the philosophy of my invention is this, viz:

Supposing the currents of air are strongly upward, there can be no very considerable undue pressure thereof upon the blaze, for relief would be had by the passage of air outward through the perforations E; or, should it be that strong currents of air were tending downward around the burner, forcing an over supply through the openings F, relief would come from the passage of a portion thereof outwardly through the perforations E, while at all times a sufficiency of air would pass inwardly, through the openings G, to supply that character of combustion which affords the greatest amount of illumination. Hence we see that, upon a locomotive, sudden motions, variable currents, from rapid or slow speed or other causes, will not interfere with or prevent that sufficient and constant supply of free air requisite to a constantly brilliant illumination.

As a consequence, in addition to the ever strong and clear light, the reflectors and chimneys are clean of smoke, so that little or no illuminating power is lost from this source.

Equally advantageous will my device be found for light-house illumination, or wherever the lamp may be exposed to strong or greatly fluctuating currents of air.

The number and size of the perforations in the shields B and C, and the relative capacity of those in shield B, as compared with those in shield C, can be determined only by trial. As a general rule, it may be said that in these respects the outer shield B should somewhat surpass the inner shield C.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The shield B, provided with the series of perforations E and F, and the shield C, provided with the perforations G, each in relation to the other, as described and set forth.

2. The combination of the detachable shields B and C with the wick-tube A, as specified.

3. The combination of the shield B, shield C, and deflector D, as specified.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

AARON C. VAUGHAN.

Witnesses:

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