

*A. C. Vaughan-Head Light for Locomotives.*

PATENTED

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FIG. 1.

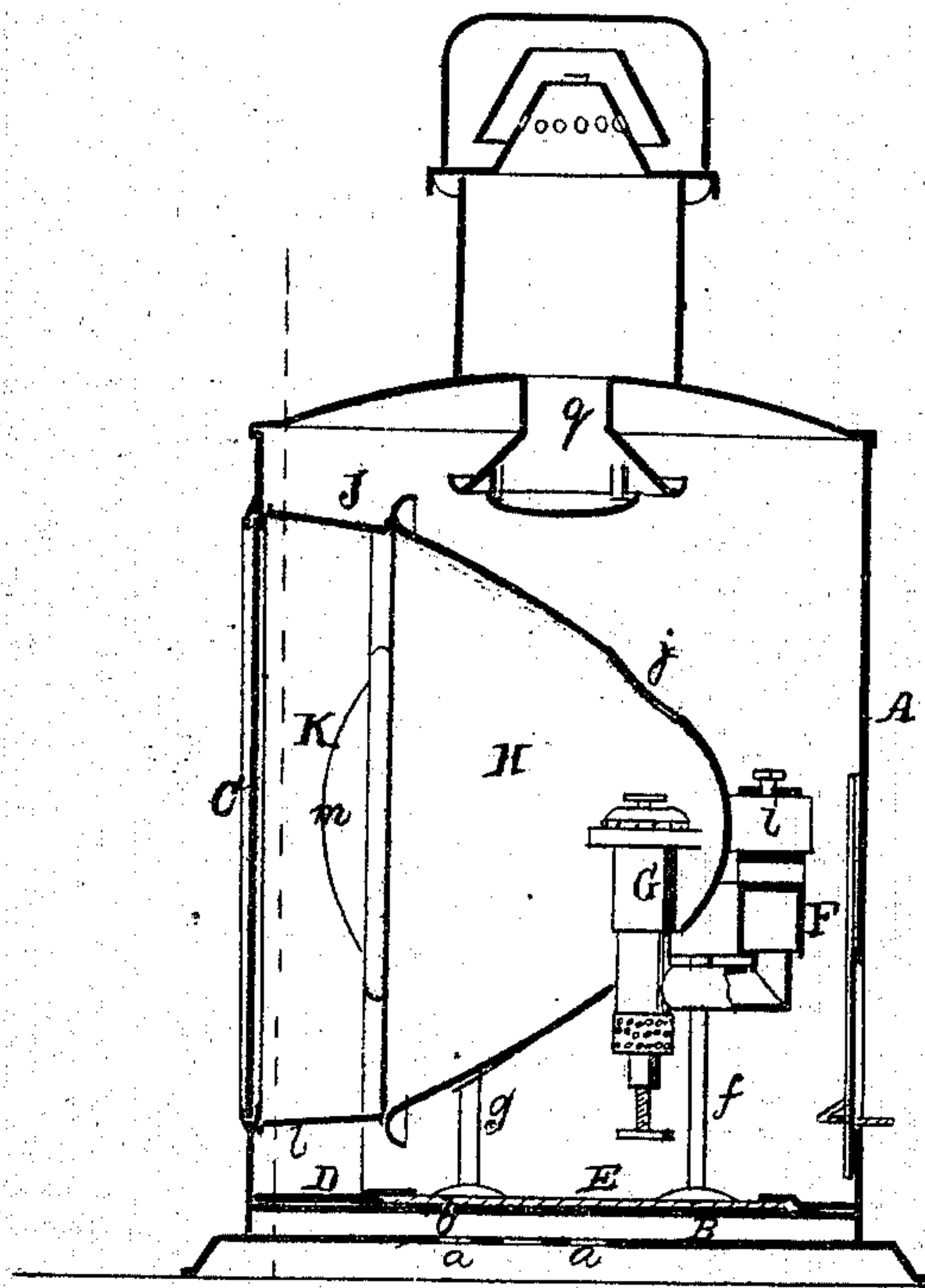
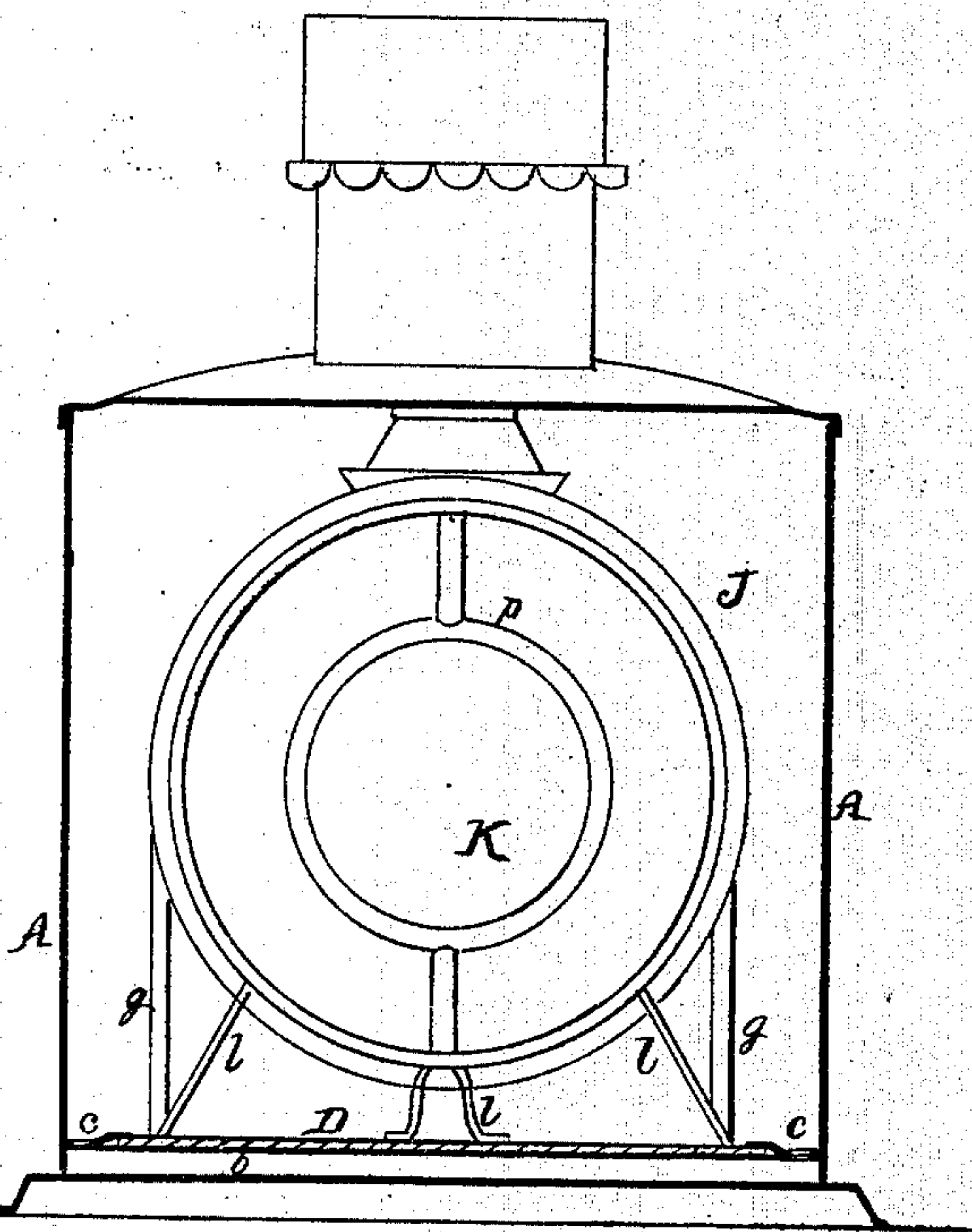
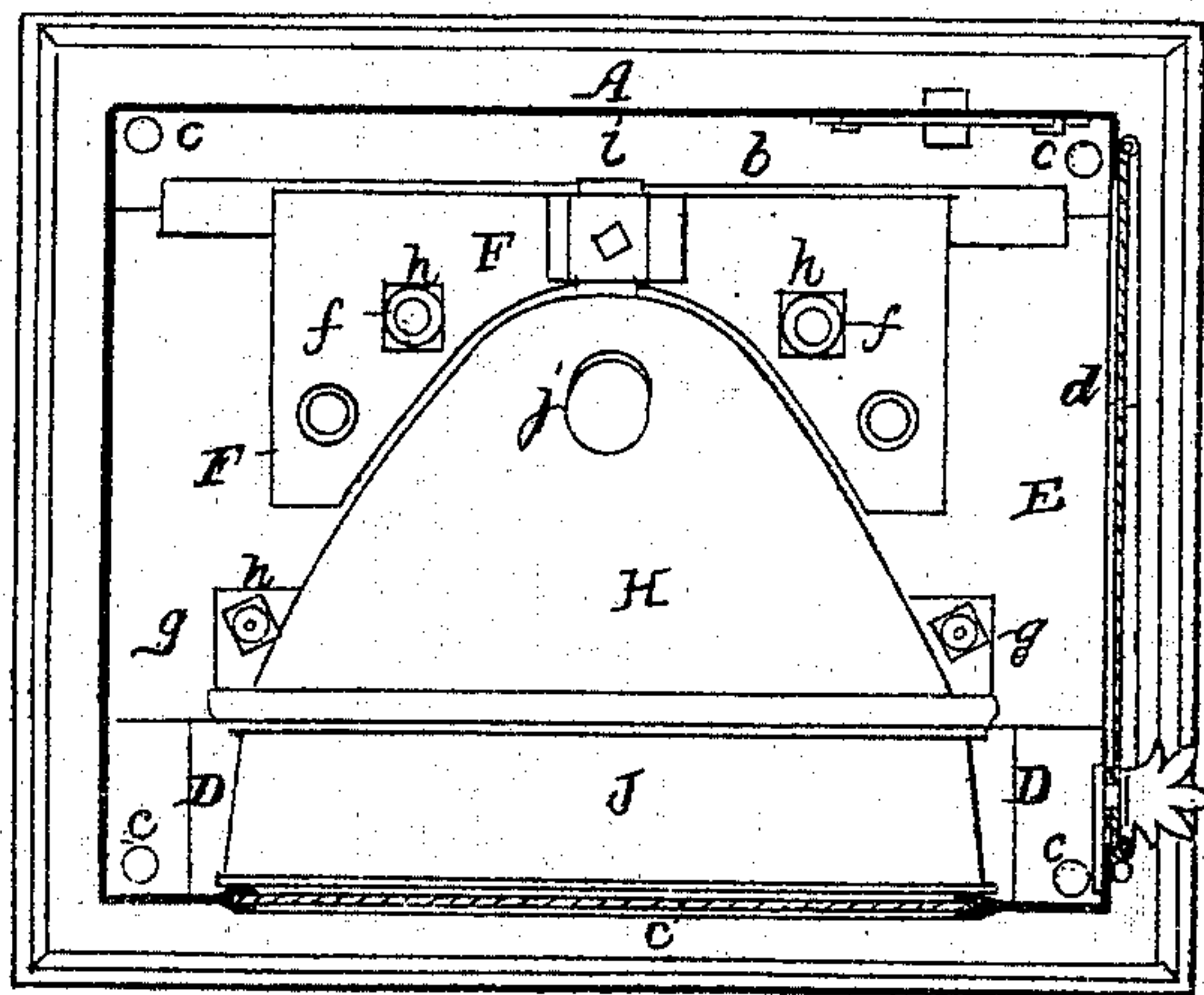


FIG. 2.



*FIG. 3.*



*Witnesses*

Witnesses { Wm Albert Luel.  
John Parker.

A. C. Vaughan  
By his attorney  
H. Howson



# United States Patent Office.

AARON C. VAUGHAN, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 71,431, dated November 26, 1867.

## IMPROVEMENT IN HEAD-LIGHTS FOR LOCOMOTIVES.

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

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, A. C. VAUGHAN, of Philadelphia, Pennsylvania, have invented certain Improvements in Head-Lights for Locomotives; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists of certain improvements, fully described hereafter, in the head-lights of locomotives, whereby the railroad-track is illuminated more intensely and to a greater distance than by the ordinary head-lights; the lamp-burner being at the same time protected from the injurious effects of sudden gusts of wind.

In order to enable others skilled in the art to make and apply my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a vertical section of my improved head-light for locomotives.

Figure 2, a front view of the same partly in section; and

Figure 3, a plan view, with the outer casing in section.

Similar letters refer to similar parts throughout the several views.

At the base of the casing A of the head-light is a chamber, B, in the bottom plate of which are holes, *a a*, and in each corner of the plate *b* which forms the top of the chamber is a hole, *c*, figs. 2 and 3, for a purpose described hereafter. In the front of the casing A is the usual circular opening C covered by a plate of glass, and on the side of the casing is a hinged door, *d*, fig. 3. Two plates, D and E, are introduced into the casing through the door *d*, and rest upon the top plate *b* of the chamber B, the edges of the plates being in contact with each other, and being adapted to suitable guides on the said top plate *b*, as shown in figs. 1 and 2, so that the plates and their attachments may be withdrawn from and replaced in the casing, at pleasure. Four vertical screw-rods, *f f* and *g g*, are secured to the sliding plate E, and the two former pass through an oil-reservoir, F, which is secured to the rods by means of the nuts *h*, figs. 1 and 3. Connected to the reservoir F is a lamp-burner, G, similar to that for which I am about to apply for Letters Patent, or any other suitable burner may be used. The rods *g g* serve to support the polished metal reflector H, which is also secured by means of its rear projection *i* to the oil-reservoir F, as shown in figs. 1 and 2. The reflector is of the usual parabolic form, and through an opening near its rear end passes the lamp-burner above referred to; an opening, *j*, being cut in the reflector immediately above the burner for the admission of the upper end of the ordinary glass chimney.

From the front edge of the reflector H to the opening C in the casing A extends a polished reflecting-band, J, secured to the plate D by stays, *l l*, or otherwise, the said band being slightly concave or flaring on the inside, and of a somewhat larger diameter in front than at the rear. A lens, K, convex on the front side *m*, and slightly convex on the opposite side, is held in a frame, *p*, and is suspended in a position concentric with the band J at the end of the same nearest to the reflector H, figs. 1 and 2. Air is admitted to the chamber B through the holes *a a* in the bottom plate of the casing, and passes thence through the corner holes *c c* into the interior of the casing. The air is thus more evenly distributed, the casing and its contents maintained in a cooler state, and the burner more effectually protected from the effects of sudden gusts of wind than if the air were admitted at one or more central points as usual, and without first passing into a distributing-chamber. The heated air and gases pass off through the flaring tube *q*, and through the usual ventilator at the top of the casing.

I have found that by the use of a lens within or adjacent to the front edge of the reflector, substantially as above described, the railroad-track is more intensely lighted and to a greater distance than when a reflector without the lens is employed. I have also found that the illumination of the track is increased, both as regards distance and intensity, by the flaring reflecting-ring in front of the lens; so much so, indeed, that the track is lighted to a distance of about four hundred yards from the head-light, instead of for the usual distance of about a hundred yards.

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

1. The combination of the burner of a locomotive head-light, a parabolic reflector, and a lens situated within or adjacent to the front edge of the reflector, substantially as and for the purpose described.
2. The reflecting flaring-ring J arranged in front of and concentric with the lens, as set forth.

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

AARON C. VAUGHAN.

Witnesses:

CHARLES E. FOSTER,  
W. J. R. DELANY.