

(No Model.)

F. H. SMITH.
VENTILATION OF LAMPS.

No. 297,460.

Patented Apr. 22, 1884.

Fig. 2.

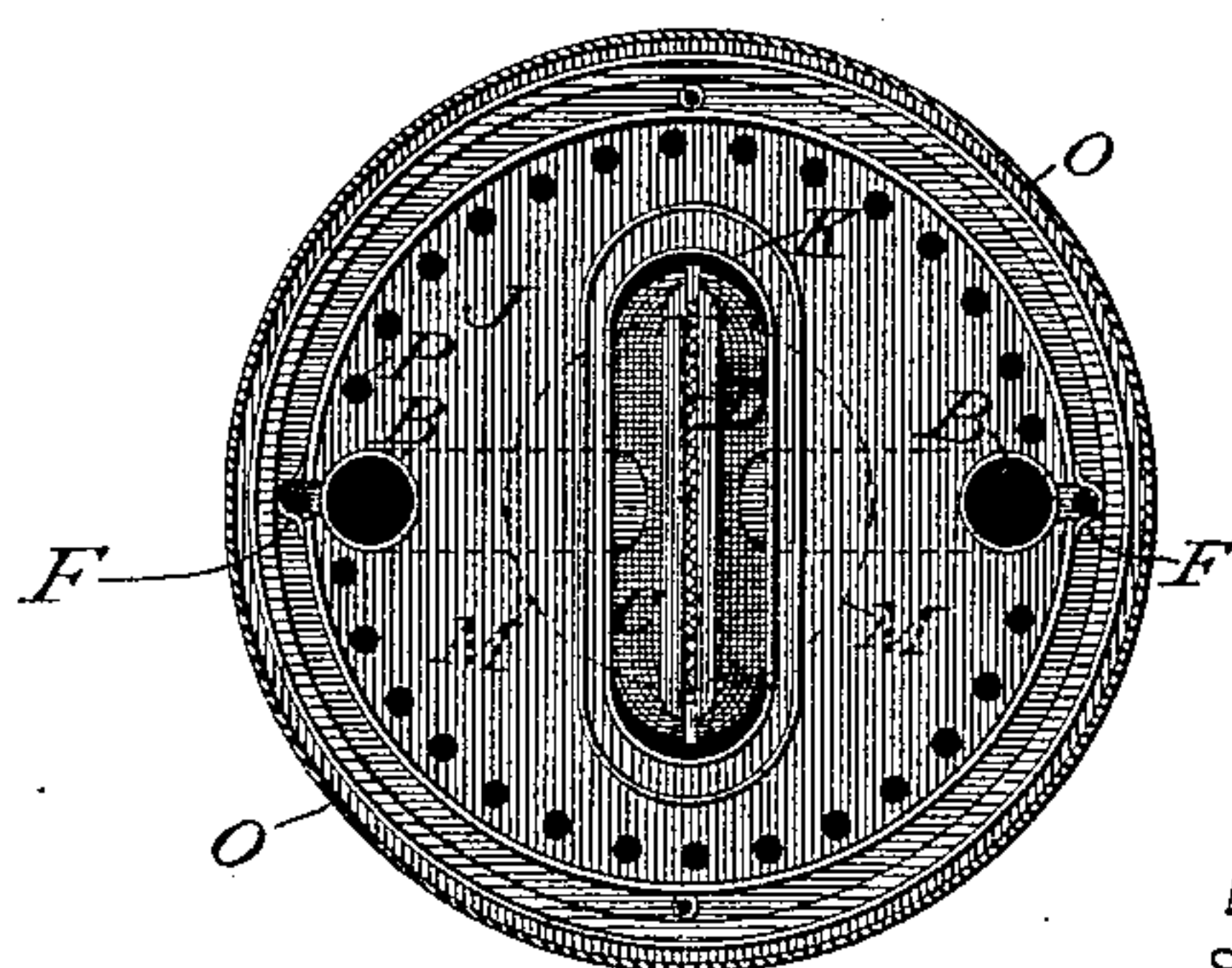


Fig. 3.

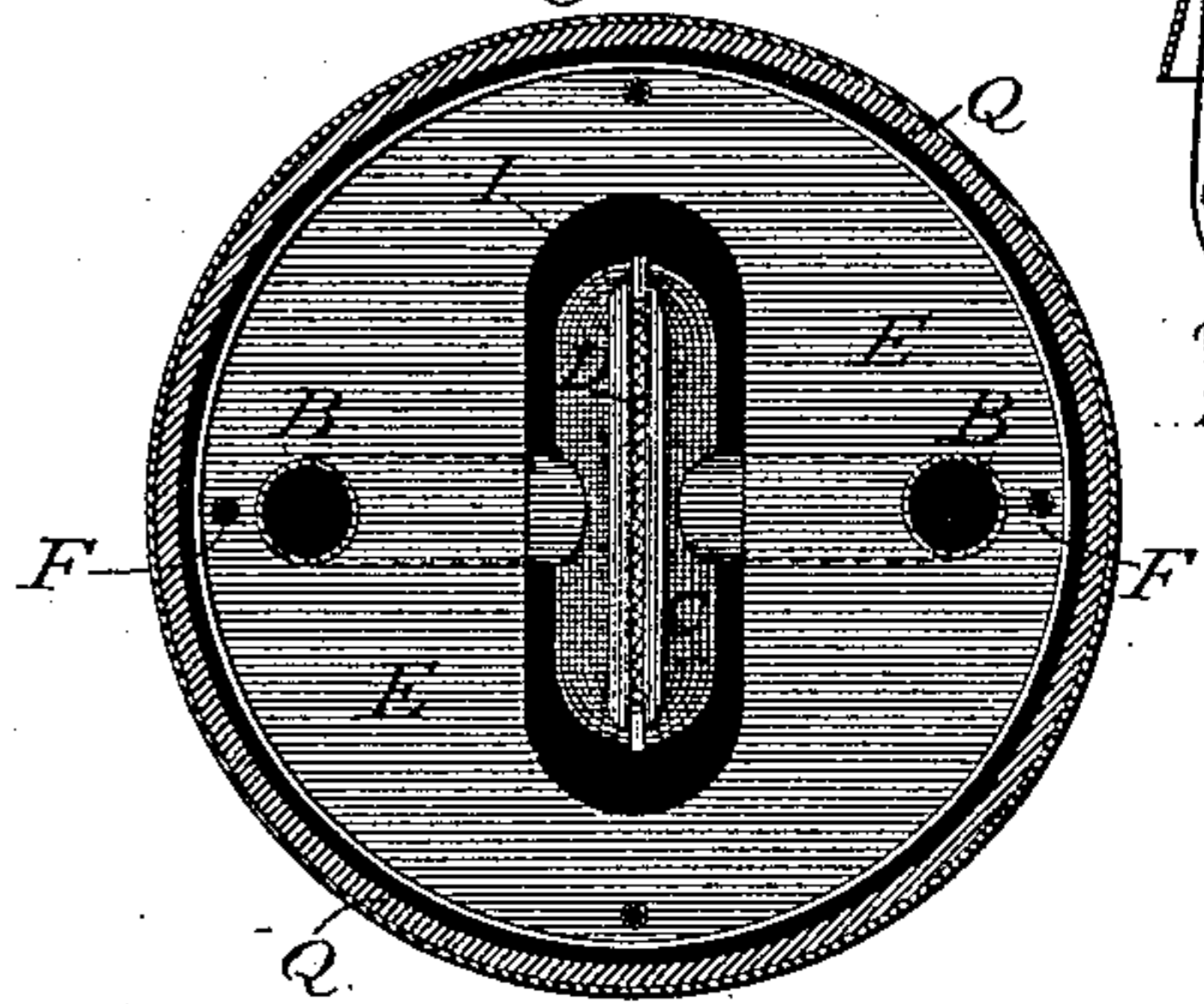
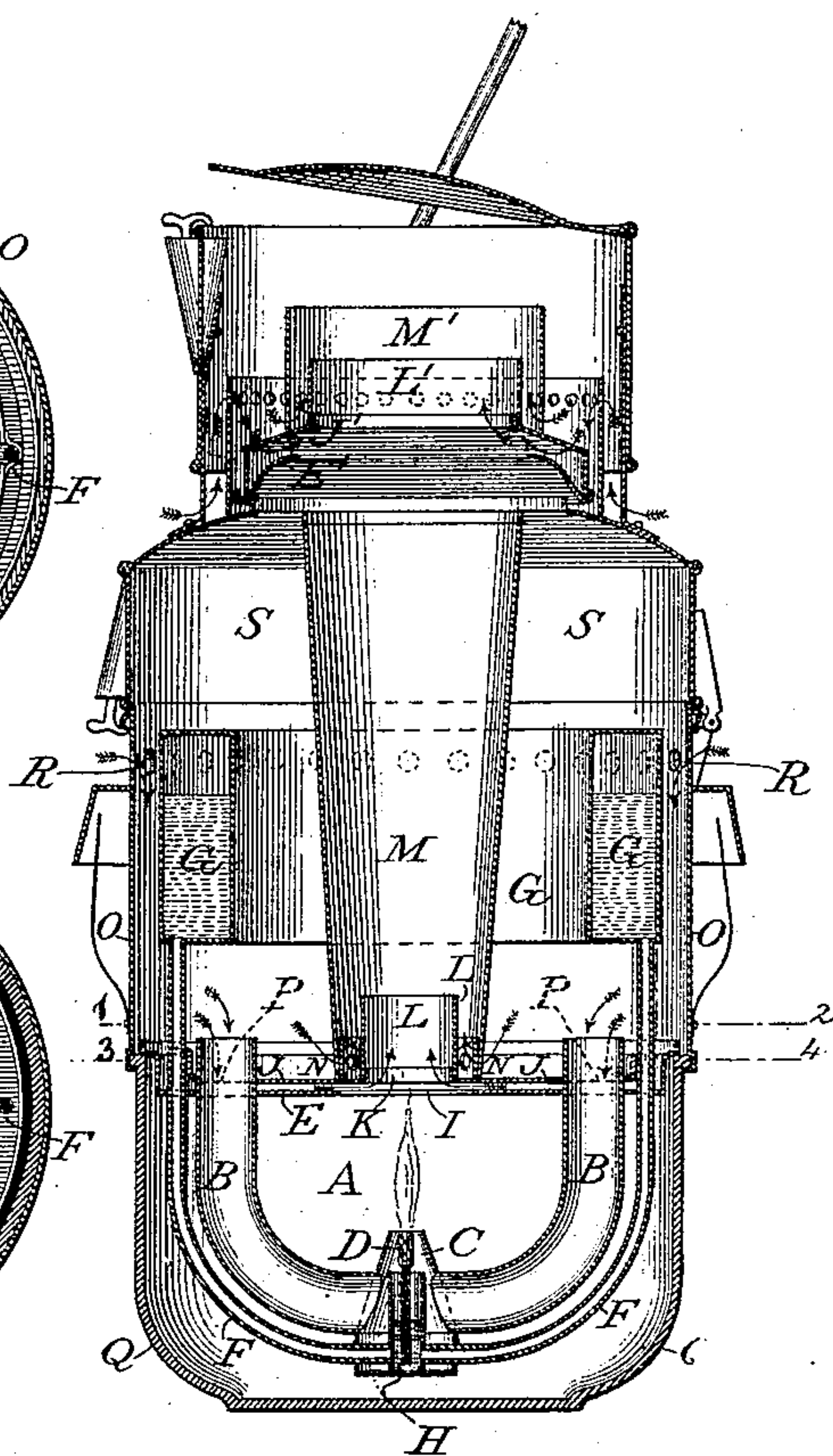


Fig. 1.



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UNITED STATES PATENT OFFICE.

FREDERICK HENRY SMITH, OF WINCHMORE HILL, COUNTY OF MIDDLESEX,
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VENTILATION OF LAMPS.

SPECIFICATION forming part of Letters Patent No. 297,460, dated April 22, 1884.

Application filed February 19, 1883. (No model.) Patented in England October 22, 1881, No. 4,638.

To all whom it may concern:

Be it known that I, FREDERICK HENRY SMITH, a subject of the Queen of Great Britain, and residing at Winchmore Hill, in the county of Middlesex and Kingdom of Great Britain, have invented certain new and useful Improved Arrangements and Appliances for Ventilating Inclosed Lamps, Burners, Stoves, &c., (for which I have obtained Letters Patent in Great Britain, dated October 22, A. D. 1881, No. 4,638;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates, especially, to the ventilation of railway and other inclosed lamps, and has for its object the prevention of the introduction into such lamps of drafts or currents of air in such manner as to cause the mounting up or increasing of the flame, so that it becomes dull and smoky and heats the metallic parts of the lamp, the oil-cistern and its contents to an inconvenient and injurious extent, which effects take place in such lamps constructed as heretofore. The invention is, however, generally applicable to the ventilation of all kinds of closed gas lamps, stoves, and burners, as well as to houses, chambers, kilns, railway-carriages, and other closed vehicles or places where it is required to remove warm or vitiated air from a given space, and to introduce cold or fresh air thereinto in place of the said warm or vitiated air. It may also be applied to fire stoves, grates, furnaces, and other such like purposes.

In order that the said invention may be most clearly understood, I will now proceed to describe the same by the aid of the accompanying sheet of drawings.

My invention as applied to railway and other similar lamps adapted to burn mineral oils consists of the arrangements illustrated in Figures 1, 2, and 3, in which—

Fig. 1 is a vertical section of such a railway-lamp; and Figs. 2 and 3, sectional plans on lines 1 2 and 3 4, respectively, of Fig. 1, Fig. 2 with the chimney M removed, and Fig. 3 with chimney M and false cover J removed.

An ordinary lamp, A, furnished with the usual air pipe or pipes, B B, extending from

the dome C of the burner D to the space above the reflector E, and with the usual pipe or pipes, F F, connecting the oil reservoir or tank G with the bird-fountain reservoir H, belonging to the burner, is fitted with a reflector, E, above the burner, somewhat in the usual way, such reflector having an opening, I, through its middle part over the said burner; but such opening I is not fitted directly with a chimney. The aforesaid air and oil pipes B B and F F pass through the said reflector E much in the usual way. Above this reflector, and at a distance therefrom varying according to the size of the lamp and other circumstances, is placed a false cover, J, of a shape somewhat similar to that of the reflector E below it, and having a central opening, K, therein, concentric with but rather smaller than that in the reflector E, so that the edges of the opening K in the upper or false cover, J, project or sail over those of the opening I in the reflector E.

The central opening, K, in the false cover J has a short neck or chimney, L, attached to it, and externally to such neck or chimney is placed a second and taller chimney, M, through the base of which are sometimes formed perforations N N, for conveying air into the space between the outer chimney, M, and the inner short neck, L. Through this neck L and chimney M the products of combustion pass off from the burner. The outer edge of the false cover J is bent so as to form a rim which fits and rests on the upper side of the reflector E; or the false cover J may be supported above the reflector E by other suitable means. The false cover J is perforated near its outer edge with several holes, P P, for the admission of cold air into the space between the said false cover J and the reflector E. The outer casing, O, carrying the glass shade Q, into which the lamp is fitted, is perforated at its upper edge with holes R R, which by preference occur opposite to the oil chamber or tank G. The casing is also provided with the usual hinged cover, S.

The action of the arrangement is as follows: When the burner D is lighted, the air to support combustion enters it by the air-pipes B B in the usual way, and the heated products of combustion pass up through the opening I in the

reflector E and the opening K in the false cover J into the neck L and chimney M, and in so doing they cause an induced current of cold air to enter by the holes R R in the outer casing, O. This current is deflected by the oil-tank G, and passes down the inside of the outer casing, O, part going to the burner D by the air-pipes B B and part to the holes P P round the outer edge of the false cover J, passing through them into the space between the false cover J and the reflector E, and converging toward the central openings in the same, passing thence into the neck L in a thin sheet spread round the inside thereof, and inclosing within it the column of heated gases arising from the burner in such a way as to isolate such hot gases from the chimney, and to prevent the undue heating of the latter. A similar effect is produced on the reflector E and false cover J by the passage of the current of air between them. A current of cold air also passes through the holes N N in the base of the chimney M (when it is found necessary or desirable to employ such holes) into the space between the said chimney and the inner neck, L, where it is deflected upward and mingles with the aforesaid thin sheet of cold air coming from between the reflector E and the false cover J. The directions of these various currents of air are shown by the arrows in Fig. 1. By these means an injurious and disturbing draft of air is altogether avoided, as the induced currents produced by the improvements above described are forced to follow the course best adapted to produce the desired effects of maintaining the lamp cool and the light steady and uniform, and a more perfect combustion is thereby effected.

Although the above arrangements have been described in relation to a mineral-oil lamp, they are applicable by suitable modifications

to lamps consuming colza and other oils or gas, and to lamp-cases or inclosed stoves generally. The application to lamp-cases is also shown in the upper part of Fig. 1, where E', J', L', and M' represent, respectively, parts which act in a manner similar to the corresponding parts, E, J, L, and M, in the lower part of the same figure, currents of air being induced by them from outside the casing and conducted into the central orifice, as shown by the arrows, so as to surround and isolate the heated products of combustion from the metallic parts, for the purpose of keeping the latter cool.

I claim—

In inclosed lamps or burners, the reflector E, having an opening, I, in the center thereof, not fitted directly with a chimney, the false cover J, having a central opening, K, therein, concentric with but smaller than the opening I in the reflector E, the short neck or chimney L, attached to the false cover J, and the chimney M, external to the short neck or chimney L, the whole constructed, arranged, combined, and operating so that the heated products of combustion emanating from the said lamp shall induce currents of air to be drawn in through the holes or openings R in the outer casing, and be caused to traverse the spaces between the reflector E and the false cover J, and between the short neck or chimney L and the longer chimney M, substantially as hereinbefore described, and illustrated in Figs. 1, 2, and 3 of the drawings, and for the purpose specified.

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