(No Model.) 2 Sheets—Sheet 1.

J. F. SHALLIS & T. C. J. THOMAS.

LAMP FOR LIGHTING RAILWAY CARRIAGES.

No. 254,708. Patented Mar. 7, 1882.

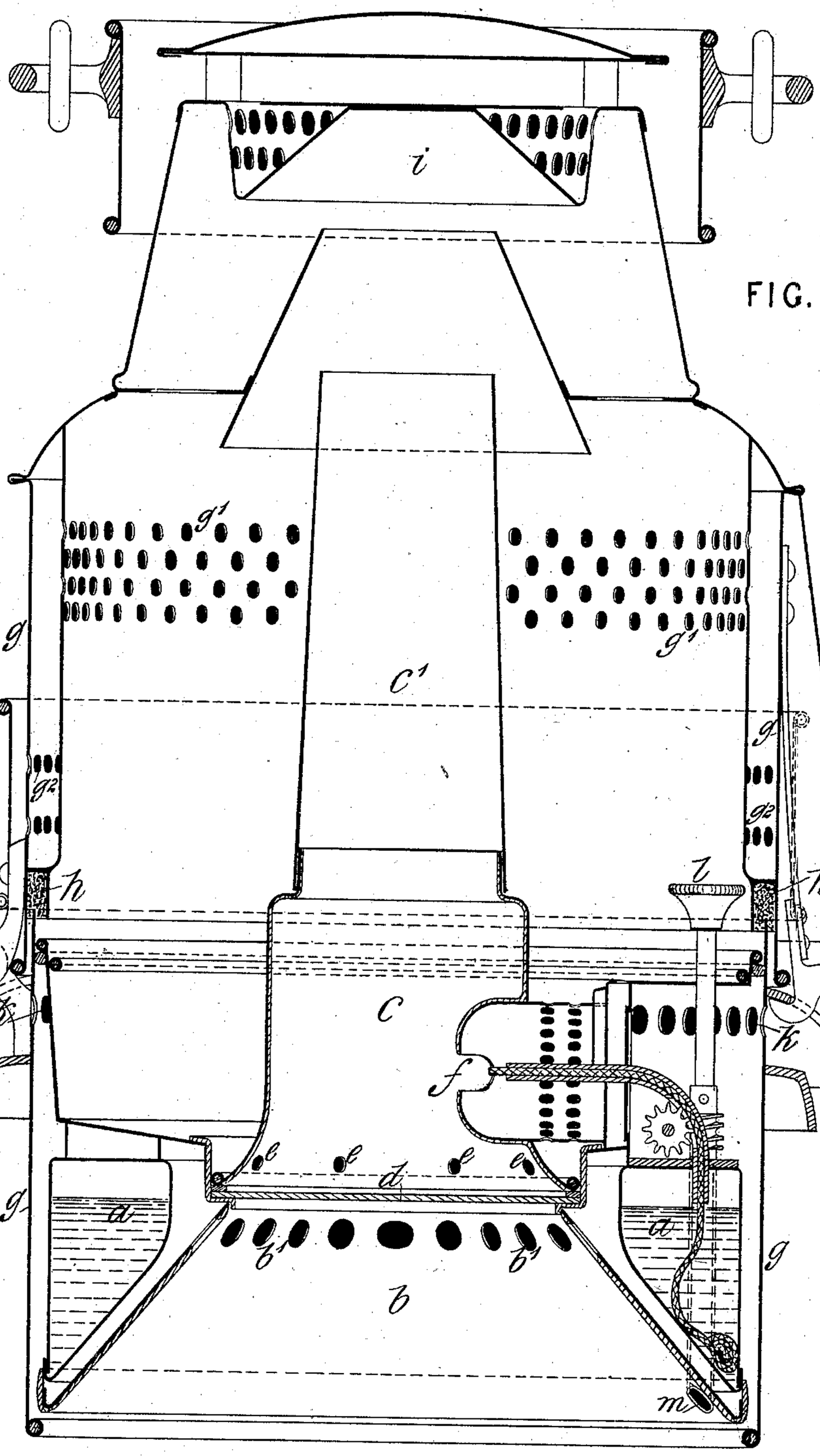


FIG. 1.

Witnesses,
Jno. R. Young
Robert McMeen

Inventors.
John Fuller Shallis
Thomas C. J. Thomas
per W. H. Doolittle, Atty.

(No Model.) 2 Sheets—Sheet 2.

J. F. SHALLIS & T. C. J. THOMAS.

LAMP FOR LIGHTING RAILWAY CARRIAGES.

No. 254,708. Patented Mar. 7, 1882.

FIG. 2.

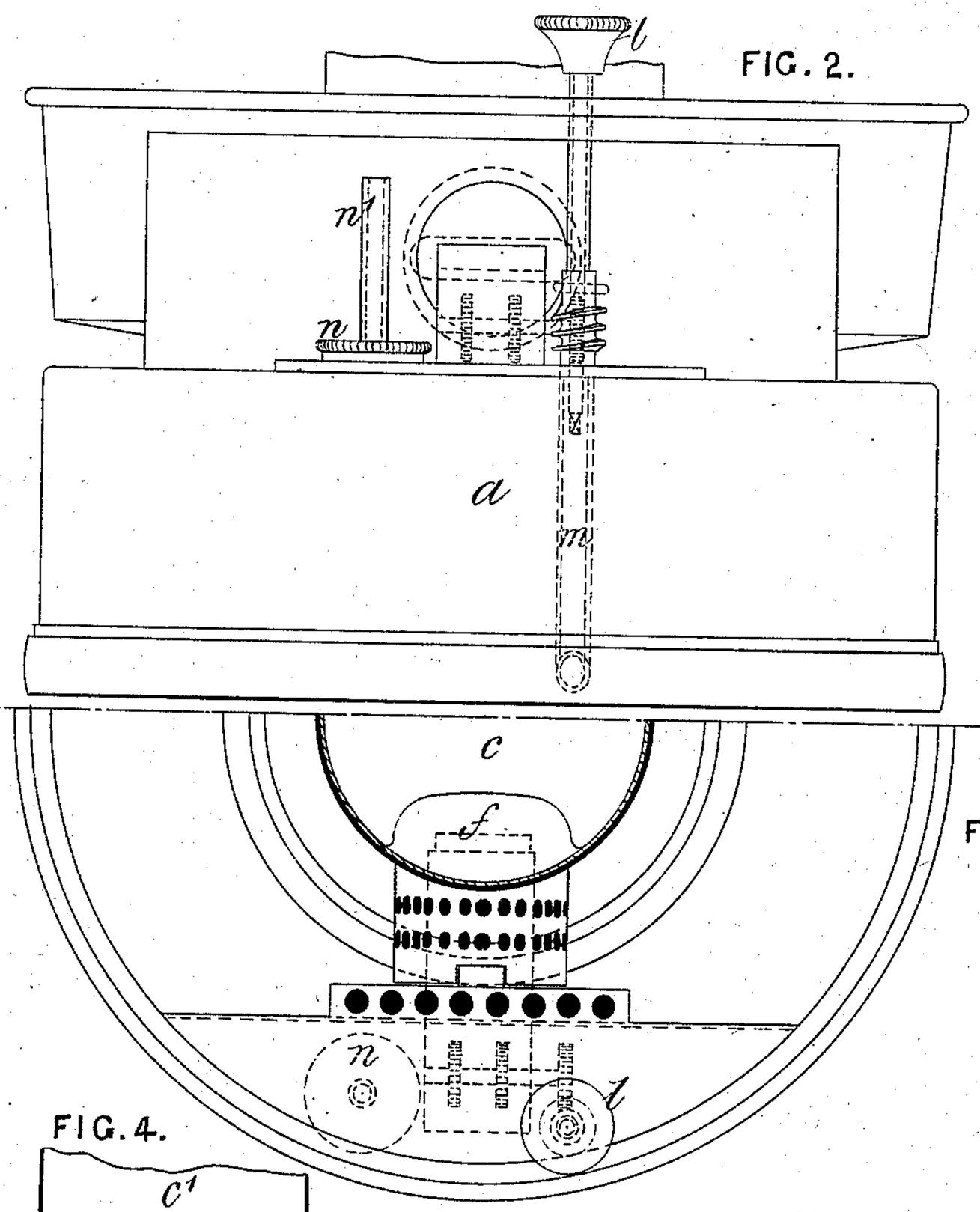


FIG. 3.

FIG. 4.

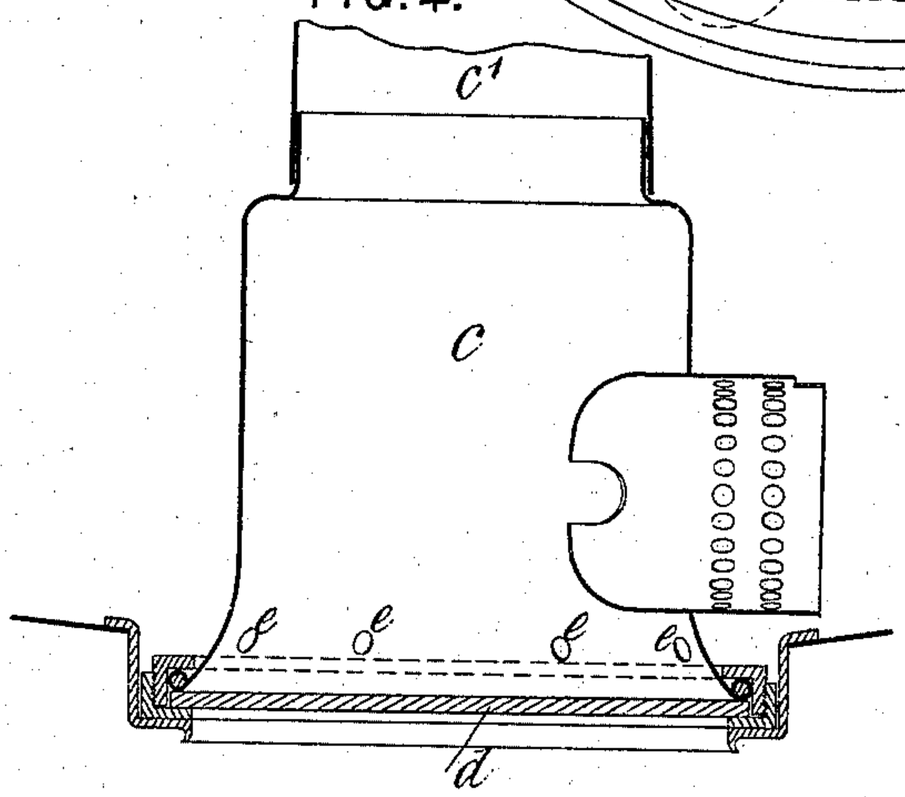
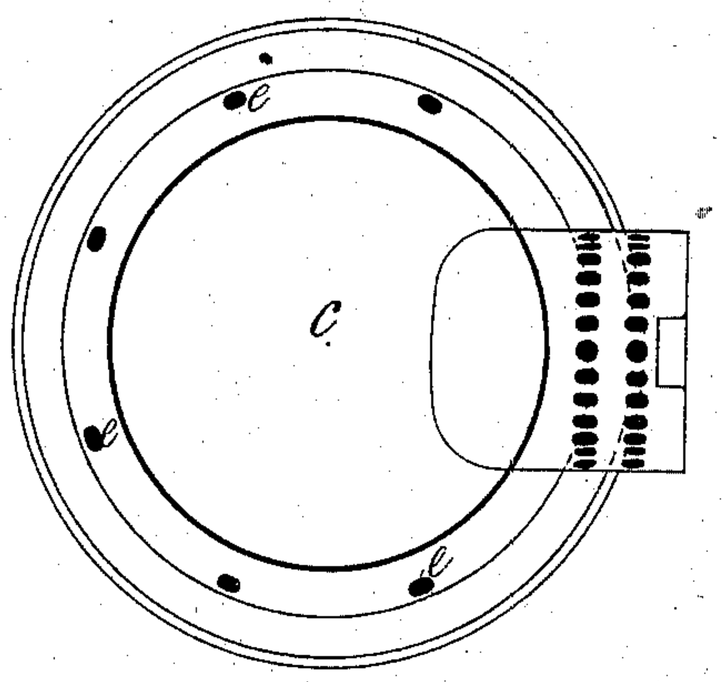


FIG. 5.



Witnesses,
Jno. R. Young
Robert W. Green

Inventors,
John Fuller Shallis
Thomas C. J. Thomas
per W. A. Doolittle, Atty.

UNITED STATES PATENT OFFICE.

JOHN F. SHALLIS AND THOMAS C. J. THOMAS, OF THE MINORIES, LONDON, ENGLAND.

LAMP FOR LIGHTING RAILWAY-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 254,708, dated March 7, 1882.

Application filed November 29, 1881. (No model.) Patented in England August 16, 1881.

To all whom it may concern:

Be it known that we, JOHN FULLER SHALLIS and THOMAS COOPER JOHN THOMAS, subjects of the Queen of Great Britain and Ireland, residing at the Minories, in the city of London, Kingdom of Great Britain and Ireland, have invented new and useful Improvements in Lamps or Apparatus for Lighting Railway-Carriages and for other purposes, (for which we have obtained a patent in Great Britain, No. 3,564, bearing date August 16, 1881, whereof, however, the final specification is not yet filed,) of which the following is a specification.

This invention has for its object improvements in lamps or apparatus for lighting railway-carriages and for other purposes.

In lamps according to our invention the oil or spirit is contained in an annular reservoir or receptacle surrounding, or partly surrounding, a reflecting-chamber, above which is a combustion-chamber having below it a transparent diaphragm or closure to exclude draft. The said combustion-chamber is provided with holes to admit air for supporting combustion; also, this combustion-chamber has a metal chimney, and the reflecting-chamber below the transparent diaphragm is or may be provided with holes to allow the escape of heat. One arrangement of the reflecting-chamber is in the form of a truncated cone, with its axis vertical; but it may be parabolic or otherwise shaped in vertical section, and in cross-section it may have a polygonal or other figure. The light is produced at one or more burners arranged in a horizontal or an inclined position over the reflecting-chamber, the burner or burners being set above the level of the oil or spirit and protruding into the combustion-chamber. The case and cover of the lamp are so arranged as to produce an efficient ventilation to keep the reservoir cool and to carry off the vapor of any spirit that may escape or be spilled. The transparent diaphragm below the combustion-chamber may be in some part of the reflecting-chamber or between the two chambers. A bowl of clear or ground or opal glass, which may or may not contain liquid, may be used, or a lens or lenses or a prism or prisms to direct or disperse the light may be employed in place of or in conjunction with the transparent diaphragm; also, lamps according to our invention, as above described, may be modified so as to use gas instead of oil or spirit. We make lenses according to our invention for directing or dispersing light from lamps of the improved kind above described of glass coated or covered with opal, and such lenses may also be used in connection with lighting apparatus of other descriptions, including apparatus for lighting with gas.

In the accompanying two sheets of drawings, Figure 1 is a vertical section of one of our improved lamps. Fig. 2 is an elevation showing the oil or spirit containing reservoir and reflecting-chamber, as seen when lifted out of the lamp-casing. Fig. 3 is a half-plan of the same. Fig. 4 is a vertical section of the combustion-chamber, and Fig. 5 is a sectional plan of the said chamber.

a is an annular reservoir containing the oil or spirit for supplying the burner and surrounding a reflecting-chamber, *b*, above which is a combustion-chamber, *c*, having below it a transparent diaphragm, *d*, to exclude draft.

c' is a metallic chimney.

e e are holes in the chamber *c* to admit air for supporting combustion, &c. The reflecting-chamber is also provided with holes *b'*, to allow of the escape of heated air, and in the arrangement shown is in the form of a truncated cone, with its axis vertical; but, as already stated, it may be parabolic or otherwise shaped in vertical section, and in cross-section it may have a polygonal or other figure.

f is the burner, which in this case is shown as arranged in a horizontal position over the reflecting-chamber; but, instead of being horizontal, the burner or burners may, as already stated, be inclined to the horizontal. The burner protrudes into the combustion-chamber *c*, as shown.

g is the outer casing of the lamp, in which the parts just described are carried or suspended. It is provided with holes *g'* and g^2 in its

upper part for ventilation, and is formed double, as shown, to prevent draft.

h is a packing for preventing admission of air when the upper portion of the case is closed on the lower.

i is the cover.

k are holes to admit air for keeping the reservoir cool and to carry off the vapor of any spirit that may escape or be spilled.

l is a screw for feeding the wick when the upper part of the case is opened, but which may also be operated from below by pushing a key through the tube *m* (which passes through the reflector and reservoir) onto a square end of the said screw, as shown more clearly in Fig. 2. Liquid combustible is fed to the reservoir through a hole usually covered by the screwed cap *n*, provided with a tube, *n'*.

o is a spring-catch for keeping the upper part of the case closed upon the lower.

Fig. 4 shows a modification, in which the transparent diaphragm *d* is secured to the bottom of the combustion-chamber instead of being fixed to the top of the reflecting-chamber, as shown in Fig. 1. The inside of the combustion-chamber as well as the surface of the reflecting-chamber are in the example illustrated enameled, and the said reflecting-chamber, combustion-chamber, and oil-reservoir may be lifted bodily out of the lower casing of the lamp, when required.

The lower part or mouth of the reflecting-chamber may, if desired, be provided with a lens for directing or dispersing the light. When such is used we by preference make it in the improved manner hereinbefore described—that is to say, of glass coated or covered with opal. The glass is a lens of suitable form, according to the direction in which the rays of light are to be dispersed, and the outer surface of the glass lens has accurately fitted over it a layer or cover of opal of uniform thickness.

Having now described the nature of the said invention and the manner in which it is to be or may be carried into practical effect, we would have it understood that we do not limit or restrict ourselves to the precise forms shown, as the same may be varied to suit circumstances; but

What we claim is—

1. In a lamp or lighting apparatus wherein oil or spirit is consumed, the combination of a combustion-chamber, a burner or burners projecting through and into the same horizontally or angularly, a metal chimney, a flat transparent diaphragm closing the bottom of the said combustion-chamber, a reflecting-chamber arranged below the combustion-chamber, and a reservoir or receptacle for combustible liquid, substantially as described.

2. In a lamp or lighting apparatus wherein oil or spirit is consumed, the combination of a combustion-chamber having holes to admit air, one or more burners projecting into such chamber horizontally or angularly, a metal chimney, a transparent diaphragm closing the bottom of the said combustion-chamber, a reflecting-chamber arranged below the combustion-chamber and perforated to admit air thereto, and a reservoir or receptacle for combustible liquid surrounding, or partly surrounding, the said reflecting-chamber and in communication with the burner or burners, substantially as described.

3. In a lamp or lighting apparatus, the combination of a combustion-chamber having holes to admit air, a burner or burners projecting into such chamber, a metal chimney, a flat transparent diaphragm closing the bottom of the said combustion-chamber, a reflecting-chamber below the same, a reservoir or receptacle for combustible liquid to supply the burner or burners, and a case or cover arranged to afford efficient ventilation and to keep the above-named reservoir or receptacle cool, and to carry off the vapor of any spirit that may escape or be spilled, all substantially as hereinbefore described and shown.

J. F. SHALLIS.
T. C. J. THOMAS.

Witnesses:
W. LLOYD WISE,
Patent Agent, London.
F. J. BROUGHAM,
Clerk to Mr. W. Lloyd Wise, 7 Whitehall Place, London, S. W.