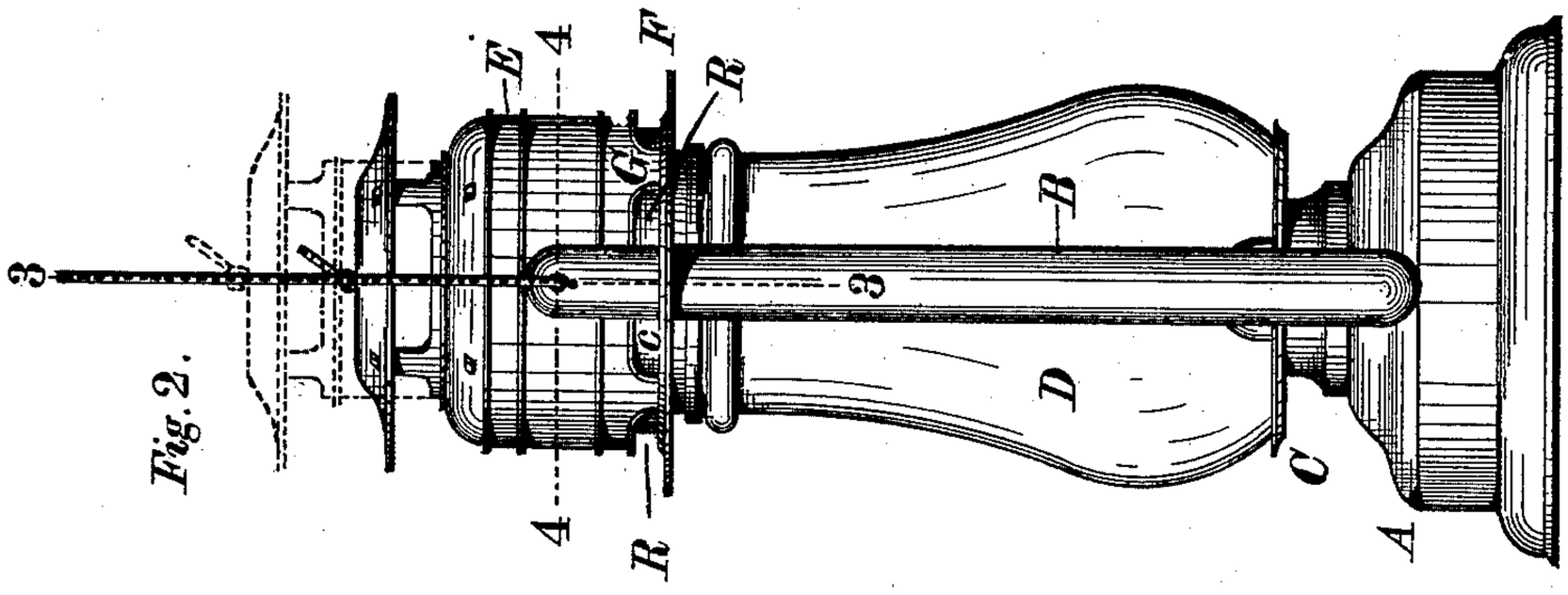
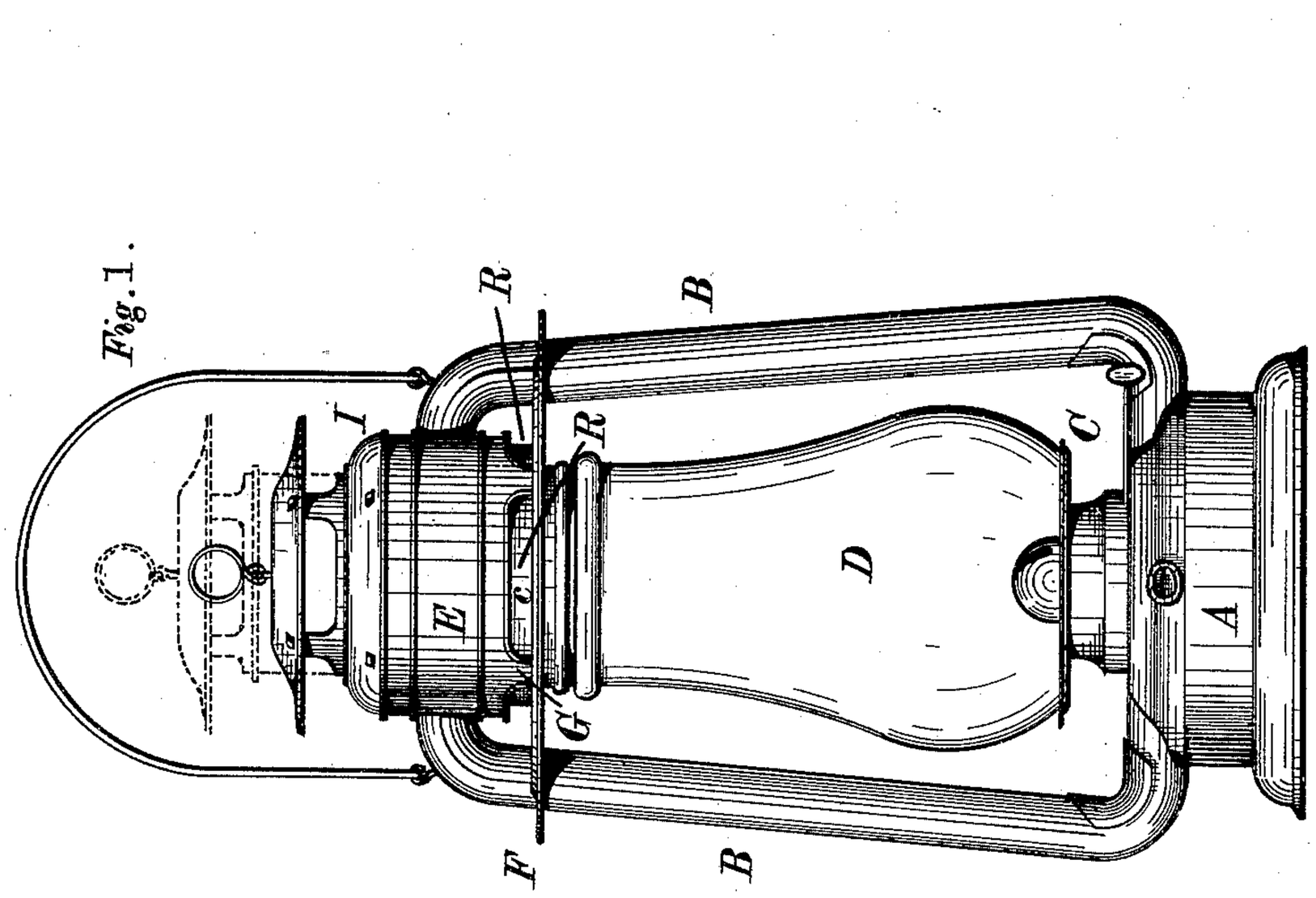
(No Model.) 2 Sheets—Sheet 1.

C. BERGENER.

TUBULAR LANTERN.

No. 378,648. Patented Feb. 28, 1888.





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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

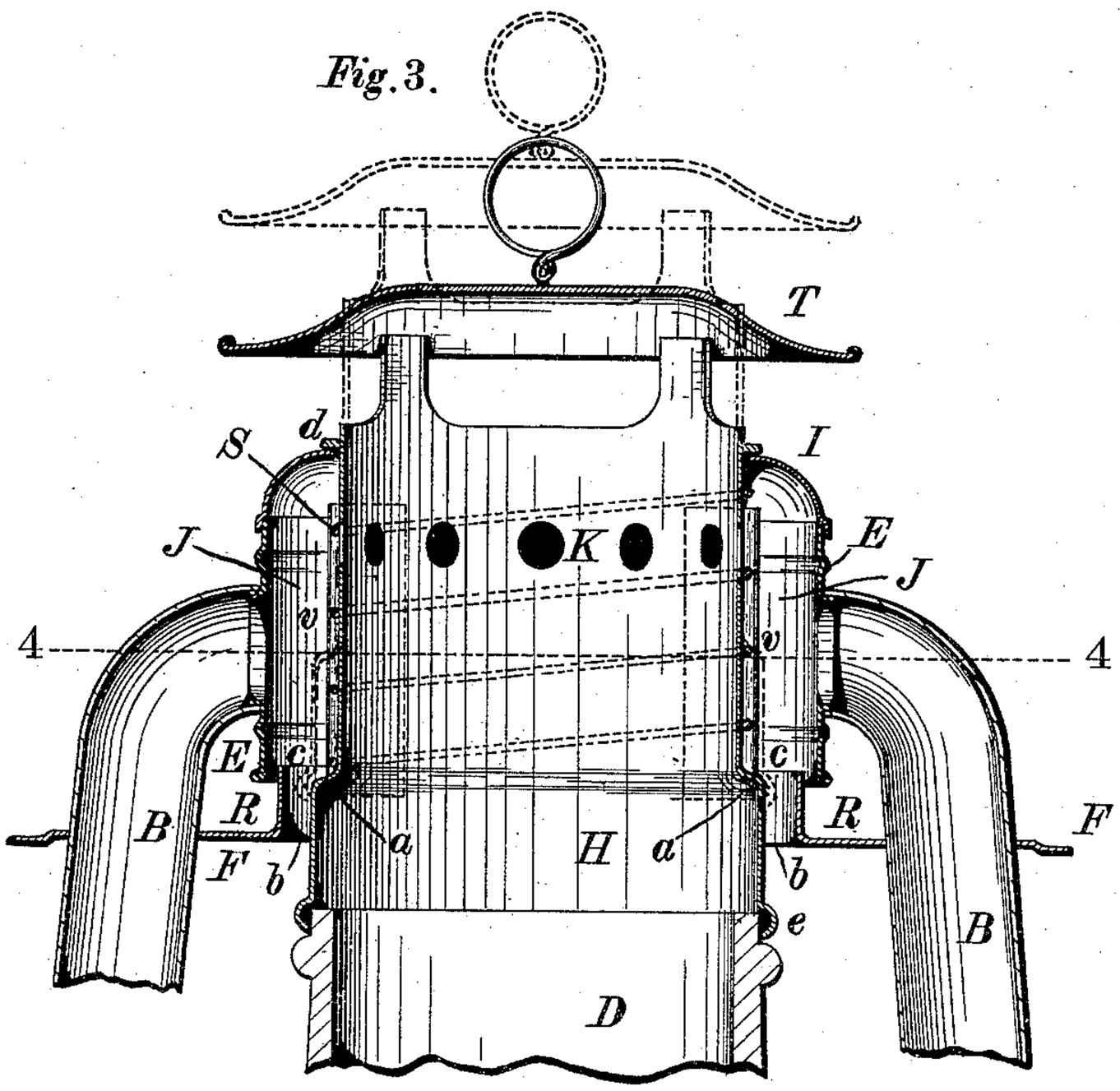
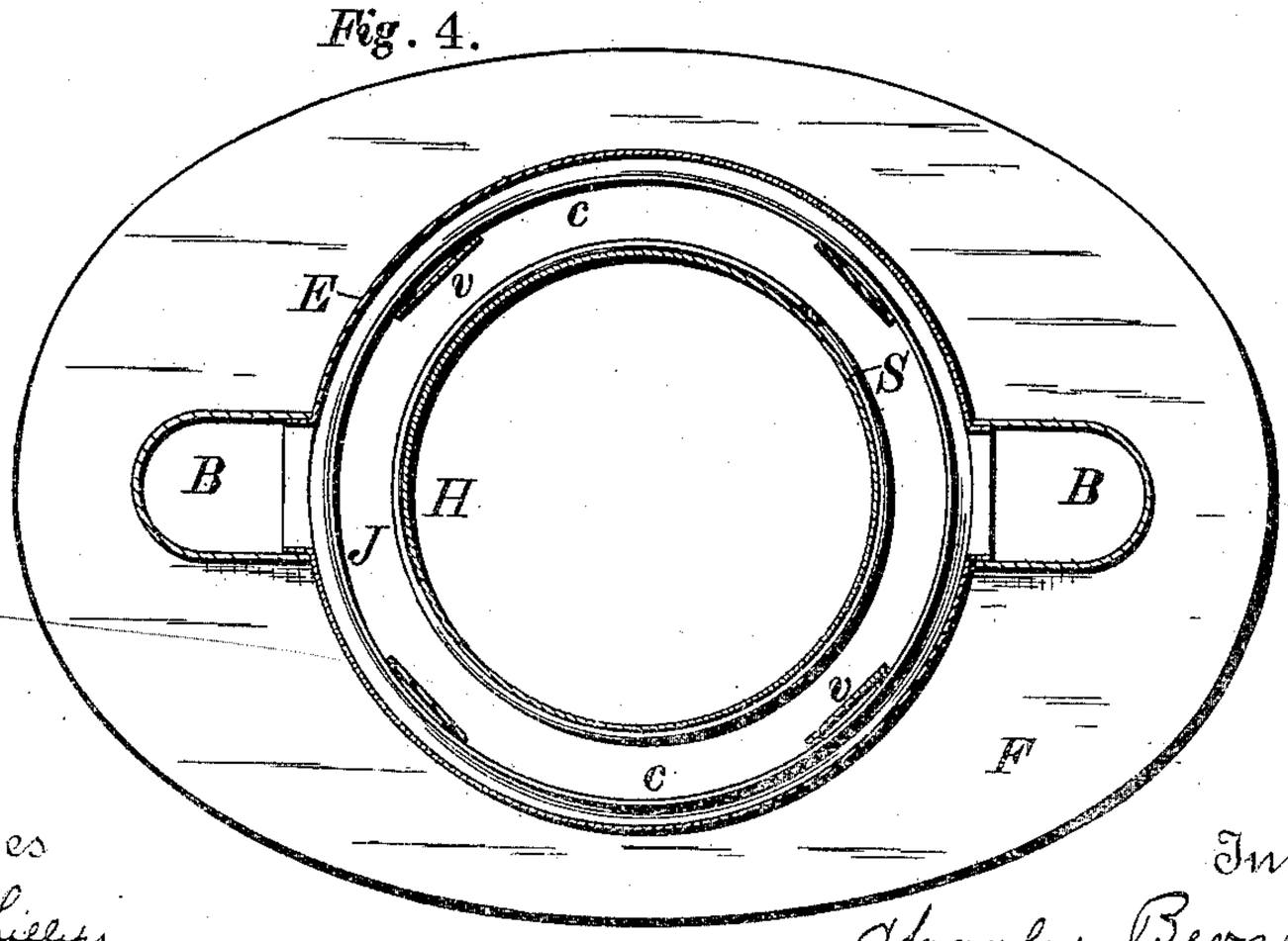


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES BERGENER, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE C. T. HAM MANUFACTURING COMPANY, OF SAME PLACE.

TUBULAR LANTERN.

SPECIFICATION forming part of Letters Patent No. 378,648, dated February 28, 1888.

Application filed July 8, 1887. Serial No. 243,759. (No model.)

To all whom it may concern:

Be it known that I, CHARLES BERGENER, a citizen of the United States, residing at Rochester, New York, have invented certain Improvements in Tubular Lanterns, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to certain improvements in tubular lanterns, having for their object the production of a lantern of improved appearance, cheap in construction, and possessing the capacity of maintaining a constant flame in the highest winds.

My invention is fully described and illustrated in the following specification and accompanying drawings, and the novel features thereof specified in the claims annexed to the said specification.

My improvements in lanterns are represented in the accompanying drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a side elevation taken at right angles to Fig. 1. Fig. 3 is a vertical section through the top of the lantern on the line 3 3, Fig. 2. Fig. 4 is a horizontal section on the line 4 4, Figs. 2 and 3.

In the accompanying drawings, representing my improvements in lanterns, A is the base, which contains the oil-reservoir and wick-tube, and is surmounted by the burner-cone. Suitable air-passages are formed above the oil-reservoir, through which air is supplied to the flame from the descending tubes B B.

The perforated globe-supporting plate C rests on an enlarged portion of the burner-cone, as shown in the drawings, being held in place by the pressure of a spring in the dome of the lantern transmitted through the globe D.

The lantern-dome E is supported by the air-tubes B B, which pass through the stiffening-plate or reflector F. The dome E is provided with projections G, Figs. 1 and 2, which extend through the plate F and are clinched on the under side thereof. Inside the dome is the globe-holding tube H, which is arranged to slide vertically in the inwardly-turned cap I of the dome E, so that the globe can be raised from the burner for lighting, or entirely removed, if desired. It will be observed that an annular air-chamber, J, closed at top, is formed between the dome E and tube H, which chamber communicates on each side with the air-tubes B and through the row of perforations K in the tube H with the space inside the tube, near the upper part of the air-chamber. The air-chamber is open at the bottom, an annular opening, *b*, Fig. 3, being left around the lower part of the tube H inside the reflector, which communicates with the space below said reflector and allows the passage of air vertically between the inner margin of the opening in the reflector and the wall of tube H. The dome E does not extend down to the reflector, but terminates above it, so as to leave a space, R, below the lower edge of the dome and above the reflector, whereby is formed a passage for air connecting the space exterior to the lantern and above the reflector with the interior of the dome. A flange, *c*, extends upward from the inner margin of the opening in the reflector. The width of the flange or ring *c* is preferably made at least equal to that of the openings R in the lower part of the dome E, immediately above the reflector; but air is permitted to pass into the annular air-chamber J around the upper margin of the ring *c*, and for this reason the flange *c* should not be placed immediately below the vertical wall of the dome E in case said flange is made to extend as high as the lower edge of said wall, as the air-passage R would be closed by such construction.

The lantern will operate satisfactorily without the flange *c;* but I prefer to employ it, even if its width be made less than as shown in the accompanying drawings.

The number of the projections G, by which the dome is fastened to the reflector, is not material; but in practice I generally use four. The flange *c* may be in one piece with the reflector. The upper part of the annular chamber J is closed by the cap I, within the inner margin of which the tube H slides. A flange or collar, *d*, Fig. 3, on the upper part of the tube H prevents its being forced too far downward by the spring S. This spring has a bearing below on the shoulder *a*, formed on tube H, and at its upper end bears against the inner part of the dome, so that it tends to thrust the tube H and globe D toward the seat of the latter. The compression of the spring is con-

veniently effected by lifting the tube H, as indicated by dotted lines in Fig. 3, which operation permits the easy removal of the globe from the lantern. Above the tube H, and connected therewith in any suitable or preferred way, is placed the usual deflector, T, which permits the escape of the heated gases below it. The tube H is stiffened at its lower end by the bead *e*, which receives the upper end of the globe.

In order to hold the spring S in position, I employ the strips *v v*, Figs. 3 and 4, which extend from the ring *c* to the cap I just outside the spring. The strips *v v* also serve as guides for the tube H. They may be attached to the ring *c* or cap I in any convenient way, as by soldering, or, preferably, by forming tongues on the ends of the strips, which tongues are inserted in openings in the ring or cap and secured in place by bending or clinching.

My improved lantern is not only cheap to manufacture and convenient and durable in practical use, but it possesses the superior merit of burning with a steady flame in the strongest winds. It is also adapted to obviate the ordinary effects of suddenly raising or lowering the lantern, or the effect of sudden downward or upward blasts of air. Thus, if the lantern be lowered so as to cause a moderate upward air-current at *b*, such current would, when it reaches the upper margin of the flange *c*, tend to induce air through the opening R above the reflector, with the effect to diminish the velocity of the original current. Should, however, the current up through passage *b* be exceptionally sudden or strong, the reaction from the upper part of the chamber J would send air out of opening R for the moment, and would to this extent relieve the tubes B from a sudden and disturbing rush of air in consequence of the aforesaid current. If, however, the lantern be suddenly raised and a downflow of air upon and about the whole lantern be thereby produced, the reflector and openings R have another very useful effect. Such currents tend to prevent a regular supply of air to the lantern and to exhaust its contents. Thus, were the reflector absent, a flow of air down around the lantern—such as would be produced by a downward blast of air or by suddenly raising the lantern—would seriously affect the supply of air through the perforated plate C, and might even extinguish the flame. Such sudden downward current would disturb the ordinary conditions also in and above tube H and in chamber I. By the action of the reflector such currents in the vicinage of the lantern-top are arrested, and in a lantern provided with openings R are in part deflected into the lantern-top and tend to counteract the disturbing effect of the exterior down current by supplying air to chambers I and tube H, and thus neutralize the exhausting action of the current passing down and by the top of the lantern. The openings R have therefore a useful function irrespective of the opening *b*, though to secure the full benefit of my improvements both should be used. Heretofore in a tubular lantern external air-tubes have been connected with the outer wall of an air-chamber, and a dome to which the air-tubes were connected has been provided with a flange or skirt, beneath which air was admitted to an annular chamber communicating with the external tubes only; but in no lantern known prior to my improvement have openings been provided above the reflector at the base of the dome, which latter, together with an inner wall or tube, served to include an air-chamber in communication with outer air-tubes, and also with the space within the inner tube immediately over the globe. A dome, spring, sliding tube, and ring have also been combined in a tubular lantern to press upon the top of the globe and hold the same upon its base and yet allow its removal when desired, the structure being such that air admitted under a skirt or flange of the dome entered an annular chamber in communication with the air-tubes, and such constructions are not herein claimed. By the present improvement the tube H is normally seated on the globe, forming an extension thereof, and is open at the top for the free discharge of products of combustion, and is also perforated, as at K, for the passage of air from chamber I, which chamber has air-inlets at the base of the dome above the reflector, and also between the inner edge of the latter and tube H, and is in communication both with the external tubes and with the space within said tube H.

I claim—

1. The combination, with the base, the burner, the globe supported on said base, the reflector, and the side air-tubes of a tubular lamp, of the annular dome E and tube H, the two forming an annular air-chamber, J, closed at top by the dome and open at bottom, said dome E having openings R at its base and immediately above the reflector, and said inner tube, H, being provided with perforations K near the top of the annular chamber, substantially as described, whereby downward currents of air striking the upper side of the reflector are directed into the chamber communicating both with the external air-tubes and the inner tube over the globe.

2. The combination, with the air-tubes of a tubular lantern, of dome E and perforated tube H, the two forming the annular air-chamber J, closed at its top by the dome and open at its bottom, said dome having openings R, and the reflector F, having flange *c* around its inner margin, substantially as described.

3. The combination, in a tubular lantern, of tube H, normally forming an extension of the globe, a dome, E, air-tubes secured to said dome and communicating with the space within the dome, and a reflector supported to leave an opening, as *b*, next the tube H and an opening, as R, near the lower margin of the dome, substantially as specified.

4. The combination, in a tubular lantern, of

a dome, E, rigidly secured to the air-tubes, the sliding tube H, provided with a shoulder, *a*, a spring surrounding the tube, and having a bearing on said shoulder at one end and on the interior of the dome at the other, and strips *r*, for retaining the spring in place and guiding the globe, substantially as specified.

5. The combination, in a tubular lamp or lantern, of the dome E and sliding tube H, normally an extension of the globe and open at the top, the two forming an annular air-chamber, J, closed at its top by the dome and open at its bottom, said sliding globe-supporting tube H being provided with shoulder *a*, and the spring S, surrounding the smaller portion of the tube, and bearing upon the shoulder and against the inner side of the dome, substantially as specified.

CHARLES BERGENER.

Witnesses:
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C. G. CRANNELL.