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Patented Dec. 5, 1899.

J. H. STONE.

LANTERN.

(Application filed Oct. 8, 1898.)

(No Model.)

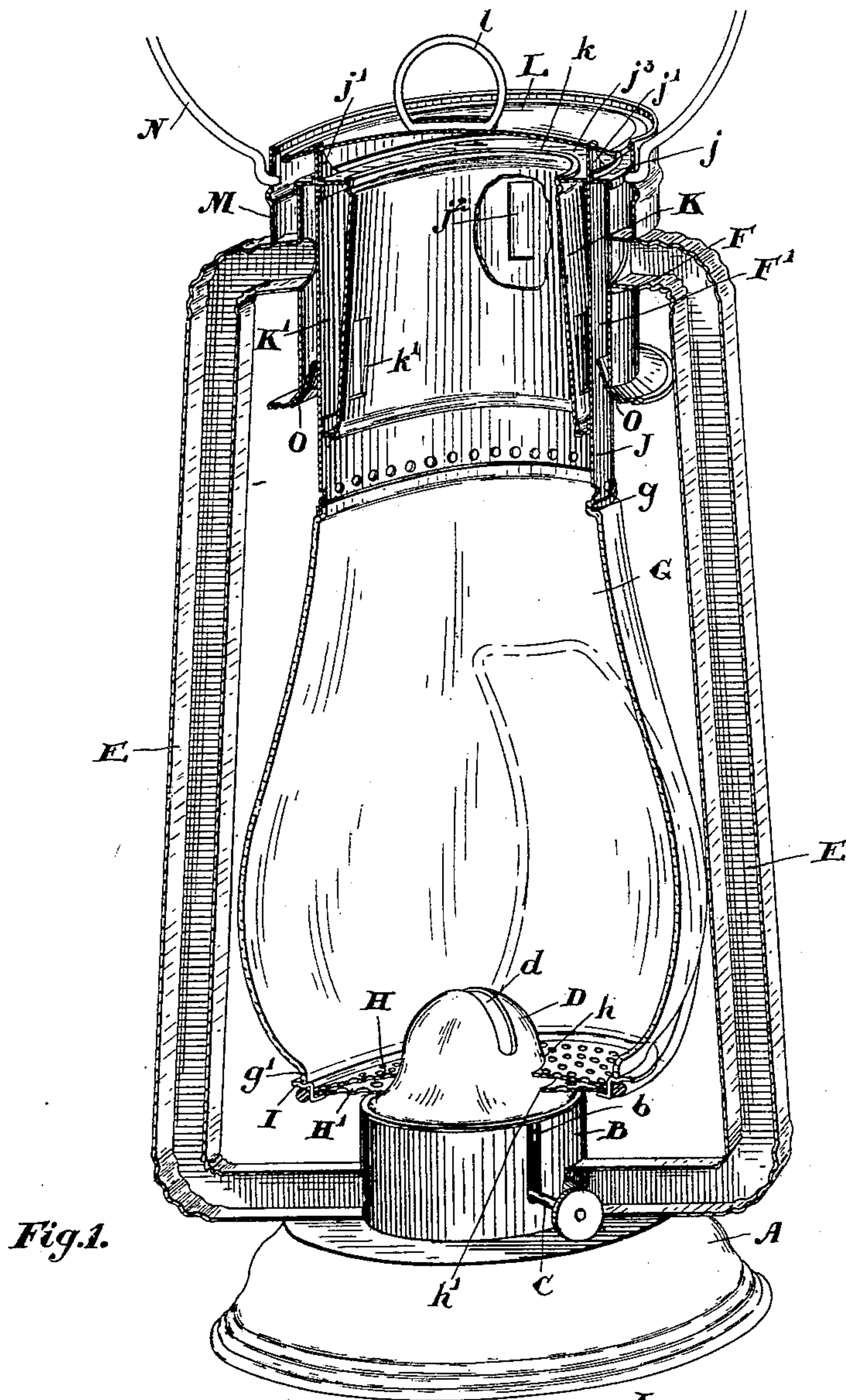


Fig. 1.

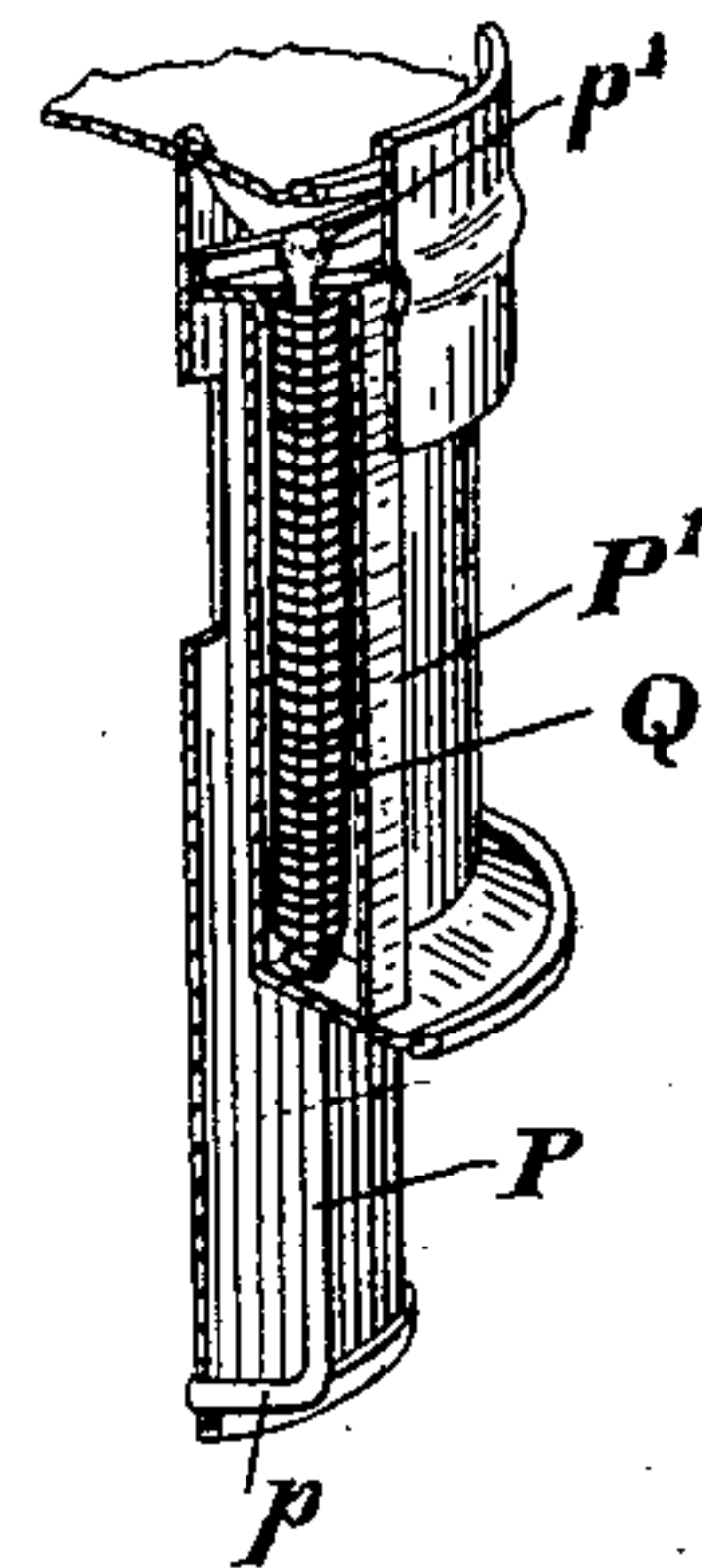


Fig. 3.

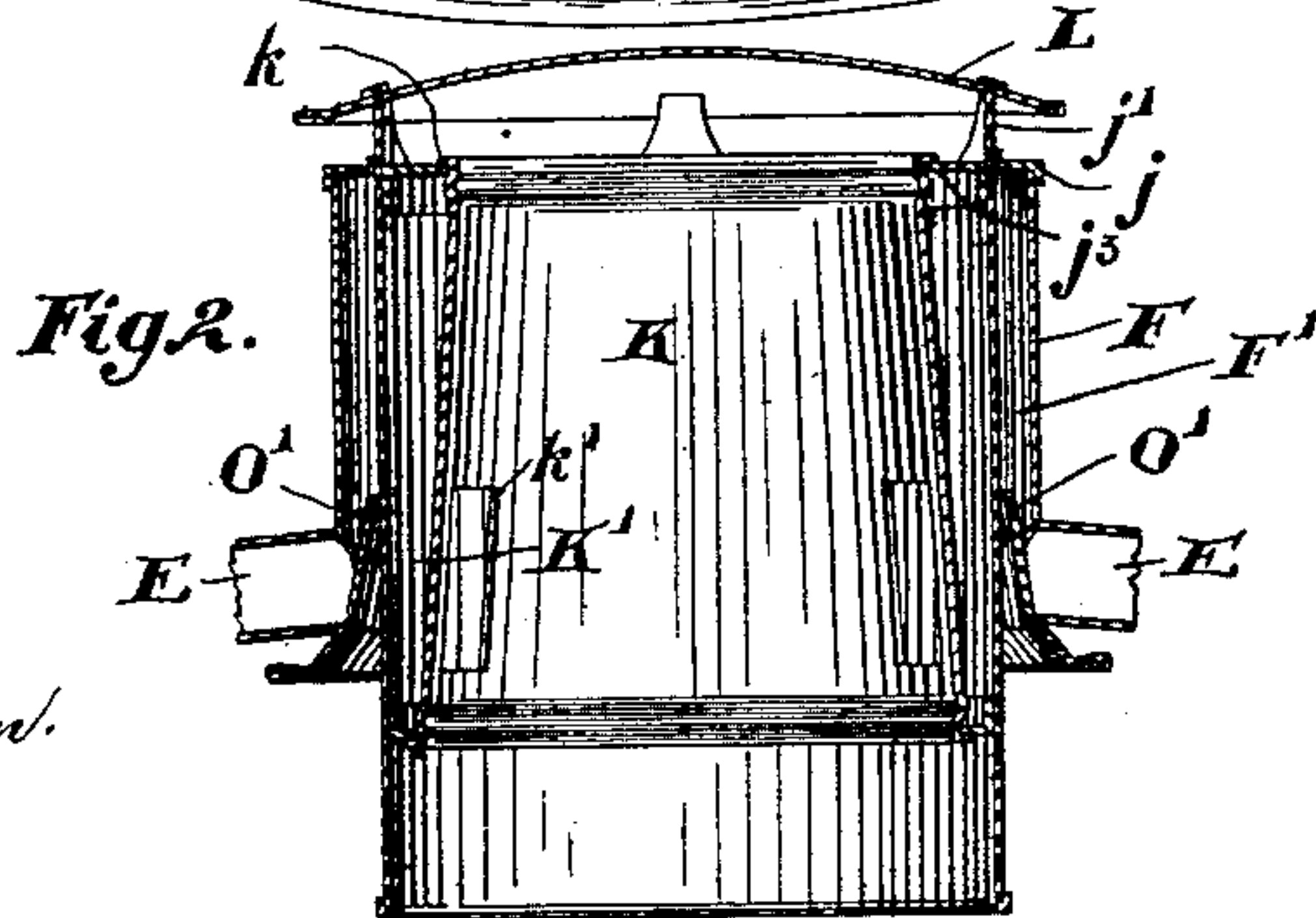


Fig. 2.

Witnesses.

Attestation.

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UNITED STATES PATENT OFFICE.

JOHN HENRY STONE, OF TORONTO, CANADA.

LANTERN.

SPECIFICATION forming part of Letters Patent No. 638,653, dated December 5, 1899.

Application filed October 8, 1898. Serial No. 693,049. (No model.)

To all whom it may concern:

Be it known that I, JOHN HENRY STONE, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Lanterns, of which the following is a specification.

My invention relates to improvements in tubular lanterns; and the object of the invention is to devise a lantern which will be perfectly safe under all circumstances and yet provide for a rapid supply of air into the combustion-chamber, and consequently increase the brightness of the flame and yet without creating a draft and without any liability of putting out the flame or smoking; and it consists, essentially, of a lantern provided with tubes leading from below the burner to the outer jacket of an annular chambersurrounding the globe-support, such annular chamber being provided at the bottom with a draft-directing ring, and a supplemental annular chamber being formed between the globe-support and an inner casing, the top of the globe-support being perforated by suitable openings, as also the bottom of the inner casing, and the bottom of the globe being supported by peculiarly-formed double-concavo-convex perforated plates, and the lantern being constructed in detail as hereinafter more particularly explained.

Figure 1 is a perspective view, mostly in section, of a lantern provided with my improvements. Fig. 2 is a sectional detail of the preferred form of casing for the upper portion of the lantern. Fig. 3 is a detail of the spring and rod by which the globe-holder is held in place.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the base or oil-bowl, which is provided with a collar B, designed to receive the burner, and provided with a slot *b* for the wick-operating spindle C.

D is the cap of the burner.

E E are the side bent tubes of the lantern, which are connected together to the collar B and communicate with the burner in the interior thereof. The upper bent ends of the side tubes E are connected to the jacket F of the annular chamber F'.

G is the globe, which is provided with internal flanges *g g'* at the top and bottom.

H and H' are concavo-convex perforated plates secured within the flanged rim I. The plates have their concaved sides toward each other, and consequently the convex sides outermost. The perforations in the plate H' are larger than those in the plate H, so that the air admitted through the plate H' will be retarded to a certain extent, and thereby effect a perfect diffusion of the air as it passes up around the slot *d* of the cap. The plates H and H' are provided with central holes *h* and *h'*, respectively, as indicated, so that they fit down upon the cap, and thereby, with the rim I, serve to support the globe at the bottom.

J is the top globe-holder, which extends up to the top of the lantern within the annular plate *j*, connected to the top of the jacket F.

K is an inner wall or casing, which fits within the globe-holder J and is also supported and connected on the inside edge by the flange *k* at the top to the annular plate *j*³, connected to the globe-holder.

L is the top cap of the lantern, which is supported on projections *j'*, extending upwardly beyond the annular plate *j* and forming part of the upper globe-holder J. The center of the cap is provided with the usual ring *l*.

M is a ring vertically arranged around the opening beneath the cap L and preferably secured to the tops of the tubes E.

N is the bail by which the lantern is carried, the ends of which are pivotally held within the ring M.

In the upper part of the globe-holder J, as indicated by the broken-away portion of the inner casing K, are a series of openings *j*². At the bottom of the casing K are also located a series of openings *k'*. The inner casing K may be in the form of a truncated cone, as shown, which is the preferable form, or perfectly cylindrical in shape.

O is an inwardly-projecting inclined flange which is supported on the bottom of the jacket, and the top of which extends close to the globe-holder J, so as in a certain extent to cause an upward draft into the annular chamber F' and yet retard such draft. The bot-

tom end of the globe-holder fits around the internal flange *g* at the top of the globe, and such bottom is held in position by means of the rod *P*, the bent end *p* of which extends into the globe-holder, and the upper end of which extends through a tubular guide *P'*, which is suitably soldered or secured to the jacket *F*. The rod *P* extends through the bottom flange of the jacket and up to and through the hole in the top plate *J*, being provided with a knob *p'*. A spiral spring *Q* surrounds the rod and is of course held in the tubular guide. There are two of these tubular guides situated diametrically opposite, but only one is shown in Fig. 3, and these tubular guides are not shown in Fig. 1, as they are at right angles to the tubes *E* and diametrically opposite each other. It will, however, be understood that by pulling on the ring the globe-holder, with the casing *K* attached thereto by means of the ring *j*³, is raised, so that the bottom of the holder releases the flange *G* of the globe, thereby enabling the globe to be swung down into position, such globe being hinged at the bottom to the collar *B* in any manner. As it is very common to swing this globe, I do not describe the manner in which it is hinged, as it is an ordinary expedient well known to manufacturers of tubular lanterns.

The air, it will be seen, passes through the plates *H* and *H'*, being diffused around the slot *d* in the cap *D*, thereby supplying to the greatest extent the oxygen to the flame. The air also passes up underneath the flange *O* into the annular chamber *F'* and through the openings *j*² at the top into the annular chamber *K'*, formed between the globe-holder and casing *K*, whence it passes through the openings *k'* in the casing *K* into the combustion-chamber, thus supplying oxygen to the air therein. The current of air is carried in addition down through the side tubes *E E* to the burner. The heated products of combustion from the wick of course pass directly up in a central column to the cap *L* and out by the opening formed between the cap and the annular plates *j* and *j*³.

In Fig. 2 I have shown an alternative form in which I arrange the inclined flange *O'* so that the top thereof comes beyond the top of the tubes *E E*, which in this instance are lowered near to the bottom of the jacket *F*, to which they are secured.

It will thus be seen from this description that I have provided a form of lantern which is provided with a central draft which is so beneficial in all forms of lamps and lanterns on account of holding the light steady and also assisting perfect combustion.

What I claim as my invention is—

1. In a tubular lantern, the combination with the base or bowl, the collar, the burner provided with a suitable cap and fitting with in such collar, of the globe and the bottom support therefor comprising a suitable ring-

flange and the concavo-convex perforated plates arranged with their concave surfaces adjacent to each other on the inside and the undermost plate provided with larger perforations than the uppermost as and for the purpose specified.

2. In a tubular lantern the combination with the base or bowl, the collar, the burner, the globe supported on the burner and the side air-tubes connected to the collar and leading to the burner, of the upper outer jacket to which the upper ends of the side air-tubes are connected, the upper globe-holder provided with the top openings and forming an annular air-space between it and the jacket, the inner casing provided with the lower openings and suitably supported on the globe-holder so as to leave an annular air-space closed at the top and the cap located and leaving an annular air-space above the closed top of the lower air-chambers as and for the purpose specified.

3. In a tubular lantern, the combination with the base or bowl, the collar, the burner, the globe supported on the burner and the side air-tubes connected to the collar and leading to the burner, of the upper outer jacket to which the upper ends of the side air-tubes are connected, the upper globe-holder provided with the top openings and forming an annular air-space between it and the jacket, the inner casing provided with the lower openings and suitably supported on the globe-holder so as to leave an annular air-space closed at the top, the cap located and leaving an annular air-space above the closed top of the lower air-chambers and the bottom inclined projecting flanges connected to the bottom edge of the jacket and extending upwardly into proximity with the globe-holder as and for the purpose specified.

4. In a tubular lantern, the combination with the base or bowl, the collar, the burner, the globe supported on the burner and the side air-tubes connected to the collar and leading to the burner, of the upper outer jacket to which the upper ends of the side air-tubes are connected, the upper globe-holder provided with the top openings and forming an annular air-space between it and the jacket, the inner casing provided with the lower openings and suitably supported on the globe-holder so as to leave an annular air-space above the closed top, the cap located and leaving an annular air-space above the closed top of the lower air-chambers, and the vertically-disposed collar surrounding the space between the top plate of the chambers and the cap as and for the purpose specified.

5. In a tubular lantern, the combination with the jacket and tubes leading thereto, and the globe-holder, of the bottom inclined projecting flange connected to the bottom edge of the jacket and extending upwardly past the level of the tubes into proximity with the globe-holder and leaving a space between

it and the tubes as and for the purpose specified.

6. In a tubular lantern, the combination with the upper globe-holder, the jacket and
5 the inner casing forming two annular chambers closed at the top and the cap located above the same, of the vertically-disposed collar surrounding the space between the top plates of the chamber and the cap as and for
10 the purpose specified.

7. In combination the base, the burner, the globe supported on the burner, the side tubes, the outer jacket provided with an annular ring at the top, the upper globe-holder and
15 the rod P connected at the bottom to the globe-holder and at the top connected to the jacket and a spiral spring surrounding the rod and located between the ring and bottom flange of the jacket said rod and spring being

located to the outside of the globe-holder as 20 and for the purpose specified.

8. The combination with the upper globe-holder and the jacket, of the rods connected at the bottom to the globe-holder, and at the top to the jacket and forming a guide to re- 25 tain the globe-holder in position as and for the purpose specified.

9. The combination in a lantern with the upper globe-holder, of an inner casing located within the same forming an annular air-space 30 within the holder and inlet-openings leading to and from said space through the side wall of said casing, substantially as described.

JOHN HENRY STONE.

Witnesses:

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H. DENNISON.