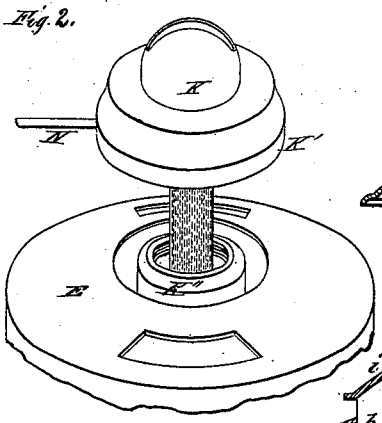
2 Sheets—Sheet 1.

T. WALTON & A. W. PAULL.

Tubular Lamp and Lantern.

No. 206,281. Patented July 23, 1878.

Fig. 2.



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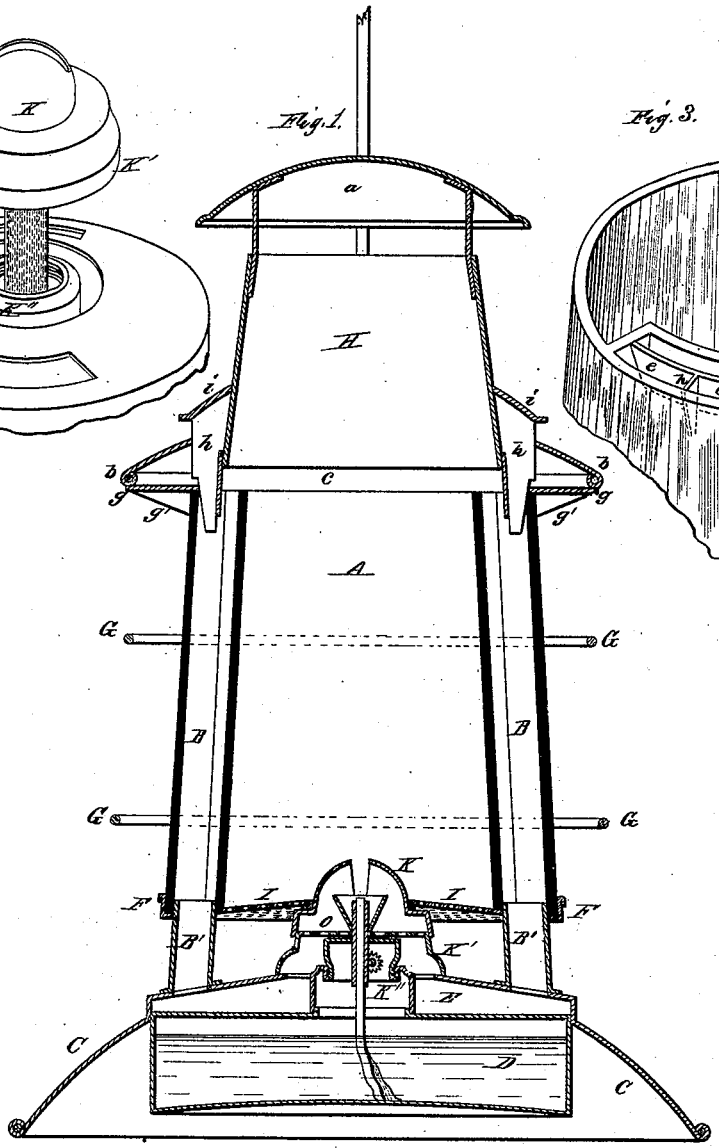
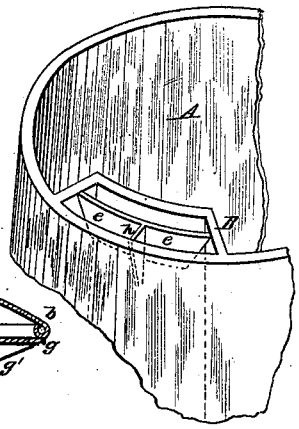


Fig. 3.



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Attorneys.

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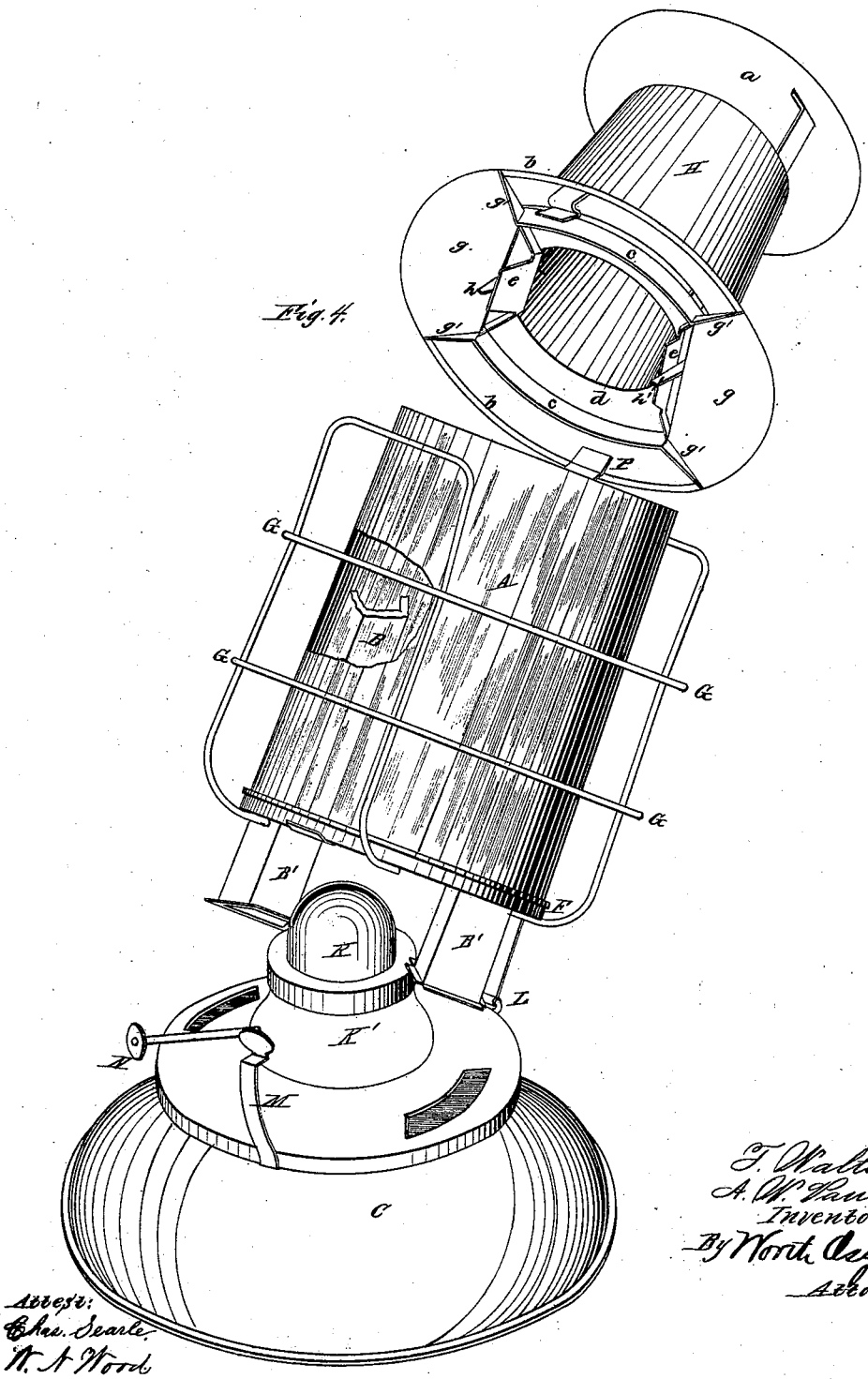
Fig. 4.



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UNITED STATES PATENT OFFICE.

THOMAS WALTON AND ARCHIBALD W. PAULL, OF WHEELING, WEST VA.

IMPROVEMENT IN TUBULAR LAMPS AND LANTERNS.

Specification forming part of Letters Patent No. **206,281**, dated July 23, 1878; application filed June 6, 1878.

To all whom it may concern:

Be it known that we, THOMAS WALTON and ARCHIBALD W. PAULL, of Wheeling, county of Ohio, and State of West Virginia, have jointly invented certain new and useful Improvements in Tubular Lamps and Lanterns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is an axial section of our improved device upon a plane passing through the axes of the two air-tubes in the globe. Fig. 2 is a perspective view, showing the top of the air-chamber, which is above the oil-reservoir, and the burner detached from the burner-collar. Fig. 3 is a perspective view, showing a fragment of the globe and the location of the division-strips in the mouth of one of the air-conducting tubes, the dome being omitted to facilitate the illustration. Fig. 4 is a perspective view of our improved device complete, the dome and globe being slightly turned away from their normal positions in order to show their relative movements.

Like letters in all the figures indicate corresponding parts.

Our present invention is chiefly intended to supply certain attachments to that class of lamp and lantern globes represented in the patent to Thomas Walton, No. 201,072, of March, 5, 1878, which attachments render the completed lamp or lantern easy to be operated and cleaned, not liable to admit of the extinguishment of the flame by sudden gusts of wind or by moving the device about from point to point, and, withal, simple in construction and comparatively inexpensive to manufacture; and to accomplish all of this the invention involves, besides certain principles of operation, numerous peculiarities of construction and arrangements or combinations of parts, all of which will be hereinafter first fully described, and then properly embodied in the claims.

To illustrate the several features of the invention, we have chosen the hand-lantern, to which we have applied our improvements; but we desire it specially understood that they (the improvements) are alike applicable to all manner of lighting contrivances, especially hand-lamps, street-lamps, signal-lights, &c., which involve the employment of what is now commonly known as the "tubular principle," consisting, essentially, in conducting air from a point above the flame down to and into the flame, our selection for illustration being chiefly governed by the fact that the hand-lantern is commonly swung about and more exposed to unequal drafts or currents of air than are any other class of illuminating contrivances.

A is the globe or flame-guard, made transparent, and provided with one or more air tubes or channels, B, said tubes being, as explained in the aforementioned patent, formed as a part of said globe, and of any desired form or shape in horizontal section, and located upon the inside or outside of said globe.

C is the base or stand of the completed lantern, formed in the customary way, and intended to sustain the oil-cup D and the whole superstructure through the medium of the several connections.

Above the oil-cup D is the air-chamber E, through which any air descending by way of the tubes B is carried up to the flame. Above the base the rim F sustains the globe, which is suitably protected by the guard-wires G, and upon these latter the dome H is so hinged as to be easily turned up or back, permitting the ready withdrawal of the globe for cleaning.

I is a foraminated bottom to the globe, acting in the ordinary way as an air-distributer; and this bottom is perforated to receive the cone, and suitably connected with the rim F. It is also perforated to provide for the free passage of air down through the tubes B. There being considerable space between the chamber E and plate I, we attach the short tubes B′ B′, one or more, beneath said plate, and in such manner as that they shall operate as continuations of the channels B, serving to form a continuous or unbroken communication between the upper mouths of said channels B and the air-chamber E. The plate I, carrying with it the whole of the structure above the burner, is suitably hinged to the lower portion or base, as at L, and a spring-catch, M, serves to maintain the two parts of the structure from accidental displacement.

In order to reach the oil-cup or burner for purposes of filling, cleaning, trimming the wick, &c., it is only necessary to loosen catch M and

turn the upper portion of the lamp or lantern about hinge L; and in this operation it should be observed that the tubes B′ B′ move with plate I, thus breaking the channel or air-passage formed by said tubes and the air-chamber E with the tubes B B, and leaving the whole upper plate or cover of the air-chamber free of any obstruction.

In returning the upper portion of the lamp or lantern to its upright position, the tubes B′ B′ automatically assume their proper locations over the perforations in the air-chamber cover, so that no adjustment is required. This feature of breaking the supplementary air-channels is an important and prominent portion of our invention, and is applicable to any style of tubular lantern, for the purpose of exposing the base free from all obstruction, or at least free from the projecting ends of the tubes.

During the ordinary use of the lighting device the wick is raised and lowered by an ordinary wick-ratchet, N, which may be reached from between the air-chamber and the bottom of the globe.

The cone K of the burner is provided with an apron or skirt, K′, of such length as to fit closely down upon the upper plate of the air-chamber, and to cause all the air from said chamber to pass upwardly beneath said cone whenever the burner is properly screwed into the lamp-collar K″. Beneath the cone is an air-distributing plate, O, serving, in the usual way, to modify the action of the air-currents from chamber E, and around the wick-tube is shown an inverted tapering or flaring guide, which may be used to good advantage, serving its well-known purpose.

To open the oil-cup, it is only necessary to unturn the cone K, which will carry the apron K′ with it, and expose the lamp-collar free of all obstructions. For convenience in filling, the collar K″ is extended to about the level with the top of the air-chamber.

The dome H is hinged to the guard-wires G, as at P, and provided with a hook or catch at the opposite side, preferably made to engage with one of the wires, which latter forms the spring. This dome is so constructed as to afford the requisite ingress and egress for air under all circumstances of ordinary use of the lamp or lantern. It is provided with a cap, *a*, slightly elevated above its upper edge, leaving a practically free air-space, and at the same time excluding rain, &c. The rim *b* extends out beyond the globe, and carries a downwardly-projecting flange, *c*, which serves to maintain the upper end of the globe in proper location. To the flange *c* is secured the horizontal rim *d*, which also joins with the vertical shell of the dome, except at the parts over the upper ends of the air-tubes B, thus excluding admission of air to the globe in the region of the lower rim, except through the channels formed by the said tubes.

The depending division-plate *e* is so located as that when the dome is in proper place it (the division-plate) will occupy about the central line of the mouth of tube B, thereby affording a passage to this tube for air from without and a like passage for air from within the globe, the beneficial results of this arrangement being probably attributable to the fact that, if the current of air from without strikes the dome with considerable force, the amount of air forced down the tubes will be sufficient to counterbalance the effect of that forced into the globe proper; or if an excess of pressure of air for any reason takes place within the flame-chamber, then a portion of this may be carried down the mouth of tube B and caused to act at the base of the flame. In either case the result is to preserve a practically uniform flame, and one which is not at all liable to be extinguished by any sudden gust of wind or violent disturbance of the lamp.

To prevent the too sudden admission of air to the tubes B B, a horizontal plate, *g*, extends out to the edge of the rim, and this is provided with side guards *g′ g′* on either side, which compel the air to travel at least the width of plate *g* before it can be admitted; and to prevent the currents from traveling directly across the mouths of the tubes, a vertical division-plate, *h*, is provided, and so located as to separate the already-divided mouth of the tube into about two equal parts, so that currents from either direction will be similarly controlled.

At a little distance above rim *b* we locate a secondary rim, *i*, which latter joins with the main vertical section of dome H and shields the opening between rim *b* and said section.

The several parts of the dome may be readily stamped from sheet metal, or otherwise formed, with comparatively little expense.

When constructed and arranged substantially in accordance with the foregoing description, the improved device is found to admirably answer the several purposes of the invention.

In the practical operation of the device it will be observed that protection is afforded against too sudden drafts or currents from each and every direction, and that fresh air may be admitted at all times to the side tubes from a point above the top of the globe, from whence it is carried down to support the flame and to act as a counter-balance to drafts within the flame-chamber.

Whenever it is desired to locate the tubes B outside of the globe, corresponding changes should be made in the form of the attachments, their principles of operation remaining always the same.

We are fully aware of numerous styles of tubular lanterns and lamps wherein channels are provided for descent of air to an air-chamber in the region of the burner. In all previous forms of such devices the tubes are located without the flame-chamber, (except in the before-mentioned patent to Walton,) and involve expensive and inconvenient methods of attach-

ing them to the dome above and the air-chamber below the burner. To these forms we desire it understood that we make no claim; but,

Having now fully described our invention, what we do claim as new, and desire to secure by Letters Patent, is—

1. In combination with a lamp or lantern base having an air-chamber beneath the burner or cone, a tube or tubes serving to conduct air from a point above the globe to said air-chamber, said tubes being connected with the removable upper portion and separable from the top of the air-chamber, in order to expose said top free from all obstructions, substantially in the manner and for the purposes explained.

2. In a tubular lamp or lantern, the combination, with the globe, which is hinged to its base, of the connecting tubes or channels, secured to and movable with the foraminated bottom, and serving to make or break the connection between the air-chamber and the main conducting-tubes accordingly as the globe is properly located for use or swung back out of the way, substantially as shown and described.

3. The combination of the lamp or lantern globe, the air-tubes formed therewith or as a part thereof, the foraminated plate covering the bottom of said globe, the connecting-tubes attached to and movable with said foraminated plate, and the air-chamber receiving air from the tubes and conducting it to the burner, substantially as shown and described.

4. In combination with the vertical strip which depends within the mouth of the air-tube, a second strip at right angles to the first, adapted to direct and control the exterior currents of air, substantially as shown and described.

5. In combination with the vertical flange on the dome, which serves to hold the globe in place, the horizontal plate of equal width with (or greater than) the air-tubes, said plate being provided with depending wings, and operating to prevent too sudden admission of air to the tube, substantially as set forth.

6. The herein-described dome, composed of the central vertical section, the cap, the two projecting rims, and the air-passages, located and arranged substantially as shown and described.

In testimony that we claim the foregoing we have hereunto set our hands in the presence of two witnesses.

THOS. WALTON.
ARCHIBALD W. PAULL.

Witnesses:
WORTH OSGOOD,
GEO. F. GRAHAM.