

(No Model.)

L. HENKLE.
LANTERN.

No. 433,652.

Patented Aug. 5, 1890.

Fig. 1.

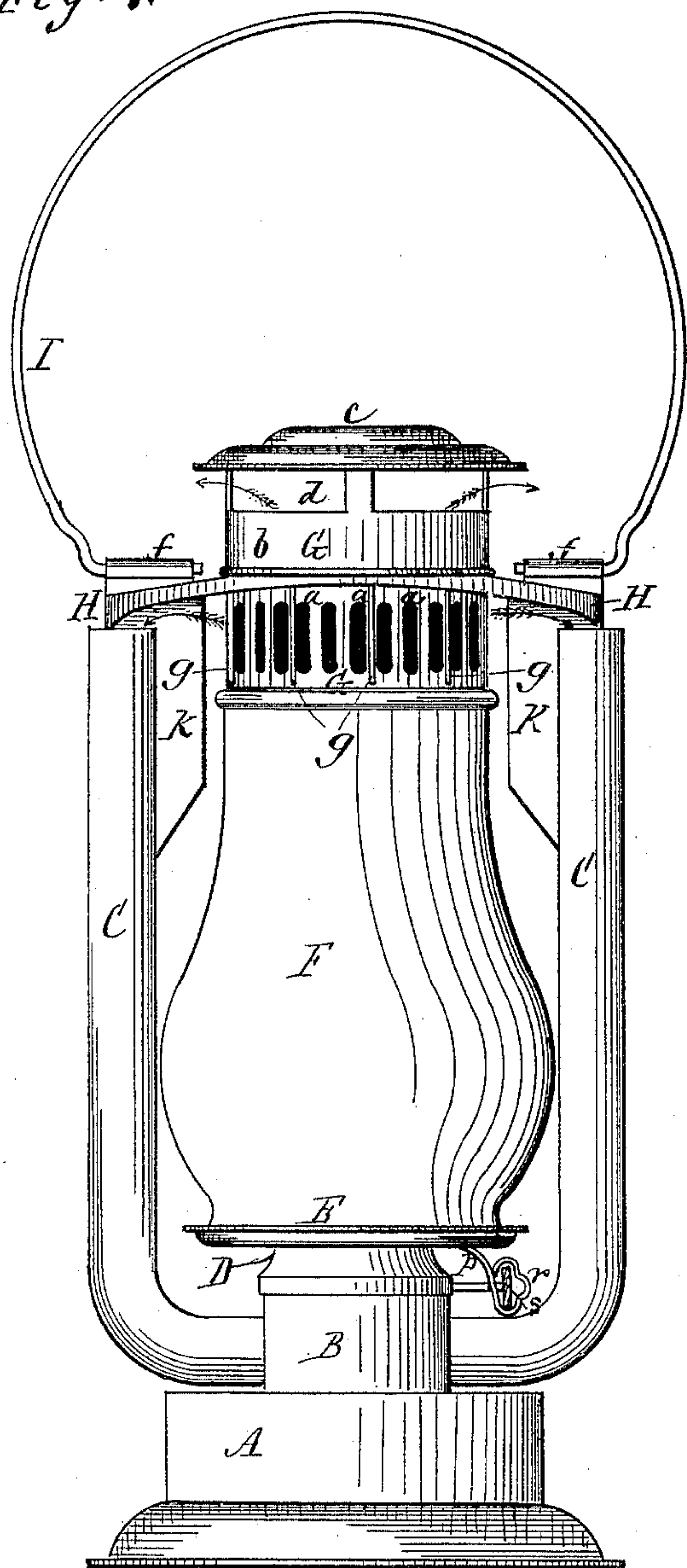


Fig. 2.

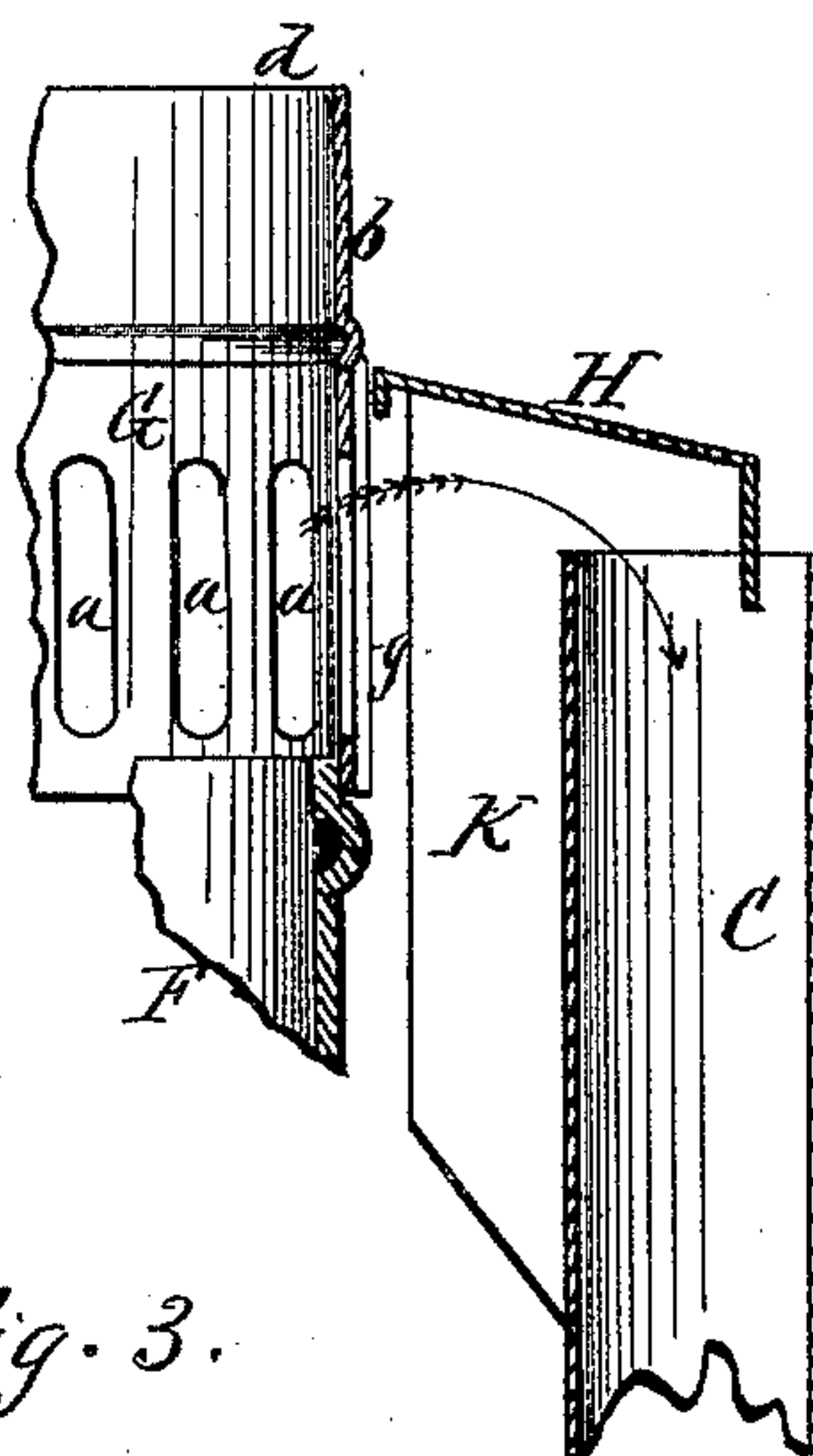


Fig. 3.

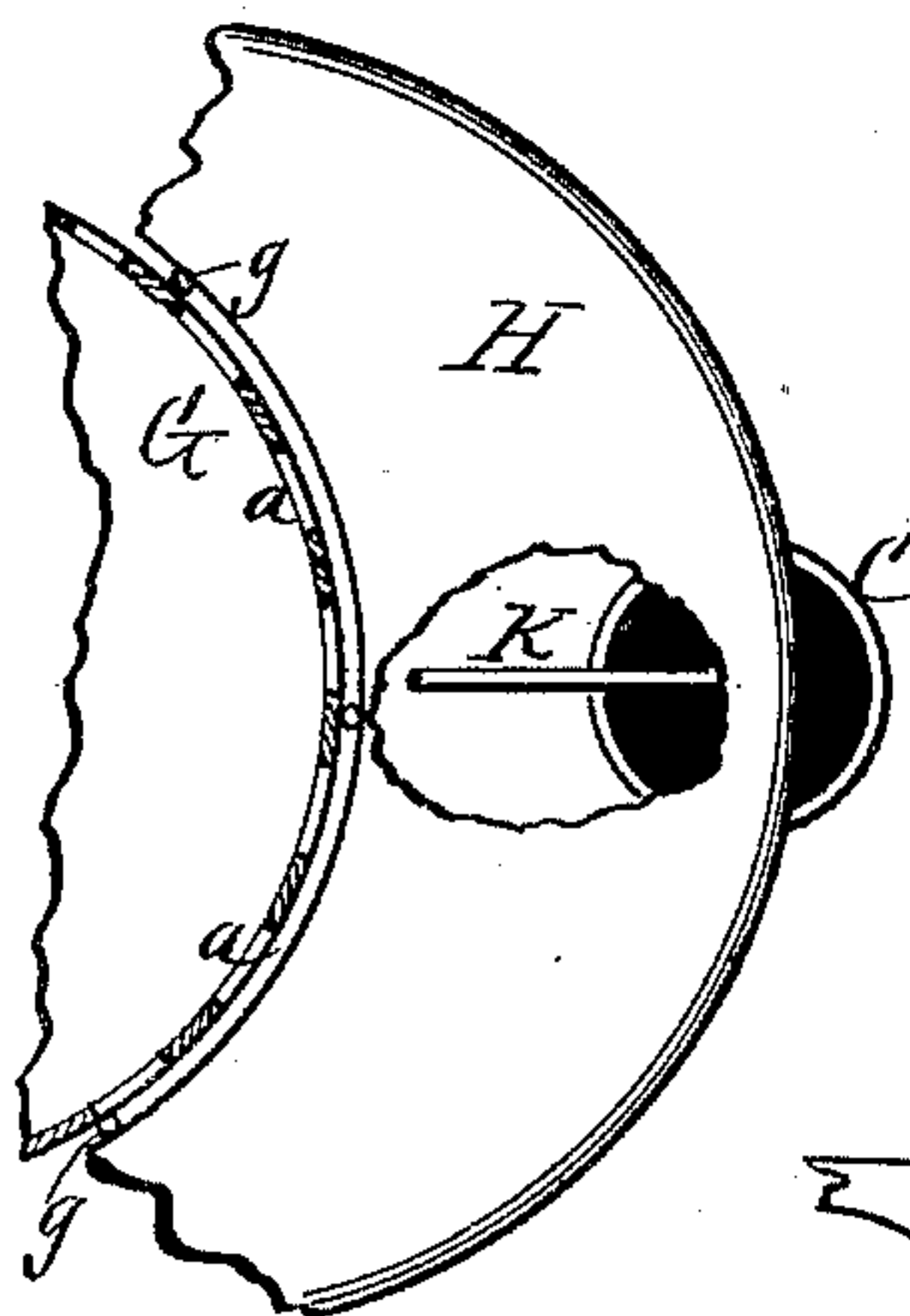


Fig. 5.

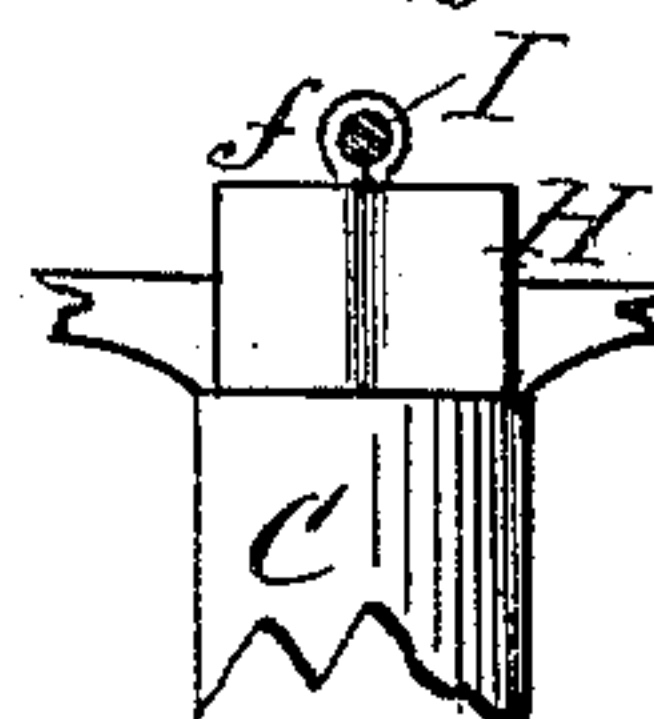
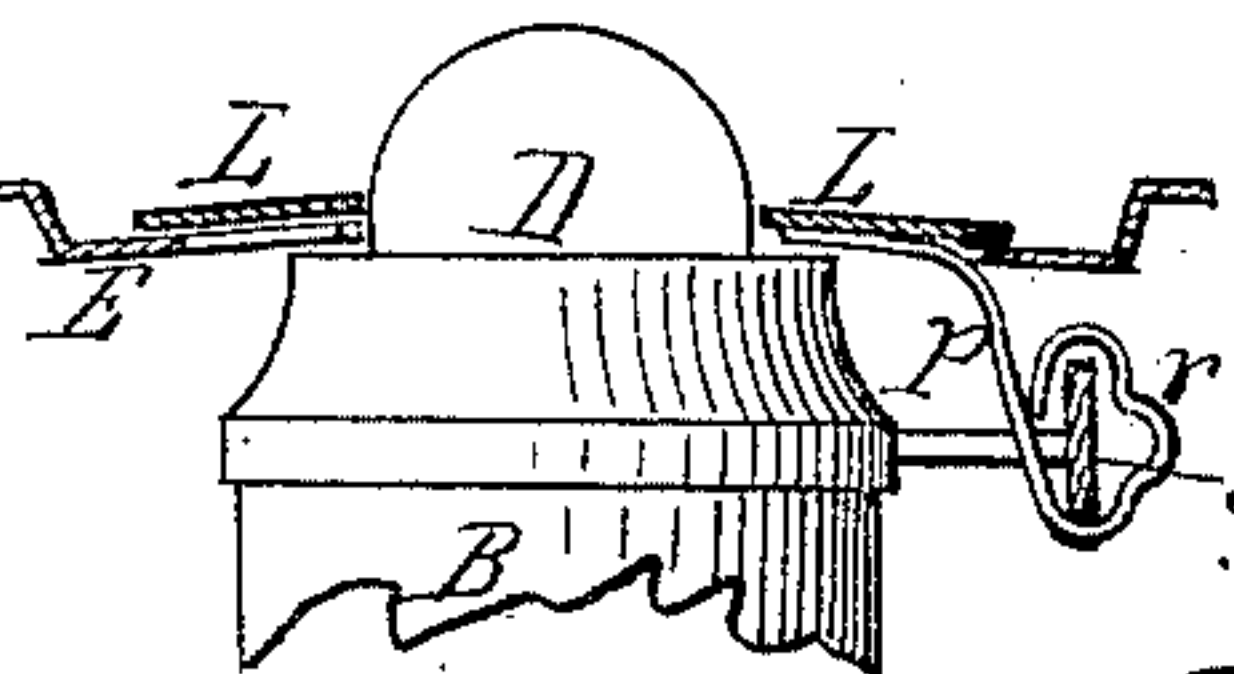


Fig. 4.



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LANTERN.

SPECIFICATION forming part of Letters Patent No. 433,652, dated August 5, 1890.

Application filed January 5, 1886. Serial No. 187,735. (No model.)

To all whom it may concern:

Be it known that I, LEONARD HENKLE, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Lanterns; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this application.

My improvement relates to side-tube lanterns, in which the tubes are open at the top to take in the air.

The invention consists in the combination and arrangement of parts, hereinafter more fully described, and definitely claimed.

In the drawings, Figure 1 is a front elevation of a lantern, showing my improvement. Fig. 2 is an enlarged vertical section of a portion of the dome, the chimney, the cap-plate, and one of the side tubes. Fig. 3 is a horizontal section of Fig. 2. Fig. 4 is a vertical section of the bottom globe-holding disk and a side elevation of the cone and air-chamber. Fig. 5 is an elevation of a portion of one of the side tubes, the cap-plate, and the ears for the attachment of the bail.

A indicates the oil-fount, B the air-chamber, C C the side tubes, D the cone, E the globe-holder, and F the globe or chimney, which are all of usual constructions.

My improvement is as follows: G is the dome or band, which slides up and down and secures the chimney at the top by sliding over it. In the sides of the dome is made a series of openings *a a*, extending all around and of such size as to allow the escape of a portion of the heated air that rises through the chimney. Above these openings the sides of the dome are closed, as shown at *b*; but the top is open, and above this is the top plate or dome proper *c*, which serves as a stop to such of the heated air as does not pass through the side openings *a a* and causes it to flow out through the large opening or throat *d*.

H is a plate, which I denominate the "cap-plate," located at the top of the lantern and covering the same. It is attached to the top of the side tubes, and in the center is made an opening, through which slides the dome G. This cap-plate is made of such size as to form a stop to the hot air which flows out through the openings *a a* of the dome, and its edge is

preferably turned down in flange form to catch the air more effectively. Ears *f f* are secured on top of the cap-plate, and to these ears are attached the ends of the ordinary bail I.

g g are small rods or wires attached to the outside of the dome at suitable distance apart and resting inside the cap-plate, forming bearings which run against the sides of the opening of the cap-plate, thus leaving a space between the dome and the cap-plate all around. By this means conduction of heat from the dome to the cap-plate is in a great degree prevented, so that the cap-plate and the side tubes are kept comparatively cold, and in addition to this by the use of these rods there is less friction and binding in moving the dome up and down.

K K are two division-plates—one on each side—standing vertically on the inner sides of the air-tubes C C and extending up to and joining with the bottom of the cap-plate, and also extending over the top of the air-tubes as far as the outer flange of the cap-plate, and dividing the top of the air-tubes into two passages, through either of which the induced currents of air can flow to the interior of the lantern. These division-plates may be attached to the tubes by soldering or otherwise. Their object is to arrest the currents of air on opposite sides when the lantern is under motion and deflect the same upward, so as to be drawn into the side tubes. They prevent any tendency to draw from the side tubes in carrying the lantern along or by reason of the wind blowing through the openings between the chimney and tubes, which would occur were this space not filled.

By the construction before described the hot currents that rise through the chimney are divided at the top, the central and hottest portion and that most vitiated by the combustion passing directly up through to the top and escaping out at the outlet *d* above the cap-plate, while the outer currents or those next to the inside of the glass, and which have greater purity, pass out through the side openings *a a* under the cap-plate. Here these currents are retained by the cap-plate and form a body of hot air surrounding the top of the whole lantern under the cap-plate and uniting with the cold external air.

This hot air passes down through the side tubes, thus producing a combined hot and cold air draft.

Owing to the peculiar construction of the dome, as above described, in connection with the horizontal cap-plate above the openings of the dome, the hot air as it escapes from the inner surface of the chimney is commingled with cold external air in such a manner as to accelerate the inflow of mixed air through the tubes of the burner. The cap-plate is made to only prevent the upward tendency of the hot air to rise from without the globe after it has passed the openings of the dome until it unites with the cold external air, when it is carried down the tubes. This cooling process causes a sudden contraction of the air in the immediate vicinity of the upper open end of the tubes, which in turn causes a concentration of air from every direction to the point of the greatest contraction.

Common air has a certain specific gravity, which is always increased in proportion to the decrease of temperature, and its tendency is always downward when drawn through the tubes to supply the vacuum caused within the air-chamber and the burner-cone by the natural upward tendency of the hot air in the chimney, as heated or rarefied air is always ascensive in its nature; hence it follows that if a portion of the hot air be taken from the globe or chimney at a point on a level with or a little above the open ends of the side tubes and then suddenly cooled the results heretofore mentioned must occur. This is proved in practice by the great coolness of the side tubes, the air-chamber, and the whole lantern, and the great brilliancy of the light shows the pressure of a great quantity of oxygen in the process of combustion.

L, Fig. 4, is a disk or plate which turns inside the globe-holder E, the two being provided with openings which when in coincidence allow a match to be inserted from beneath to light the burner. *p* is a small wire

handle attached to the disk and projecting below, by which the disk is turned. On the outer end of this handle is formed a loop *r*, of such form that when turned to the right its bottom strikes under or against the head *s* of the spur-wheel shaft and locks it in place to prevent turning. Preferably the end of the handle is bent in the form of a loop that incloses the milled head, as shown, serving also as a finger-piece to operate the handle.

Having described my invention, I do not claim, simply and broadly, open-ended side tubes. Neither do I claim, broadly, shields connected with said tubes to deflect currents of air therein and to prevent suction on the tubes.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a tubular lantern, of the open-ended side tubes, the cap-plate covering the globe and extending partially over the tops of the tubes, the dome passing loosely through the cap and provided with openings at its lower end beneath the cap, and the division-plates attached to the inner sides of the tubes and extending vertically downward below the openings in the dome, as shown and described, and for the purpose specified.

2. In a tubular lantern, the combination, with the cap covering the globe and extending partially over the side tubes, and with the dome which passes loosely through an opening in the cap, of wires or rods attached vertically to the outside of the dome and forming bearings between the dome and cap, as shown and described, and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LEONARD HENKLE.

Witnesses:

P. A. COSTICH,
R. F. OSGOOD.