

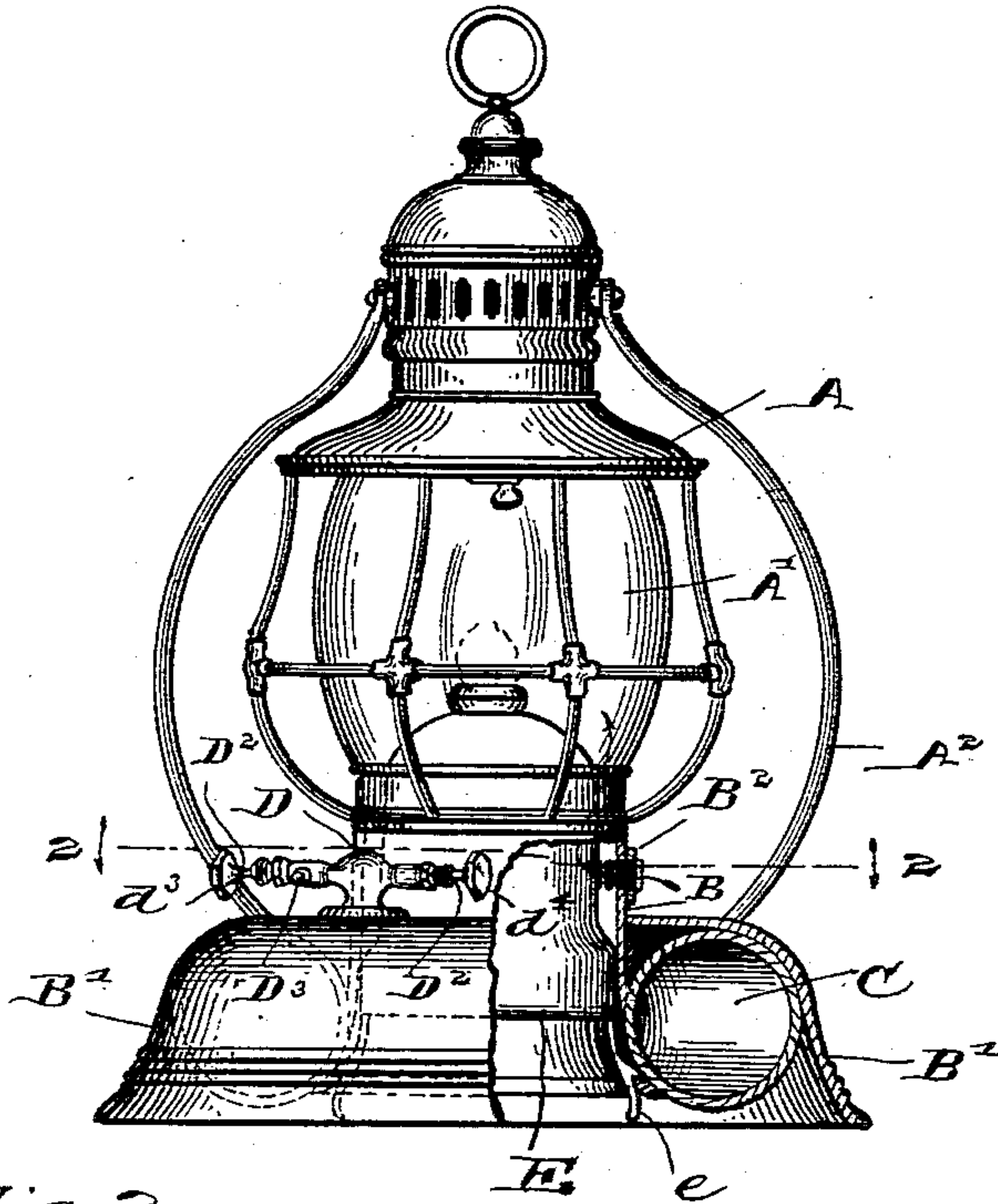
(No Model.)

W. C. VAJEN.  
LANTERN.

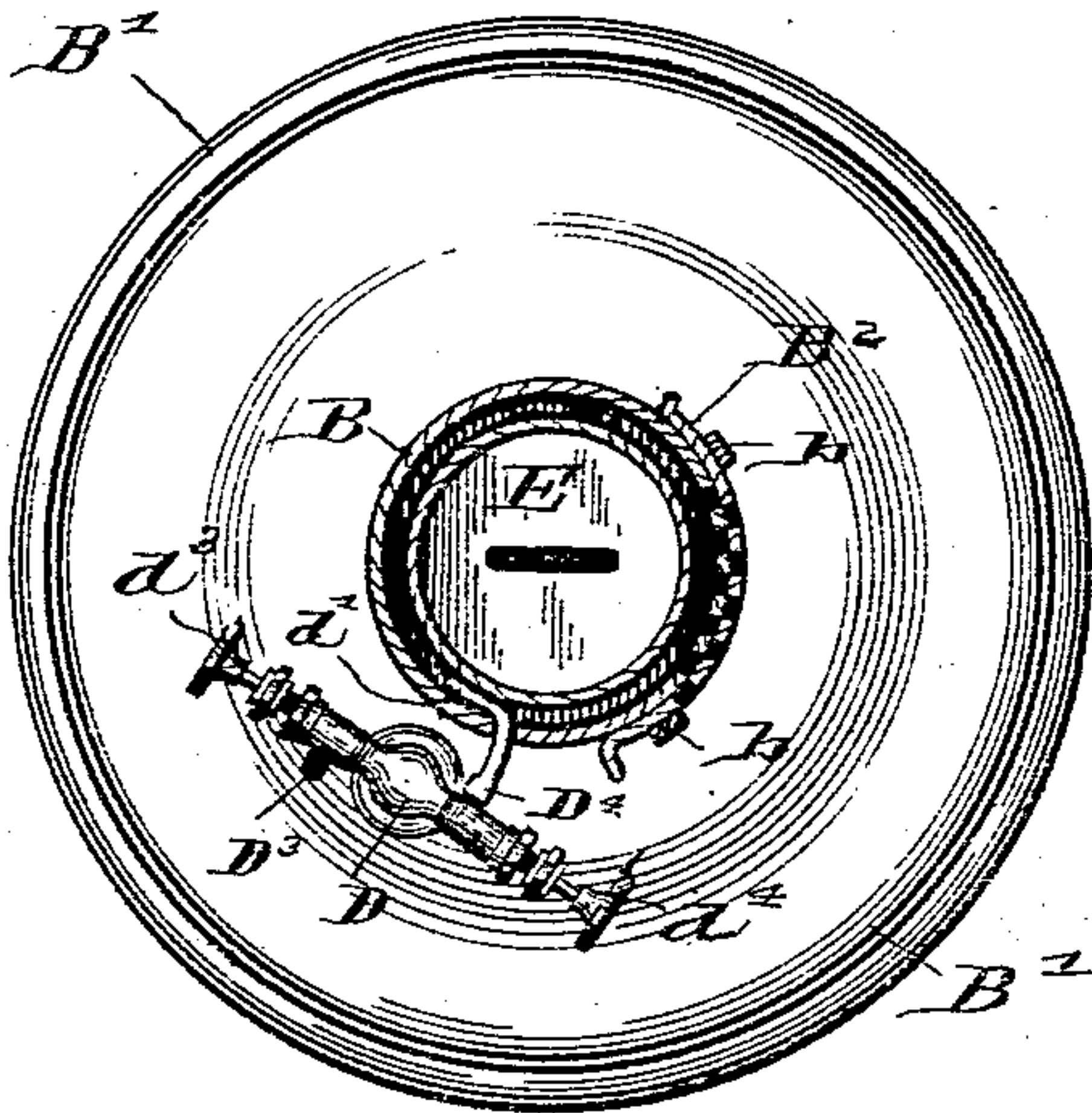
No. 555,132.

Patented Feb. 25, 1896.

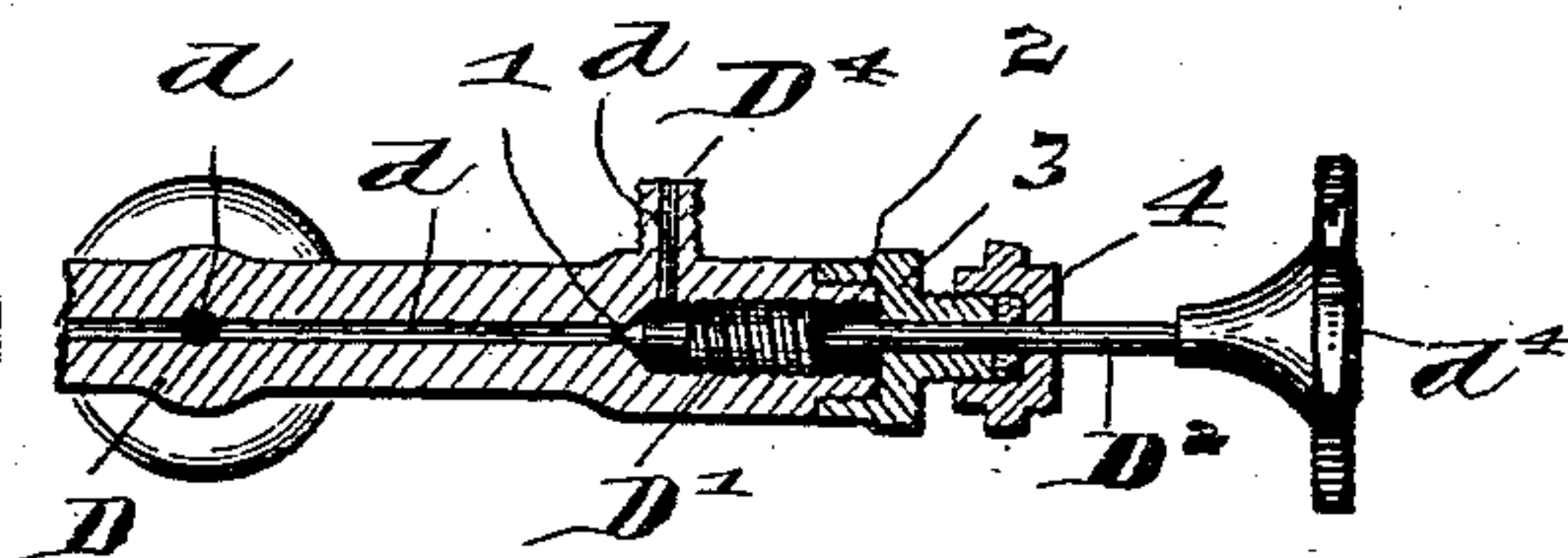
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIS C. VAJEN, OF INDIANAPOLIS, INDIANA.

## LANTERN.

SPECIFICATION forming part of Letters Patent No. 555,132, dated February 25, 1896.

Application filed September 30, 1895. Serial No. 564,191. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIS C. VAJEN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Lanterns, of which the following is a specification.

The object of my said invention is to produce a lantern which may carry a supply of pure air in a chamber within or attached to itself, by which combustion may be maintained, so that the lantern may be used in places filled with noxious gases or vapor.

A lantern provided with apparatus embodying my said invention will be first fully described, and the novel features then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters and numerals of reference indicate similar parts, Figure 1 is a side elevation of a lantern provided with my said invention, wherein the air-tank is embodied in or attached to the base of the lantern, a portion of said air-tank and base being shown in section; Fig. 2, a horizontal sectional view looking downwardly from the dotted line 2 2 in Fig. 1, and Fig. 3 a detail sectional view of a portion of the valve structure on an enlarged scale.

In said drawings the portions marked A represent the framework of the lantern; B, a cylinder forming part of the lantern structure and located at the lower portion thereof; C, the air-chamber; D, the valve structure, and E the lamp.

The lantern-frame A is or may be of any desired construction suitable for the purpose. It has the usual glass globe A' and bail or handle A<sup>2</sup>.

The cylinder B is connected to the lower portion of the lantern-frame A, and within this cylinder is the usual lamp proper, E. The cylinder preferably develops into or has attached thereto the lantern-base B'. A number of slits are provided in one side of said cylinder, and these are covered by a gate B<sup>2</sup> having corresponding slits, and which may be moved so that said slits register with one another, thus admitting air to the lantern from the outside, or so that the solid parts of one shall cover the slits in the other, as shown

in Fig. 2, thus making said cylinder substantially air-tight. The object of this arrangement is to admit air to the lantern from the outside, without taking it from the air-chamber, when the lantern is being used in places where the surrounding air is fresh and suitable for the purpose. Said gate B<sup>2</sup> is held in place on the cylinder B by the loops b.

The air-chamber C is preferably in the form of an annular hollow tube adapted to be inclosed within the base of the lantern structure, as shown. It should be of considerable strength, and thus adapted to receive and contain air under high pressure. If inclosed in the lantern-base, as shown in the drawings, it adds little if anything to the superficial size of the structure.

The valve structure D is mounted on the top of the lantern-base B' and communicates with the air-chamber C contained within said base. It is provided with two valves D', both operating in connection with an orifice d' within said structure and its branches, which orifice leads to and from the interior of said air-chamber. The valves D' are situated at each end of the horizontal portion of this valve structure, and said valves are preferably operated from thumb-wheels d<sup>3</sup> d<sup>4</sup> on the valve-stems D<sup>2</sup>, which extend in through the ends of said horizontal portion. This valve structure has two branches D<sup>3</sup> and D<sup>4</sup>, through one of which the air may be introduced into the air-chamber C, and through the other of which it may pass from said air-chamber (through the tube d' or its equivalent) to the combustion-chamber of the lantern, discharging at a point in suitable relation to the flame of the lamp, where it may be utilized in supporting combustion. In the arrangement shown the tube d' discharges horizontally, thus insuring a better distribution of the air than if it was directed toward the flame of the lamp. Manifestly, when air is being passed through one of the branches D<sup>3</sup> or D<sup>4</sup> the valve to the other branch should be closed. As shown most plainly in Fig. 3, each valve has a point 1, which closes the orifice d'. At a point 2 is another surface, in the nature of a valve-seat, which, when the valve is entirely opened, comes against the interior surface of the cap 3, and thus prevents any escape of air at that point, this contact serving substantially as a



valve-seat and doing away with the necessity of stuffing-boxes to a large extent, although I prefer to add also a stuffing-box 4 for greater safety of operation.

5 The lamp E is the ordinary lantern-lamp, and is held within the base B' by springs e, as shown in Fig. 1. At its upper portion it is reduced somewhat, thus leaving a chamber into which the air may be discharged through  
10 the tube d', as shown most plainly in Fig. 2, whence said air passes into the interior of the body of the lantern or combustion-chamber. The preferred manner of arranging this discharge has already been described.

15 The operation is as follows: Assuming it is desired to charge the chamber C with air, an ordinary air-pump is connected to the branch D<sup>3</sup>, the valve operated by the thumb-wheel d<sup>3</sup> is opened, and the valve operated by the  
20 thumb-wheel d<sup>4</sup> is closed. Manifestly, the air will then be forced from the air-pump into the air-chamber until the desired pressure therein has been secured. The valve operated by the thumb-wheel d<sup>3</sup> is then closed,  
25 and when it is desired to supply fresh air to the burner it can be done by opening the valve operated by the thumb-wheel d<sup>4</sup>, when a supply of air will flow from the chamber C through the branch D<sup>4</sup> and the connected tube  
30 d', which thus forms a continuation of the orifice d in the valve structure, to within the cylinder B, and thence to the proper point to supply the flame. When the necessity for this supply has ceased, the valve can be closed  
35 and the compressed-air supply reserved for further use.

This lantern is especially designed for firemen's use, where it is necessary to penetrate  
40 thick smoke in burning buildings, in cellars, basements and other dark places. It is adapted to be used as a companion device to the "Fireman's smoke-protector" shown and described in Letters Patent No. 456,687, granted to William Bader July 28, 1891, by means of  
45 which the fireman is himself enabled to enter places of the character described. With my improved lantern he is enabled also to observe the situation as he proceeds. It is, of course, useful in other situations where simi-  
50 lar conditions exist.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

55 1. The combination of a lantern embodying a cylindrical structure or chamber within which the lamp itself is situated, a compressed-air chamber supported on said lantern structure, and a tube or way leading from said air-

chamber to said combustion-chamber, with a valve in said tube or way whereby the pas- 60 sage of the air may be controlled, substantially as and for the purposes set forth.

2. The combination, with a lantern, of a compressed-air chamber mounted thereon, a valve structure D on said air-chamber hav- 65 ing two branches, one branch being connected to the combustion-chamber of the lantern, and the other being adapted for connection to an air-pump, and each branch being provided with a valve, substantially as shown and de- 70 scribed.

3. The combination of a lantern, an air-chamber connected thereto, a combustion-chamber in said lantern, a connection between said air-chamber and said combustion-cham- 75 ber, a valve controlling said connection, and a gate on the side of the combustion-chamber itself, the construction being such that air may be supplied to said combustion-cham- 80 ber either from said air-chamber or from the surrounding air, at will, substantially as set forth.

4. The combination, in a lantern, of the usual frame and globe and base, said base having a central opening to receive the lamp, 85 said lamp being smaller at its upper portion than at its lower portion to provide a chamber between itself and the surrounding structure, an air-chamber secured within the base of the lantern, a connection between said air-cham- 90 ber and the interior of the lantern and a valve whereby the passage of air from the compressed-air chamber to the combustion-chamber may be controlled.

5. The combination, in a lantern, of the 95 usual frame and globe and base, said base having a central cylindrical chamber extending from the outside to the interior of said lantern, a lamp the upper portion whereof is reduced to adapt it to fit into said cylindrical 100 opening, a passage from said air-chamber to the space surrounding the burner portion of the lamp, and a valve structure including two valves and two branches, through one of which air may be introduced into said air- 105 chamber, and through the other of which air may be permitted to pass from said air-chamber to the interior of the lantern, substantially as shown and described.

In witness whereof I have hereunto set my 110 hand and seal, at Indianapolis, Indiana, this 27th day of September, A. D. 1895.

WILLIS C. VAJEN. [L. S.]

Witnesses:

CHESTER BRADFORD,  
JAMES A. WALSH.