

No. 702,405.

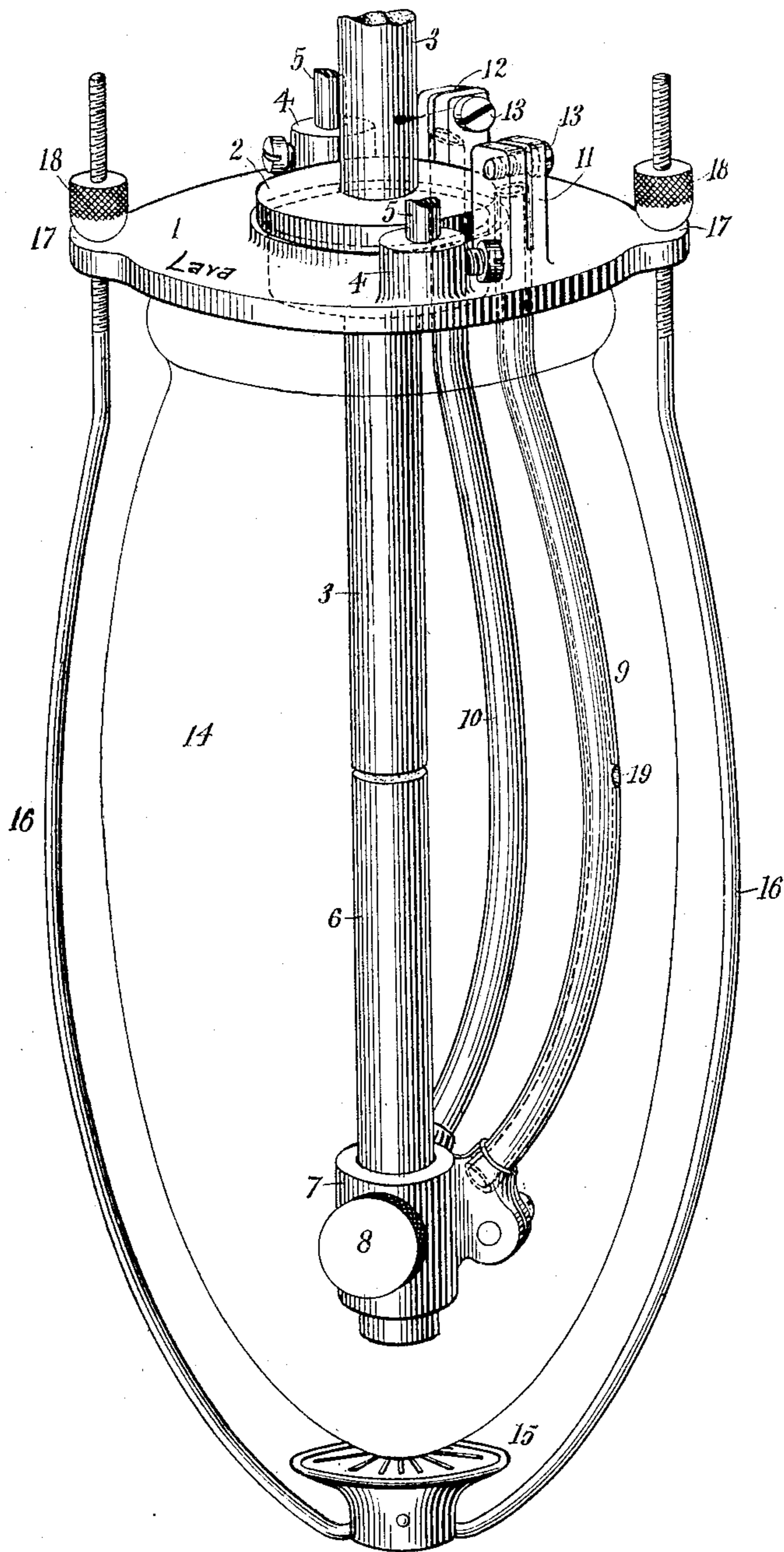
Patented June 17, 1902.

W. L. CHENEY, G. R. DAVISON & E. W. SKINNER.

INCLOSED ARC LAMP.

(Application filed Jan. 6, 1902.)

(No Model.)



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## INCLOSED-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 702,405, dated June 17, 1902.

Application filed January 6, 1902. Serial No. 88,480. (No model.)

*To all whom it may concern:*

Be it known that we, WALTER L. CHENEY and GEORGE R. DAVISON, of Newark, Essex county, and EDDIE W. SKINNER, of Arlington, Hudson county, New Jersey, citizens of the United States, have invented certain new and useful Improvements in Inclosed-Arc Lamps, of which the following is a specification.

The present invention is directed to improvements in the lower structure of inclosed-arc lamps and is concerned with providing means for increasing the efficiency of such lamps as light-giving devices through very simple alterations in the present lamp structure.

The invention consists in utilizing as the side rod or rods for supporting the lower carbon one or more hollow metallic rods and providing an opening in the side of one or both of the rods near the point where the arc is established, whereby a mingling of the gases of combustion with the outer air or with the air in the upper part of the lamp may take place through one or both of the side rods or a portion thereof. In general we have found it advantageous to provide such a side opening in only one of the side rods in case more than one side rod is present in the lamp, and the other side rod is by preference a tubular rod open at top and bottom; but it may be a solid rod or a tubular rod with the ends closed. We may likewise close the lower end of the rod in which the side opening is made and generally find it advantageous to do so; but in case the second side rod is solid or closed at the ends the first rod should not only have a side opening, but should be open at both ends. In every case the tube in which the side opening is made will be made open at the top in order to admit of the mingling of the air and gases of combustion.

Our invention will be readily understood by reference to the accompanying drawing, which is a perspective, partly sectional, of the lower part of an inclosed-arc lamp embodying our invention.

In the drawing, 1 is a gas-check, and 2 a bushing of lava or other good heat-resisting mate-

rial, through which the upper carbon 3 passes. At 4 4 we show lugs, which are perforated for receiving rods 5 5, by means of which connection is made with the upper part of the lamp. (Not shown.) The lower carbon is shown at 6 and is supported in a suitable socket 7, being held in place by a thumb-screw 8 in the usual way. The socket is itself supported upon the lower ends of side rods 9 and 10, which pass up through the gas-check 1 into split hubs 11 and 12, respectively. The upper ends of the side rods are held within the split hubs by means of clamp-screws 13 13.

The described structure below the gas-check is surrounded by a globe 14, of glass, the globe being held in place by any suitable means, generally by a spring-support at the lower end, (indicated at 15,) the said support being connected with the gas-check by means of rods 16 16, which pass through lugs 17 17 at the rim of the gas-check and are adjustably held in place by nuts 18 18.

The novel feature of our invention resides in making an opening 19 in one of the side rods—say the rod 9—this rod being essentially tubular and having an opening running to the upper end thereof, by means of which the said upper end of the tube and the opening 18 are connected through an air-passage. The lower end of the tube 9 is connected with the socket 7 through the medium of a split lug, so that in case the said lower end of the rod be open there will be opportunity for the passage of air or gases therethrough. A similar arrangement of openings may be made in the side rod 10; but this side rod will usually be made without the opening corresponding to the opening 19 in the side rod 9 and preferably of tubular material, with top and bottom ends open. It may, however, be made solid, or if of tubular material the top and bottom ends may be closed. The exact location of the side opening in the supporting-rod may be varied; but we prefer the location near the arc, but on the side of the rod remote from the arc. That part of the side rod 9 which extends from the neighborhood of the arc to a point above the gas-check may be re-

garded as an open tube, and it would be equivalent to a separate special tube extending between the points named.

As stated above, we prefer to make the side rod 10 of tubular material, with an air-passage extending through the entire rod. In practice we have found that the best results are obtained when both rods are tubular and only one of the rods is provided with a side opening, as described. When the rods are of this construction, the rod having the side opening is usually closed at the bottom; but when the air-passage through the other rod is closed at one or more points the rod having the side opening should be also open at both ends.

By referring to the drawings it will be seen that the side rods are curved to conform to the curve of the inner wall of the inclosing globe. The object of this structure is to insure that the side rods shall be as remote as possible from the arc, so as to avoid the danger of short circuits between the arc and the side rods. It is also apparent that the globe is contracted at the upper end where it is applied to the gas-check and that if the side rods, curved as described, were applied on opposite sides of the carbons difficulty might be encountered in placing the globe over the rods. For this reason we prefer to arrange the side rods approximately as indicated in the drawings—that is to say, about ninety degrees apart. When they are so arranged, there is no difficulty whatever in putting the globe in place.

While we prefer to adopt the arrangement illustrated, we may place the side rods at other distances apart—say seventy-two degrees or one hundred and twenty degrees—and we do not wish to limit ourselves even to that extent, inasmuch as the side rods might be on opposite sides of the carbons provided the lamp-globe admits of such a placing of the rods.

Inasmuch as the invention described in the earlier part of the foregoing specification is designed to be used with commercial inclosed-arc lamps, wherein the globe is usually manufactured in the manner illustrated in the drawing and wherein the side rods are provided with a curve corresponding to that of the globe, the location of the side rods as indicated in the latter paragraphs is a matter of importance in connection with the special invention hereinbefore set forth.

For some reasons the use of a single side rod for supporting the lower carbon is objectionable; but in case a single side rod should be employed there would of course be no difficulty in respect to the placing of the globe in position.

We find that a lamp embodying our invention as described burns with greater brilliancy than the ordinary inclosed-arc lamp, the arc

being longer and the vitreous coating of the carbons at and near their adjacent ends being avoided.

We claim as our invention—

1. In an inclosed-arc lamp, a pair of carbons, a gas-check, a globe surrounding the meeting-point of the carbons, and an open tube extending from the neighborhood of the arc to a point above the gas-check.

2. In an inclosed-arc lamp, a pair of carbons, a gas-check, a globe surrounding the meeting-point of the carbons, and a tubular support for the lower carbon, said tubular support being open at the top, closed at the bottom, and having a side opening communicating with the top opening through an air-passage.

3. In an inclosed-arc lamp, a gas-check, and a side rod extending therefrom and forming a support for the lower carbon, the said side rod being provided with an opening extending from the neighborhood of the arc to a point above the gas-check.

4. In an inclosed-arc lamp, a side rod forming a support for the lower carbon, and provided with an opening extending from a point in the rod between the ends thereof to a point above the gas-check.

5. In an inclosed-arc lamp, a pair of carbons, a transparent globe surrounding the meeting-point of the said carbons, a pair of side rods supporting the lower carbon, the said rods being curved to conform to the inner curve of the lamp-globe, one of the side rods being provided with a side perforation which connects through an air-passage with an opening above the gas-chamber.

6. In an inclosed-arc lamp, a gas-check, a pair of carbons, a transparent globe surrounding the meeting-point of the carbons, the said globe being constricted at its mouth and provided with a curved lower portion, a pair of side rods having a curve corresponding to the inner curve of the globe, the said side rods being attached to the gas-check at points less than one hundred and eighty degrees apart.

7. In an inclosed-arc lamp, a gas-check, a pair of carbons, a transparent globe surrounding the meeting-point of the carbons, the said globe being constricted at its mouth and provided with a curved lower portion, a pair of side rods having a curve corresponding to the inner curve of the globe, the said side rods being attached to the gas-check at points approximately ninety degrees apart.

Signed at New York, in the county of New York and State of New York, this 3d day of January, A. D. 1902.

WALTER L. CHENEY.  
GEORGE R. DAVISON.  
EDDIE W. SKINNER.

Witnesses:

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