

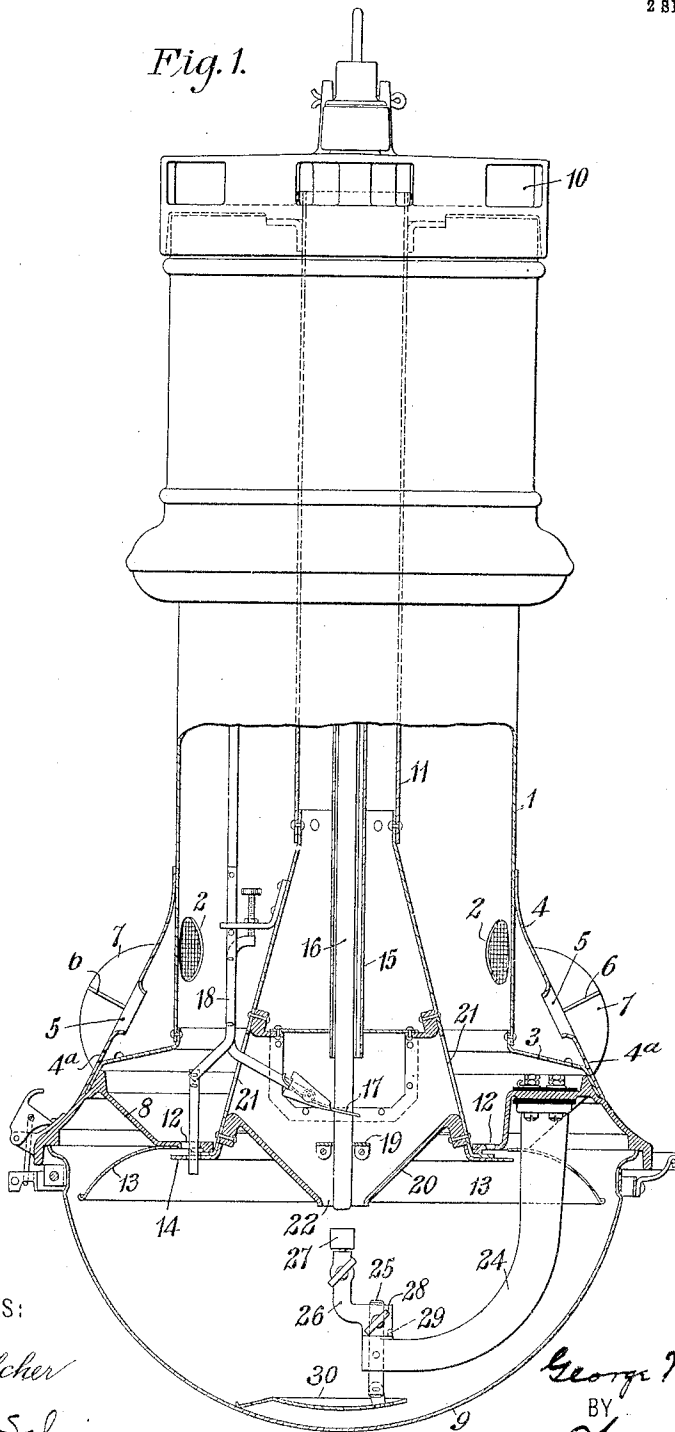
G. M. LITTLE.
ARC LAMP.
APPLICATION FILED MAY 6, 1907.

964,664.

Patented July 19, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 2.

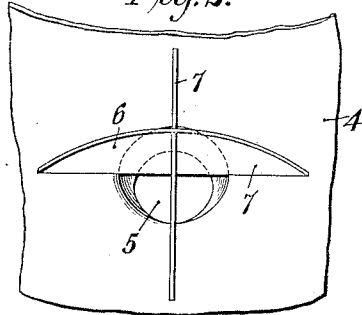
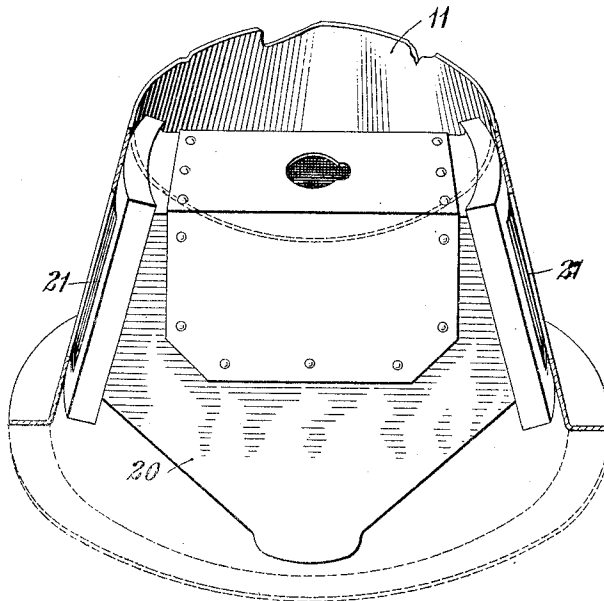


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE M. LITTLE, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE
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ARC-LAMP.

964,664.

Specification of Letters Patent.

Patented July 19, 1910.

Application filed May 6, 1907. Serial No. 372,178.

To all whom it may concern:

Be it known that I, GEORGE M. LITTLE, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Arc-Lamps, of which the following is a specification.

My invention relates to arc lamps, and particularly to such lamps as embody composition electrodes from which vapors or fumes are emitted that become incandescent in the arc and enhance the luminosity thereof.

The object of my invention is to so construct and arrange the parts of a lamp of the character indicated that the light may not be unduly obstructed or the most effective distribution thereof interfered with, and so that trimming, cleaning and repairing of the lamp may be done conveniently and expeditiously.

A further object of the invention is to so provide for the ventilation of lamps of the character indicated that reflectors may be employed to obtain a desired or effective distribution of the light.

When composition electrodes containing other materials than carbon are employed in arc lamps for the purpose of increasing the luminosity of the arc and improving the quality of the light, fumes and vapors are usually emitted at the arc which, unless properly disposed of, may deposit and condense upon the parts of the lamp so as to obstruct more or less of the light and otherwise interfere with the successful operation of the lamp. For this reason, it is very desirable and quite essential that the lamp be so constructed that a continuous draft of air will be directed through it for the purpose of conveying the fumes and vapors to the exterior, and, further, so that such deposits as form in spite of these precautions may be readily removed. The present invention facilitates and insures the passage of air into the lamp and permits the use of a reflector for obtaining a desired or the most effective distribution of the light, the incoming drafts of clean air being directed over the surface of the reflector to prevent the fume and vapor-laden atmosphere from coming into contact therewith.

Figure 1 of the accompanying drawings is a view, partially in elevation and par-

tially in section, of a lamp that embodies my invention. Fig. 2 is a face view of one of the deflectors upon the exterior of the lamp, and Fig. 3 is a view, partially in perspective and partially in section, of some of the parts of the lamp shown in Fig. 1.

The lamp is provided with a casing the main cylindrical member 1 of which has a plurality of screened apertures 2 near its lower end. Secured to the lower end of the member 1 is a slightly flared annular sheet metal piece 3, extending upwardly from the outer edge of which is a frusto-conical sheet metal ring 4 that joins the main member 1 above the apertures 2. The ring 4 is provided with a plurality of apertures 5, the walls of the apertures being bent inwardly. Extending across the apertures 5 are sets of angularly disposed vanes 6 and 7 that serve to direct drafts of air into the lamp regardless of the direction of the wind, the inwardly projecting walls of the intake apertures 5 being of material assistance in effecting this result. By reason of the peculiar construction and arrangement of these parts, snow and water are prevented from entering the casing through the apertures 2 and are drained off through small apertures 4^a that are provided in the ring 4 adjacent to the part 3.

The lower and outer edges of the members 3 and 4 fit against a ledge at the upper edge of an annular partition 8, to the lower edge of which is clamped a transparent globe 9 that provides an arc chamber below the partition. Supporting the partition 8 and extending upwardly through the lamp from the opening therein and communicating with the exterior through openings 10 in the top of the lamp, is a flue or chimney 11, the lower end of which is enlarged and flared to assist in collecting the fumes and vapors that are given off at the arc.

The partition 8 is provided, near its inner edge, with a plurality of apertures 12 through which air, that is taken into the lamp through the apertures 5 and 2 is admitted to the arc chamber. Secured to the lower face of the partition 8, with its inner edge just outside of the apertures 12, is a concave reflector 13 the surface of which is kept clean by drafts of air which are admitted into the arc chamber through the apertures 12 and are guided by means of an annular deflector 14 at the lower end of the

chimney 11. The drafts of clean air which are admitted and deflected as stated, serve to prevent the fume and vapor-laden atmosphere within the arc chamber from coming into contact with and soiling or dimming the surface of the reflector.

Extending upwardly into the chimney 11, and also into a guide tube 15 within the chimney, is a composition electrode 16 containing the magnetic oxid of iron, chromium oxid and titanium oxid, or some other compound of titanium, though other compositions may be employed, if desired. The electrode 16 is supported by means of a ring clutch 17 that is pivoted to an actuating rod 18 and engages a seat 19 when feeding of the electrode becomes necessary.

Extending across and secured within the lower flared end of the chimney 11 is a box 20 having apertures 21 in its ends that communicate with corresponding apertures in the sides of the chimney. The guide tube 15 projects through the upper side of and into the box 20, and the electrode 16 extends entirely through the box, an aperture 22 somewhat larger than the electrode being provided in the lower side thereof.

In the operation of the lamp, air is first taken into the intake chamber through the apertures 5 and 2, and from there it passes into the box 20 through the apertures 21 and out through the aperture at 22, around the lower end of the electrode and into the arc chamber, where the drafts are reversed and directed upwardly into the chimney at the sides of the box 20 and conveyed to the exterior of the lamp. Air is also admitted from the intake chamber into the arc chamber through the apertures at 12, as before described, and maintains the surface of the reflector 13 clean. Since all of the air that enters the arc chamber through the apertures 12 and 22 is taken from the intake chamber, a substantially uniform distribution of the drafts within the arc chamber is maintained regardless of the wind pressure upon the exterior of the lamp, or other atmospheric conditions, and the operation of the lamp accordingly remains uniform and undisturbed by external conditions. This result would not be satisfactorily obtained if the air that enters the arc chamber through the apertures 12 and 22, respectively, came from different sources, because the two streams of entering air would almost invariably be at different pressures, which would cause non-uniformity of distribution thereof within the arc chamber. The dimensions of the lower flared end of the chimney 11 are such as to insure the direction of all, or of substantially all, the fumes and vapors emitted by the arc upwardly thereinto, so that the parts within the arc chamber are maintained substantially free from deposits.

The walls of the apertures 5 have been bent inwardly because I have found by experiment that when a blast of air is directed upon a casing having apertures of this character, drafts substantially invariably pass through the apertures into the casing, regardless of the direction of the blast, whereas, if the walls are not bent inwardly, there may be drafts either into or out of the casing depending upon the direction of the blast. The crossed vanes 6 and 7 are provided over the apertures in order to further insure the direction of drafts inwardly when the wind blows upon the casing. As a result of this structure and arrangement of the parts it is reliably insured that drafts will be directed only inwardly through the apertures 5, which is essential to the most successful operation of the lamp.

Depending, but insulated, from the partition 8 is a curved bracket 24, having a rod 25 secured to its lower free end upon which is pivotally mounted an angular holder 26 for an electrode 27 that is preferably composed of copper or iron, substantially as set forth in an application, Serial No. 316,131, filed by me May 10, 1906. The electrode 27 may be constructed and supported as set forth in another application, Serial No. 372,177, filed by me of even date herewith, if desired. By reason of the form of the holder 26 and the character of its support, the metallic electrode 27 may be moved out of alinement with the composition electrode 16 in order to permit of insertion of the latter into the lamp and removal thereof, the holder 26 being clamped in position, when the electrodes are in exact alinement, by means of a thumb-screw 28. In order that it may be readily known when the electrodes are in exact alinement, the bracket 24 is provided with a small boss or lug 29 that fits into a corresponding recess in the holder 26 when such relation exists.

For the purpose of catching materials that may, at times, become detached from the electrodes and other parts of the lamp, and to prevent them from being deposited upon the globe 9 and cracking the same, as might occur if the deposits are heated, a pan or tray 30, composed of wired glass or other suitable material, may be pivotally attached at one side to the lower end of the rod 25, the other side of the tray being supported by the globe 9, or otherwise. I make no claim to this feature as a part of my invention, however.

I claim as my invention:

1. The combination with a casing having an aperture the walls of which are flared inwardly, of angularly disposed vanes located upon the exterior of the casing and extending across the aperture.

2. The combination with a casing having an aperture the walls of which are flared in-

wardly, of vanes located upon the exterior of the casing and extending across the aperture.

3. The combination with a casing having
5 an aperture the walls of which are flared inwardly, of means for directing drafts of air into the casing through the aperture.

4. A sheet metal arc lamp casing having
10 one or more intake side apertures, the portions of the casing adjacent to the apertures being bent to project inwardly and to flare outwardly.

5. In an arc lamp, the combination with
15 an arc chamber, an electrode projecting into the chamber and a reflector surrounding said electrode, of an intake chamber having communication with the arc chamber adjacent to the said electrode and having inlet apertures adjacent to said reflector, and means
20 for deflecting the air from said inlet apertures outwardly over the surface of said reflector.

6. In an arc lamp, the combination with
a casing containing an intake chamber and
an arc chamber below the intake chamber, 25
of an electrode extending downwardly into the arc chamber, a chimney surrounding the same and extending upwardly through the intake chamber, means for directing drafts
from the intake chamber through the chimney 30
downwardly into the arc chamber and immediately surrounding the electrode, a reflector in the arc chamber, and means for directing drafts from the intake chamber
into the arc chamber outwardly over the sur- 35
face of the reflector.

In testimony whereof, I have hereunto
subscribed my name this 30th day of April,
1907.

GEORGE M. LITTLE.

Witnesses:

OTTO S. SCHAIRER,
BIRNEY HINES.