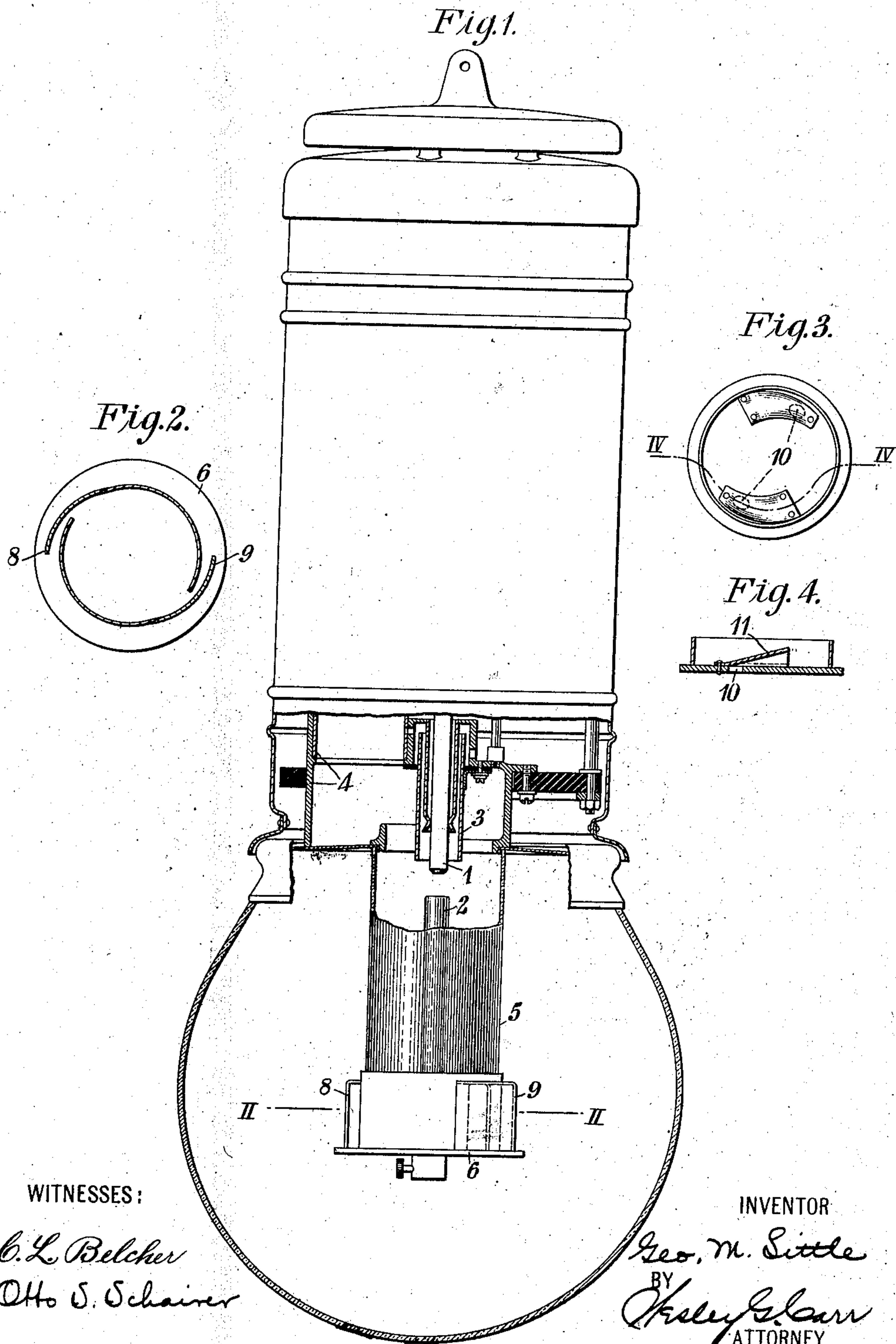


933,770.

G. M. LITTLE.
ARC LAMP.
APPLICATION FILED MAY 10, 1906.

Patented Sept. 14, 1909.



UNITED STATES PATENT OFFICE.

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ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ARC-LAMP.

933,770.

Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed May 10, 1906. Serial No. 316,135.

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 it has for its object to provide means for automatically preventing the formation of deposits upon the globes which surround the arcs and for causing the electrodes to be evenly and squarely consumed.

Arc lamps have heretofore been provided with composition electrodes of such character that the arcs produced are more luminous than those produced between plain carbon electrodes, and also such that they are less rapidly consumed. A composition which has been found suitable comprises magnetic oxid of iron, which is usually the predominant constituent and which gives conductivity to the electrode both when hot and when cold, chromium oxid, which by reason of its very high fusing point assists in preventing rapid consumption of the electrode and flickering of the arc, and titanium oxid which imparts color and brilliancy to the arc and also assists in extending the life of the electrode. Such an electrode is usually employed as the cathode in combination with a copper or other suitable metallic anode, the latter being but very slowly consumed by the arc. Fumes are ordinarily given off at the arcs between such electrodes and are condensed and deposited upon the metallic electrode and the globe within which the electrodes are usually inclosed. The cathode is often consumed unevenly and its end becomes beveled and, in order to cause the composition electrode to be consumed evenly and squarely and also to prevent the fumes given off by the arc from depositing upon the inclosing globe, I propose to direct a draft of clean air upon the inner surface of the globe in such a manner as to cause a rotation of the atmosphere surrounding the electrodes, thereby causing the arc to rotate also.

Figure 1 of the accompanying drawings is a view in section through the casing of an arc lamp that is constructed in accordance with my invention, Fig. 2 is a sectional view on the line II—II of Fig. 1. Fig. 3 is a plan view of a modification of the part

shown in Fig. 2, and Fig. 4 is a sectional view on the line IV—IV of Fig. 3.

An electrode 1 that may be composed, as before described, of magnetic oxid of iron and oxids of titanium and chromium or of other substances in various and suitable proportions, is adapted to be adjusted in position with reference to another electrode 2 by any suitable means (not shown) such as is commonly employed for the purpose. In the present instance, electrode 1 is surrounded by a tube 3 which protrudes through the lower offset end of another tube or chimney 4, currents of air being directed downwardly around the electrode by the tube 3 and immediately reversed and directed upwardly by the draft in the chimney 4, such structure forming the subject-matter of another application, Serial No. 316,132 filed by me of even date herewith.

The electrode 2 and the lower end of the electrode 1 are inclosed by a transparent globe 5 that is provided with a cap or closure 6 having apertures in its circumference in relation to which vanes 8 and 9 are so disposed upon the outer surfaces that drafts of clean air are directed upon the inner surface of the globe in a direction substantially tangential to its circumference. A rotating layer of clean air is thus formed adjacent to the inner surface of the globe so that the fumes given off by the arc do not come in contact therewith and consequently the formation of deposits thereon is substantially prevented. Rotation of the atmosphere within the globe is also caused which in turn causes rotation of the arc. Rotation of the arc prevents uneven consumption and beveling of the upper electrode which might otherwise occur.

In Fig. 3 I have shown a modification of the cap or closure of Figs. 1 and 2, the passages through the cap being at 10 in its end surface rather than in its circumferential surface and the vanes 11 being so shaped and disposed as to direct the drafts of air upon the inner surface of the globe and cause rotation of the medium within. The cap or closure and the means for directing the air upon the inner surface of the globe may be composed of glass or other transparent material so as not to obscure the light and cast shadows.

The device here shown and described for

directing the air upon the inner surface of the globe and causing rotation of the atmosphere within is only illustrative of any suitable means for effecting this result and
5 I desire that my invention be construed broadly to cover every such means.

I claim as my invention:

1. In an arc lamp, the combination with electrodes and an inclosing casing therefor,
10 of means for directing a draft upon the inner surface of the casing and for causing rotation of the atmosphere within the casing about an approximately vertical axis.

2. In an arc lamp, the combination with
15 electrodes and an inclosing casing therefor, of means for directing drafts tangentially

and approximately horizontally upon the inner surface of the casing.

3. In an arc lamp, the combination with electrodes and an inclosing casing therefor, of means for causing the drafts that enter the casing to revolve about an approximately vertical axis adjacent to the inner surface of the casing.

In testimony whereof, I have hereunto subscribed my name this 1st day of May, 1906.

GEORGE M. LITTLE.

Witnesses:

OTTO S. SCHAIRER,
BIRNEY HINES.