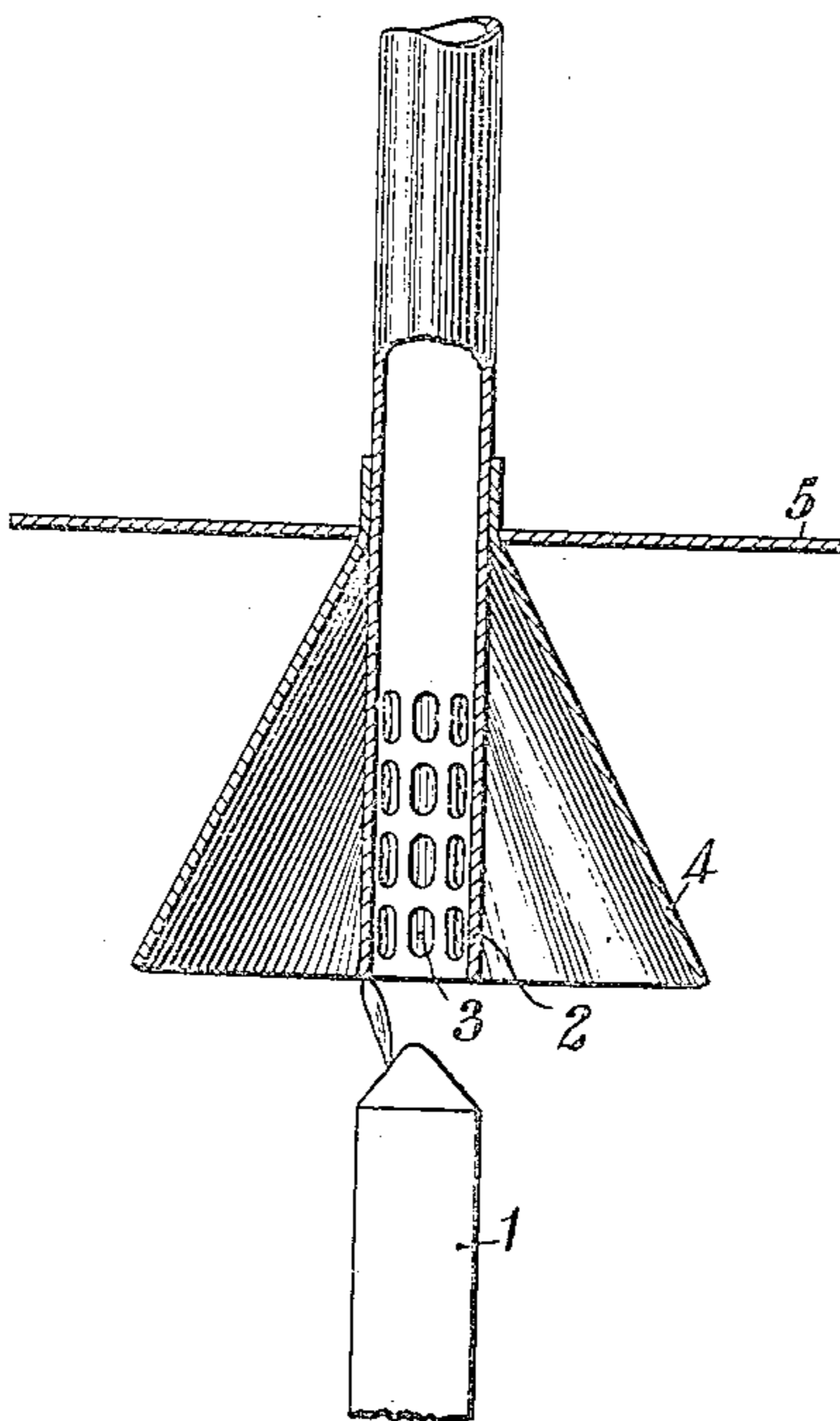


931,169.

S. P. WILBUR.  
ELECTRODE FOR ARC LAMPS.  
APPLICATION FILED APR. 28, 1906.

Patented Aug. 17, 1909.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## ELECTRODE FOR ARC-LAMPS.

No. 931,169.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed April 28, 1906. Serial No. 314,207.

*To all whom it may concern:*

Be it known that I, SAMUEL P. WILBUR, a citizen of the United States, and a resident of Wilkesburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electrodes for Arc-Lamps, of which the following is a specification.

My invention relates to arc lamps and particularly to lamps in which the arc is of the character commonly known as "flaming" or "luminous."

The object of my invention is to provide an electrode for an arc lamp of the character specified which shall enable starting or lighting thereof and removal of the fumes produced by the arcs.

Arc lamps have heretofore been provided in which one of the electrodes is composed of a metal and is substantially non-consumable, and the other of which is composed of a material, or a mixture of materials, that is more highly refractory than carbon, or other materials commonly employed, and that is, consequently, much less rapidly consumed. Electrodes which have been found suitable in practice have been variously composed of titanium carbide, or mixtures of metallic titanium and carbon, titanium oxide and carbon, and various other compositions. In the operation of such a lamp a slag is formed upon the end of the composition electrode, which becomes a non-conductor when cold and which often interferes with starting of the lamp after it has once been in use. Fumes are also given off by such lamps which form deposits upon the electrodes and other parts, often in such a manner as to obscure more or less of the light and to interfere with the operation of the lamp.

According to the present invention, I propose to construct the metallic or non-consumable electrode in the form of a tube, the inner diameter of which is less than the diameter of the other electrode, so that, when the electrodes are brought together, the tube will cut the slag and permit electrical contact between them, the tube also serving as a chimney through which the fumes may be conveyed from the lamp by means of the draft set up by it.

The figure of the accompanying drawing

is a view, partially in section and partially in elevation of the electrodes of a lamp that embody my invention.

Lower electrode 1 of an arc lamp to which my invention may be conveniently applied may be composed, as before described, of titanium carbide or of mixtures of titanium oxide and carbon, metallic titanium and carbon or of other suitable substances that are highly refractory and that impart a "flaming" or "luminous" character to the arc. Upper electrode 2, which is preferably composed of copper but which may also be composed of iron or other suitable metal or metals, is tubular in form and its inner diameter is less than the outer diameter of the electrode 1. It will be understood that when the electrodes are brought together, in the usual manner, to start the arc the tubular electrode will cut or break any insulating slag that may have been formed on the other electrode. The tube also serves as a chimney through which fumes that are given off by the arc may be conveyed to the exterior of the lamp by means of the draft set up by the lamp. In order, however, to insure removal of all the fumes in this manner, the lower end of the tube is provided with a plurality of apertures at 3, and is surrounded by a conical shaped hood 4 that collects the fumes and directs them into apertures. An annular flange 5 is also secured to the tube at the upper end of the hood which facilitates the radiation of heat from the electrode.

The structural details of the tubular electrode may differ considerably from what I have specifically shown and described, and it may be employed with composition electrodes the characteristics of which may differ widely from those here described without departing from the spirit of the invention.

I claim as my invention:

1. A tubular arc lamp electrode of uniform diameter from end to end and provided with lateral apertures adjacent to one end and with a hood that surrounds the apertured end.

2. A tubular upper electrode for arc lamps having open ends and a plurality of side apertures adjacent to its lower end.

3. A tubular arc lamp electrode of uni-

form diameter from end to end and having open ends and a plurality of side apertures adjacent to its arcing end.

4. A tubular arc lamp electrode of uniform diameter from end to end and provided with side apertures adjacent to one of its ends and with a flaring hood that surrounds the apertured end.

5. A tubular arc lamp electrode provided with side apertures adjacent to its lower end and with a flaring hood that surrounds said apertures.

6. A tubular arc lamp electrode having open ends and provided with a flaring hood that surrounds said electrode adjacent to one of its ends.

In testimony whereof, I have hereunto subscribed my name this 21st day of April, 1906.

SAMUEL P. WILBUR.

Witnesses:

BURT BAY,  
BIRNEY HINES.