

(No Model.)

A. C. SIEBOLD.  
ELECTRODE FOR ARC LAMPS.

No. 498,141.

Patented May 23, 1893.

Fig. 1.

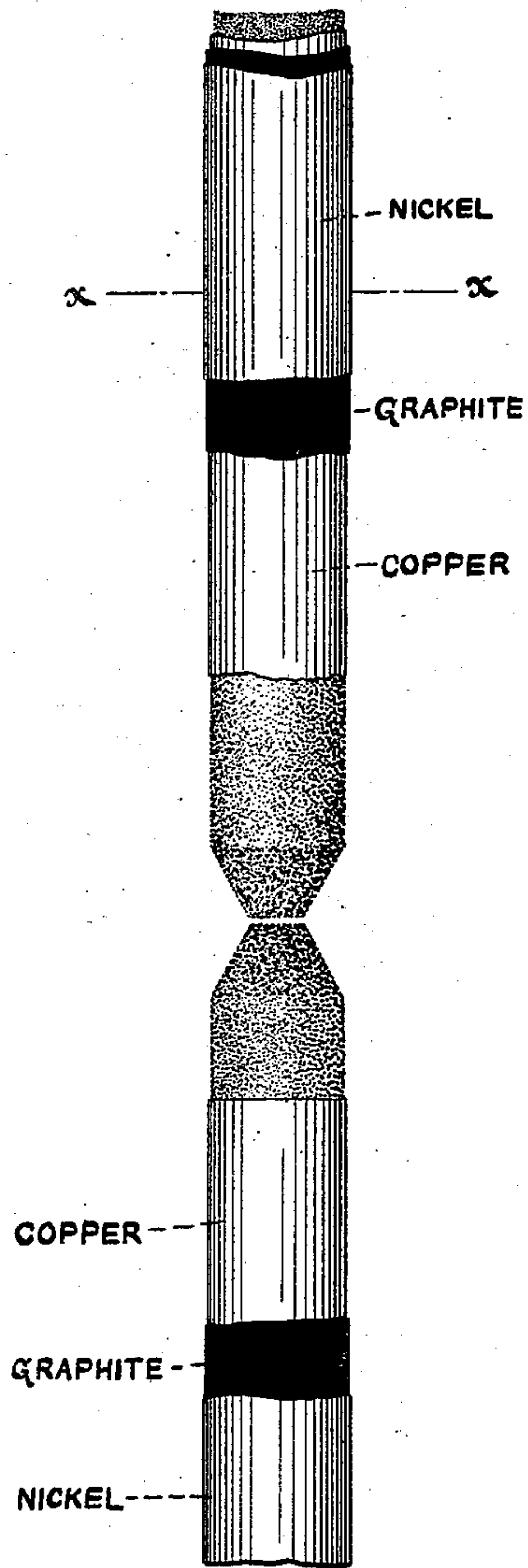
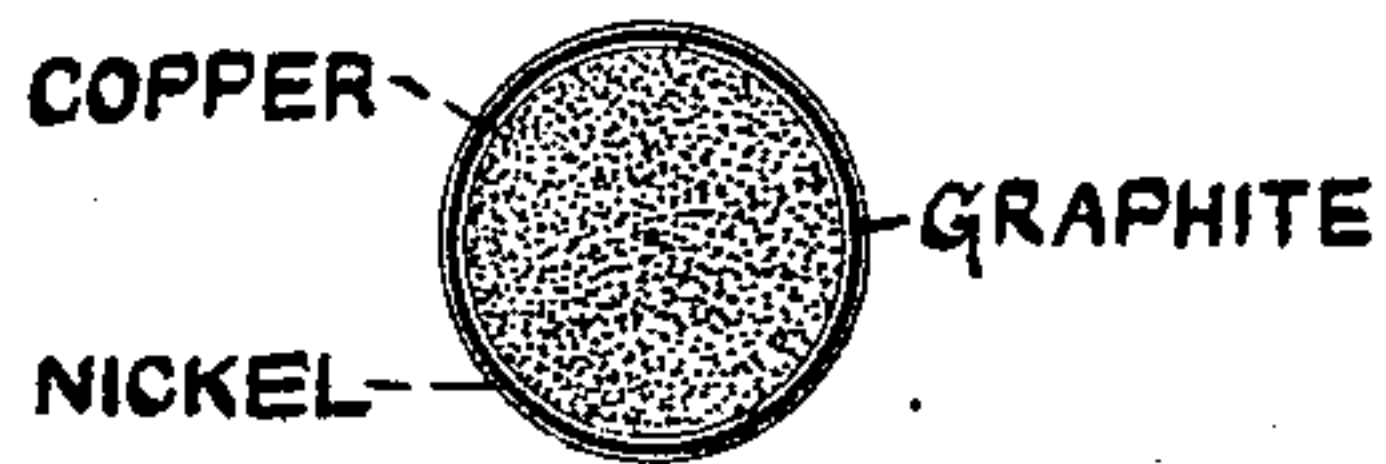


Fig. 2.



WITNESSES:

*Klas H. Penstett*  
*J. J. Malle.*

INVENTOR:

*Albert C. Seibold,*

BY

*Arthur duPont*  
ATTORNEY

# UNITED STATES PATENT OFFICE.

ALBERT C. SEIBOLD, OF MOUNT VERNON, NEW YORK.

## ELECTRODE FOR ARC LAMPS.

SPECIFICATION forming part of Letters Patent No. 498,141, dated May 23, 1893.

Application filed February 28, 1893. Serial No. 464,074. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED C. SEIBOLD, a citizen of the United States, and a resident of Mount Vernon, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Electrodes for Arc Lamps, of which the following is a specification.

My invention has reference to means for prolonging the life of the carbon electrodes employed in arc lamps, and also for effecting a saving of labor involved in the trimming of the same,—it relating especially to the electrodes provided with protective coverings consisting of a combination of metallic coatings successively electro-deposited upon the carbons to prevent useless dissipation of the same. I have found by experiment that the life of such carbons may be materially prolonged by combining with the metallic coatings, a coating of refractory material located intermediate of the two metallic coatings.

My invention therefore consists essentially in an electrode or carbon provided with an inner metallic coating, an outer metallic coating and an intermediate non-metallic coating of refractory material, such as graphite (plumbago).

I will now proceed to describe the said invention with reference to the annexed drawings in which—

Figure 1 represents an elevation of the two electrodes or carbons of an arc lamp embodying my invention, parts of the carbons and coatings being broken away. Fig. 2 is a transverse section in the plane  $x x$ , Fig. 1.

In carrying out my invention a thin coating of copper is first formed about the carbon either by dipping or otherwise mechanically applying the metal, or by electro-deposition in the well known manner. The copper coating is made about the same thickness as that found on the carbons of commerce. The second coating consists of a non-metallic refractory material, by preference commercial graphite. It is applied preferably by dipping the electrode or carbon in a wash or bath of graphite. In place of graphite ordinary gas carbon may be used but graphite being the more refractory is more suitable for the

purpose. The third coating, preferably consisting of a metal differing in nature from the copper, such for instance as nickel, is applied either mechanically or by electro deposition, and is made about the same in thickness as the copper coating. The coating of graphite is somewhat heavier than the metallic coatings, but of course the thickness of either of the coatings may be varied without departure from my invention.

As before stated I have determined by practical experiment that the intermediate coating of refractory material is an important factor in prolonging the life of the carbons when combined with the metal coatings described. The good results obtained by this combination I attribute to the protection afforded to the copper coating from the air, so that oxidation and consequent volatilization of the metal is greatly retarded and can take place only directly at the extreme ends or points of the electrodes, and consequently dissipation of the carbon is retarded by its exclusion from the air. Again the refractory material being protected from the air by the outer nickel coating remains intact and is disintegrated or consumed only in close proximity to the arc. I have also found by experiment that there is no tendency for the protective coating to form a shell about or envelop the arc and then run off in balls, but that it is gradually dissipated in close proximity to the arc;—nor is it liable to melt and run off and leave the carbon exposed.

What I claim as new, and desire to secure by Letters Patent, is—

1. An electrode or carbon provided with two metallic coatings and an intermediate coating of a non-metallic refractory material, substantially as described.

2. An electrode or carbon provided with two coatings of different metals and an intermediate coating of graphite, substantially as described.

3. An electrode or carbon provided with an inner coating of copper, a graphite coating upon said copper, and an external coating of nickel, substantially as described.

4. An electrode or carbon provided with a plurality of metal coatings and a non-metallic



refractory coating separating the metallic coatings, substantially as described.

5. An electrode or carbon provided with a coating of copper, a graphite coating upon said copper, and an external coating of a different metal, substantially as described.

Signed at New York, in the county of New

York and State of New York, this 25th day of February, A. D. 1893.

ALBERT C. SEIBOLD.

Witnesses:

KLAS H. TERUSTEDT,  
J. J. MALLE.