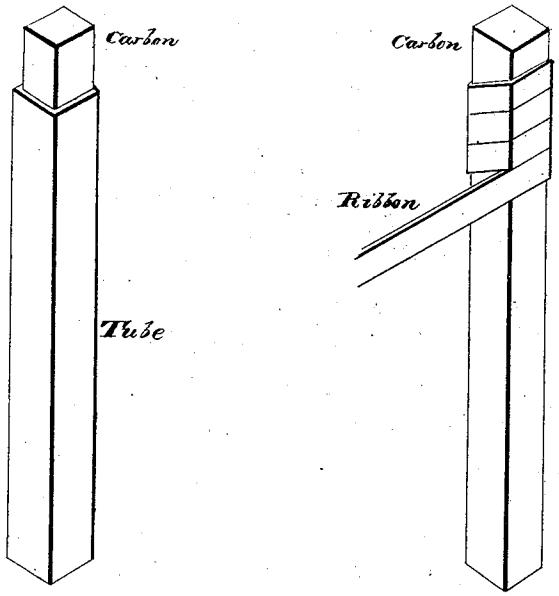
C. F. BRUSH.

Metal-Plated Carbon for Electrical Illuminating Points.

No. 196,425. Patented Oct. 23, 1877.




WITNESSES

Ed. L. Nottingham

A. W. Bright

INVENTOR

Chas F. Brush

By L. Eggett & Leggett,

ATTORNEYS

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

CHARLES F. BRUSH, OF CLEVELAND, OHIO.

## IMPROVEMENT IN METAL-PLATED CARBONS FOR ELECTRICAL ILLUMINATING-POINTS.

Specification forming part of Letters Patent No. **196,425,** dated October 23, 1877; application filed August 21, 1877.

*To all whom it may concern:*

Be it known that I, CHARLES F. BRUSH, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Illuminating-Points for Electric Lights; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to the carbons or illuminating-points of electrical lighting apparatus; and it consists, broadly, in coating, incasing, electroplating, or in any manner covering said carbons with copper, nickel, or any suitable metallic or electro conducting material.

The drawings show a few of various methods of providing a metallic covering to said carbons.

I have found, by repeated experiment with a powerful dynamo-electric apparatus, that it is impracticable to employ sufficiently thin carbon sticks to produce the best illuminating effects, on account of their high resistance and rapid consumption, due to the action of the air on the highly-heated carbon. A great amount of heat is generated in small carbons in consequence of their resistance, aside from the heat produced at the ends of the voltaic arc.

As it is always desirable to employ carbon points as small or thin as possible, I have sought to provide a means whereby such may be practically used in connection with a powerful electric current, and I have fully accomplished my purpose by covering the carbon stick (or disk or plate, as is occasionally used) with copper, nickel, or any good protecting and electro conducting material. The main objects of this covering are to decrease the resistance of the carbon, and protect it from the action of the air, excepting at the extreme illuminating end.

I do not, in any degree, limit myself to any manner or method of applying the said covering to the carbons. I prefer to electroplate the carbons with copper, nickel, or other suitable metal; but, instead of this, sheet-copper or other metal may be formed into a tube which shall inclose the carbon; or a ribbon of suitable material may be wrapped spirally around the carbon stick, so as to cover it; or, instead of originally taking carbon in the "stick" form, pulverized or suitably-prepared carbon, or any desirable compound of carbon and other matter, may be rammed, packed, or suitably put into a metallic tube of proper dimensions.

Providing the covering to the carbons, as above specified, results, first, in preventing consumption of the carbons, excepting at and very near their points; second, in the practicability of using smaller or thinner carbon sticks; third, in the ability to employ much longer sticks; fourth, in affording a free and ready conductor to the electric current, thus sufficiently decreasing the resistance to said current, that has heretofore rendered the employment of small carbons impracticable; fifth, in increasing the strength and toughness of the carbon sticks; sixth, in insuring a good electric connection between the carbon stick and its post; seventh, in making practicable the employment of foreign matter mixed with the carbon.

In operation, the intense heat generated by the electric light melts and disperses the covering of the carbon sticks at their opposing points, and for a proper distance beyond, but no farther. The balance of the carbons are entirely preserved, while, as fast as the carbons are burned, just so fast will their covering be removed, leaving the carbons properly exposed.

I do not confine myself to the covering of carbon sticks or rods, or to pure carbon only. Plates or disks of carbon may be used, or a mixture of carbon with foreign material. Thus the carbon may be mixed with any other suitable substance for increasing the illuminating power of the incandescent points—such as, for instance, magnesia, lime, &c.

Compounds of this character have heretofore been impracticable, owing to the greatly-increased resistance produced.

As I am not aware that carbons have ever before been provided with the covering hereinbefore specified,

What I broadly claim is—

1. As an article of manufacture, carbon (or other material suitable for use as illuminating-points in a device for producing electric light) permanently covered, coated, or surrounded with copper, nickel, or other suitable protecting and electro conducting substance, substantially as and for the purposes specified.

2. As an article of manufacture, a carbon stick, point, disk, or plate electroplated with copper, nickel, or any suitable metal, substantially as and for the purposes shown.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES F. BRUSH.

Witnesses:

FRANCIS TOUMEY,

GEO. W. STOCKLY.