

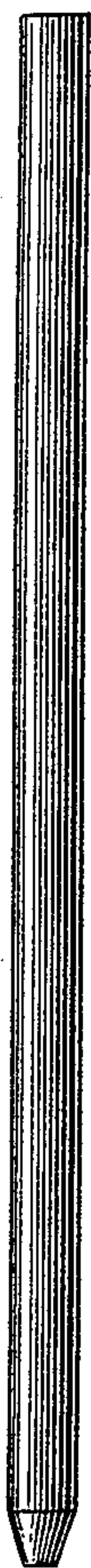
(No Model.)

E. G. ACHESON.  
CARBON FOR ELECTRIC LIGHTS.

No. 527,826.

Patented Oct. 23, 1894.

*Fig. 1.*

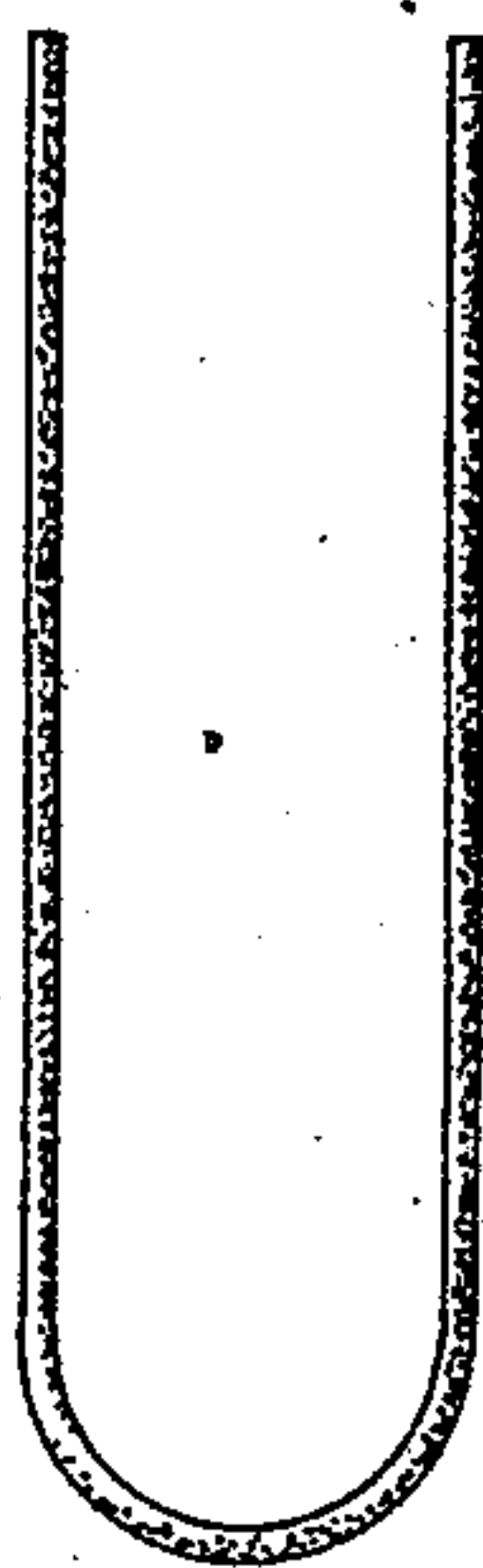


*Fig. 2.*



← Carbon.  
← Carbide of Silicon.

*Fig. 3.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

EDWARD GOODRICH ACHESON, OF MONONGAHELA CITY, PENNSYLVANIA.

## CARBON FOR ELECTRIC LIGHTS.

SPECIFICATION forming part of Letters Patent No. 527,826, dated October 23, 1894.

Application filed August 25, 1894. Serial No. 521,324. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD GOODRICH ACHESON, a citizen of the United States, residing at Monongahela City, in the county of Washington and State of Pennsylvania, have invented certain new and useful Improvements in Carbons for Electric Lamps, of which the following is a specification.

My invention relates to carbons, and more especially to that class of carbons which are adapted for use in connection with the electric current, such as the points or rods for are lighting, the filaments for incandescent lighting, and other forms, and it has for its object to produce an improved illuminating body which may be so used, and which shall have the properties among others, of prolonged life and greater efficiency, producing a greater light value for the electric energy utilized, and to these ends my invention consists in a carbon or filament composed essentially of carbon, having associated with it and forming a part thereof, a certain proportion of carbide of silicon.

It is well known that many efforts have been made to improve the quality of illuminating carbons, for the purpose of lengthening the life of the filaments, rods or points, and also that many efforts have been made to produce a combination of carbon with other substances for the purpose of producing more light for the electrical energy consumed, and for this purpose many and various combinations of materials have been made, both in the mass of the filament, rod or point, or in the coating of the mass. Without reciting all the efforts which have been made in this direction with greater or less success, it has been one of the principal objects of my present invention to produce an illuminating carbon containing a material having an excessively high fusing point and equally difficult of oxidation, and at the same time having a high luminous value, as exhibited in the production of a greater number of light-waves at a given temperature than the substances heretofore used; these combined characteristics resulting in the production of an arc free from vapors which have been produced in nearly or all former efforts, and also in the production of an arc free from objectionable colors.

With these general statements of the objects and purposes of my invention, I will now proceed to describe the embodiment thereof and the manner in which my invention is carried out, and it will be understood that while I have described what may be considered as a preferable embodiment of my invention, I do not limit myself to the precise conditions or proportions herein set forth, as they may be varied by those skilled in the art in accordance with the particular purposes for which the carbons are intended, and the conditions under which they are to be utilized.

In the accompanying drawings, I have shown several typical forms of illuminating bodies or carbons embodying my invention, sufficient to enable those skilled in the art to understand the same, and in which—

Figure 1, is a representation of an ordinary solid carbon rod. Fig. 2, is a representation of a cored carbon rod; and Fig. 3, is a representation of a filament of an incandescent lamp.

In carrying out my invention I take preferably pure carbon, and preferably reduce it to a finely pulverized condition, and also take carbide of silicon in a similar condition, and thoroughly mix the two together, and these may be united by any appropriate or well-known binding material, such for instance, as tar. While the proportions may be varied considerably, according to the purposes for which the carbons are intended, a mixture of ninety per cent. of carbon and ten per cent. of carbide of silicon, in the conditions above indicated, produces efficient and satisfactory results. When the carbons are to be used as rods, points, or other forms, in an electric arc, this mixture may be treated or manipulated in any of the well-known ways, by compression, baking, coated, &c., which need not be fully set forth.

For some particular purposes, it has been found advisable to use a cored carbon rod or point, the core being formed of substances other than carbon, and where such form is desirable, as well as to get the full and complete effect of the illuminating qualities of the carbide of silicon more distinctly separated from that of the carbon, the ordinary cored carbon rod or point is used and the cen-



tral space is filled with the carbide of silicon, either alone or with a suitable binding agent, as indicated in Fig. 2.

5 In the use of the carbide of silicon in connection with the carbon of the filaments for incandescent lighting, the carbide of silicon is intermingled with the portions of the carbon at the surface and extending inward for any desired depth, and it is intermingled and  
10 fixed in any suitable way, as for instance, the carbide of silicon in a very fine powder or dust is mixed with and suspended in the oil used in the well-known oil bath, for the treatment and building up of the carbons, and in  
15 the process of depositing the carbon from the oil bath onto the filament, the fine particles of carbide of silicon, being about and in contact with the filament, become fixed to the filament simultaneously with the deposit of  
20 carbon and become a part of the filament, the amount of carbide of silicon fixed in the carbon being governed, among other things, by the amount suspended in the oil. Other ways of combining the carbide of silicon with the  
25 filament, of course, may be utilized, according to the specific results intended to be produced.

Carbide of silicon is a product which was first produced by myself, and which has been  
30 formed at a temperature approximately that of the electric arc, and which is, as a result, free from all volatile matters and eminently fitted (as the result of having already existed at these high temperatures) for the light-  
35 giving body. It has also been demonstrated that it resists oxidation to a greater extent

than any other known material, having resisted such chemical action when highly heated and exposed to a stream of oxygen gas. Associated with these two essential qualifications of infusibility and non-oxidizability, is a third equally valuable one, of luminescence, it producing a greater number of light-waves for the electrical energy consumed than those illuminating bodies heretofore used. 40 45

While carbide of silicon has the essential characteristics of an illuminating body as above stated, it is in itself deficient in the electrical conductivity necessary to rods or points of arc lights, and for that reason it is associated with carbon in their formation. 50

What I claim is—

1. An illuminating body for electric lamps, comprising carbon associated with carbide of silicon, substantially as described. 55

2. A carbon rod, point or filament for electric lamps, comprising carbide of silicon as an illuminating body, associated with a body of relatively high electrical conductivity, as carbon, substantially as described. 60

3. A carbon rod or point for electric lamps, comprising an outer body of carbon and a core of carbide of silicon, substantially as described.

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

EDWARD GOODRICH ACHESON.

Witnesses:

F. L. FREEMAN,  
A. N. DOBSON.