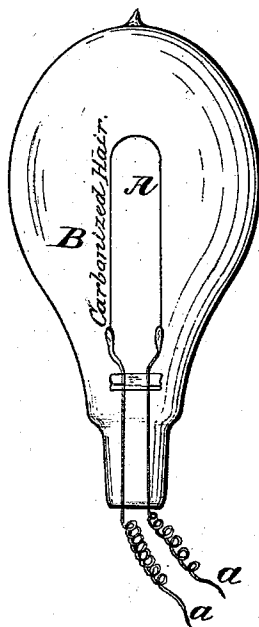


(No Model.)

W. STANLEY, Jr.  
ELECTRIC LAMP.

No. 269,132.

Patented Dec. 12, 1882.



*Witnesses:*

*R. F. Gaylord*

*L. A. Duncan*

*Inventor:*

*William Stanley, Jr.*  
*by Robt H. Duncan,*  
*his attorney*

# UNITED STATES PATENT OFFICE.

WILLIAM STANLEY, JR., OF ENGLEWOOD, NEW JERSEY, ASSIGNOR TO THE  
SWAN INCANDESCENT ELECTRIC LIGHT COMPANY, OF BOSTON, MASS.

## ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 269,132, dated December 12, 1882.

Application filed June 15, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM STANLEY, JR., of Englewood, in the county of Bergen and State of New Jersey, have invented a new and  
5 useful Improvement in Carbon Burners for Electric Lamps, of which the following is a specification.

I have discovered and demonstrated by a series of experiments that hair from the human  
10 head, as well as that taken from the bodies, manes, and tails of certain animals, is admirably adapted for the manufacture of carbon burners for incandescent electric lamps.

The present invention consists in a carbon  
15 burner for electric lamps produced from hair; also, in the method of preparing or producing such hair carbons, substantially as hereinafter set forth and claimed. A desirable method of forming or producing such carbons is to take  
20 strands of hair, preferably from the human head, and immerse them in an alkaline bath of sufficient strength and during sufficient time to remove the greasy or fatty matter therefrom. Instead, however, of treating the hair  
25 with alkalies, dilute sulphuric acid or other weak acids may be used which will have an affinity for the oil or fatty matter and will not materially injure the structure of the hair. So, also, by exposing the hair to a gentle heat for  
30 a considerable length of time the larger proportion of oil and grease can be removed by evaporation.

After the removal of the fatty matter the strands or filaments of hair can be laid straight  
35 upon a plate of glass or other smooth surface and retained in that position till thoroughly dried by any convenient means, as by sticking the ends upon the plate by the use of any adhesive substance adapted for the purpose, or  
40 even by the moisture of alkalies or acids by which they have been treated. This drying of the strands in a straightened and slightly stretched position tends to prevent them from crinkling during the operation of carboniza-  
45 tion. When the strands of hair are dried they are placed in suitable molds or flasks provided with grooves or channels, in which the hairs are brought into the form or shape for use, and are then carbonized by heating the flasks  
50 to the required temperature in the ordinary

way for carbonizing materials for incandescent-lamp carbons. When the carbonization is completed the hair is ready for application to the lamp, and may be attached to the leading-in  
wires in any desired manner.

In practice I have found that the hair of the human head is superior to that of the lower animals for making carbons for the purpose indicated, and that the hair of Chinamen gives the most satisfactory results. This, in my judg-  
60 ment, is due to the circumstance that the hair of the Chinese, so far as I have examined it, is coarser than that of most races, and is remarkably straight and uniform in cross section.

Heretofore carbon burners for incandescent  
65 lamps have been made from a great variety of materials; but, so far as I know, nothing has been found in abundance which, in its natural state, was of the proper sizes for this purpose, and a large part of the cost of making such  
70 finished carbons has been expended in bringing the material into the proper sizes in cross-section by molding, cutting, shaving, and by the use of dies and other devices. As opposed to this prior state of the art, and constituting  
75 one of the valuable advantages of the use of hair for this purpose, is the circumstance that this material can be found in great abundance of all the sizes in cross-section without prepara-  
80 tion or deduction in the matter of size for the manufacture of carbons for lamps of different intensities, it being true that the hair from human heads of the same race differs greatly  
in size, while a still greater difference is found when the hair of some of the different races  
85 is compared.

Carbon burners properly made from hair are found to be superior in the density of the carbon, as compared with its size, to that of most, if not all, carbons from other material. If  
90 made from suitable hair, which can easily be obtained, they are also remarkably uniform in structure and in diameter throughout their entire length, and they are less liable to crack and flaw during carbonization, from the fact  
95 that hair contains only a small percentage of silicious matter compared with wood fiber or most vegetable or mineral products from which such carbon burners have heretofore been made.

Hair carbons, properly made, are essentially 100

tougher, more flexible, and more durable than those heretofore made from other materials, and they can be readily bent into desirable shapes or forms for use in lamps, even if carbonized  
5 when straight. In addition to the superior density of the hair carbon, its purity, flexibility, durability, and the abundance of the supply of hair of the proper sizes for lights of different intensities, without any cost or labor of changing  
10 its natural form or size, there is another important advantage arising from the fact that the hair is tubular, and, as a consequence, the same mass of carbon will present a larger radiating-surface than if it were in the form of a  
15 solid cylinder.

The present invention is illustrated in the accompanying drawing, which shows the hair carbon or burner A in position in the globe B of an electric lamp, *a* representing the lead-

ing-in wires properly sealed into the neck of 20 the globe.

It is not intended to limit this invention to the use of any special kind or quality of hair, or to any special way or process of carbonizing the hair or of removing the oil or fatty matter 25 therefrom; but

What I claim as new is—

1. A burner for incandescent electric lamps, composed of carbonized hair.

2. The hereinbefore-described method of pro- 30 ducing burners for incandescent electric lamps, which consists in removing the oil or fatty matter from hair and then carbonizing the same.

WILLIAM STANLEY, JR.

Witnesses:

ROBERT H. DUNCAN,  
W. F. HAPGOOD.