(No Model.)

H. A. SEYMOUR.

CARBONS FOR ELECTRIC LAMPS.

No. 261,264. Patented July 18, 1882.

Fig. 1.

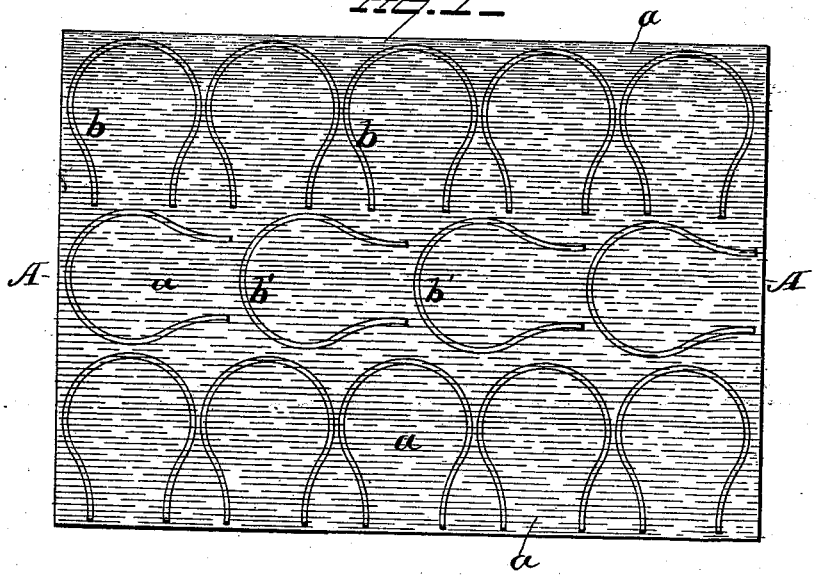


Fig. 2.

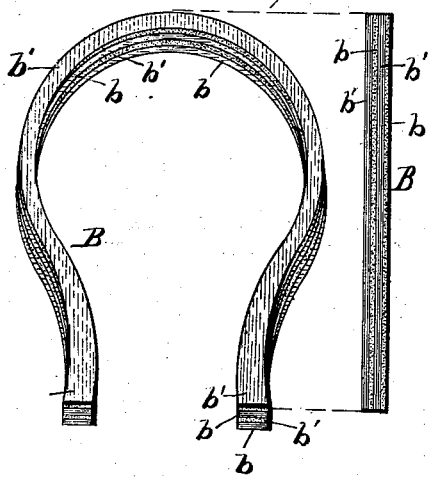
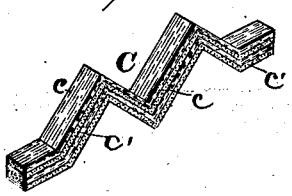


Fig. 3.



WITNESSES

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CARBON FOR ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 261,264, dated July 18, 1882.

Application filed January 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. SEYMOUR, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Carbons for Electric Lamps; 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 the same.

My invention has for its object the strengthening of the incandescent carbons of electric lamps, especially those carbons the blanks or filaments for which are cut from paper or paper-like substance formed from fibrous pulp, and which have a curved or bent configuration.

Most of the incandescent carbons are curved or bent into graceful shapes in order that they may have their illuminating surface within a small compass, and not require the use of inclosing bulbs having one dimension much in excess of their others. The curves and angles of these carbons are known to be the portions most likely to be broken by expansion and contraction, from the fact that lines of strain center or meet at and emanate from such points.

Even, however, in a straight carbon made from paper, as heretofore prepared, there are liable to be weak points, owing to the lack of uniformity in the arrangement of the fibers of the paper, these fibers being at some points parallel and at others arranged at various angles to each other.

In accomplishing the end I have in view I form each carbon filament from a blank of several layers of especially-prepared paper or nearly-dried pulp, each layer having the general design of the complete carbon, and all being compressed into practically one filament or blank, which may be afterward carbonized.

In preparing the paper from which are to be cut the layers for composing a carbon I use preferably a long-fiber pulp, and so comb or otherwise treat it that the long fibers shall lie parallel or nearly parallel with each other.

From the paper thus prepared I cut the layers or elementary filaments from which the complete blank is built, one half of the whole number of layers being cut with their main portions parallel with the direction of the long fibers of the paper, while the other half are cut in a position at right angles to the direction of the fiber. The result is that when the complete carbon is formed from the two sets of layers, equal numbers being preferably used for each set, the fibers will lie in one direction in one half of the carbon and at right angles thereto in the other half. The resistance to strains of expansion and contraction is thus approximately equalized throughout the carbon, and there is certain to be at all curves and angles an arrangement of the paper fibers adapted to oppose a disruptive strain at such points, the fibers of one layer re-enforcing those of another or others adjacent. I prefer to dry the pulp to paper under pressure after it has been combed.

In the accompanying drawings, Figure 1 is a diagram illustrating the arrangement of the fibers of the paper and the manner of cutting the layers or elementary filaments thereform. Figs. 2 and 3 are perspective views of the superposed or piled layers to be compressed to form the complete blank ready for carbonization.

Referring to Fig. 1, the letter A designates a strip of paper, and *a a* the long fibers of the same. These fibers, as will be seen, are arranged practically parallel with each other, this parallelism being secured by combing the pulp in a manner well known to paper-makers.

The letters *b* and *b'* indicate the positions of two horseshoe-shaped layers or elementary filaments to be cut from the paper strip. The fibers lie across the arms or side portions of the layer *b*, and longitudinally with respect to the corresponding portions of the layer *b'*. In Fig. 2 four of these layers—two of *b* and two of *b'*—are alternately arranged in the pile marked B, and when firmly compressed and condensed into one blank this blank will have two sets of fibers at right angles to each other, one set re-enforcing the other, as before explained.

The letters *c* and *c'* designate zigzag layers having the fibers in positions at right angles when the layers are piled alternately, as shown at C, the effect being the same as in the horseshoe shape.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An electric-lamp incandescent carbon composed of paper or paper-like substance, having two sets of long fibers arranged in layers, and the long fibers of one portion of the layers being at an angle to those of the other layers.

2. The method of manufacturing incandescent carbons for electric lamps, substantially as described, the same consisting in cutting layers or elementary filaments in different positions from paper having its long fibers parallel with each other, and combining a number of these layers having the fibers in different positions to form a complete blank or filament, and then carbonizing the whole.

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

HENRY A. SEYMOUR.

Witnesses:
HERMAN MORAN,
F. O. MCCLEARY.