

(No Model.)

H. S. MAXIM.
CARBON FOR ELECTRIC LAMPS.

No. 254,672.

Patented Mar. 7, 1882.

Fig. I

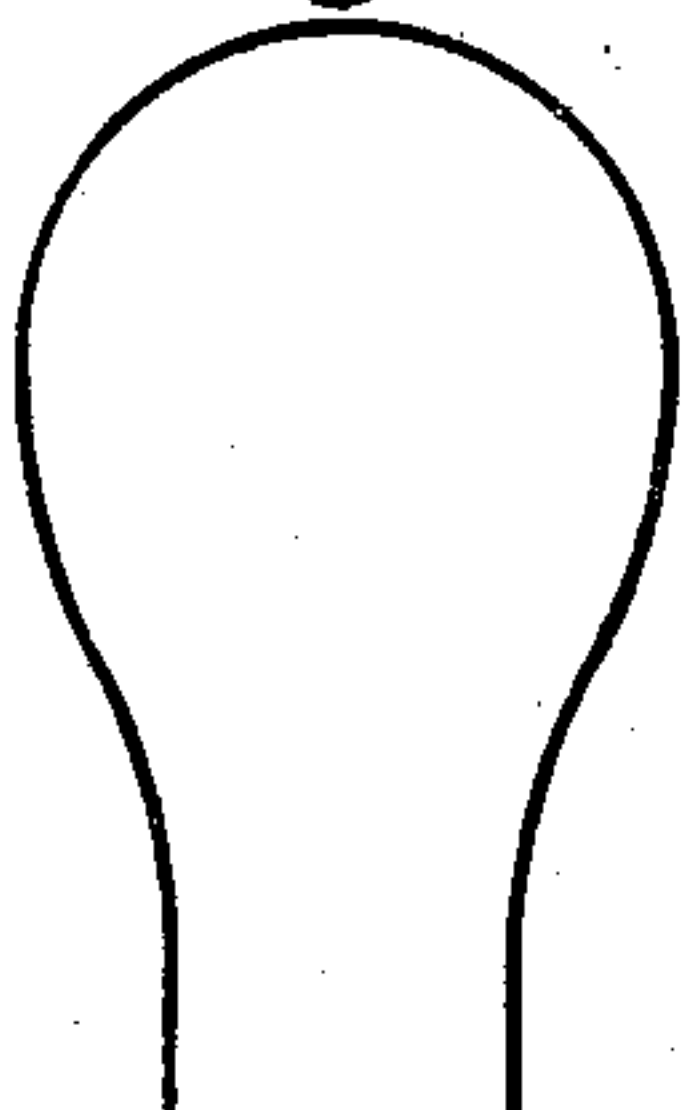


Fig. II



Fig. III

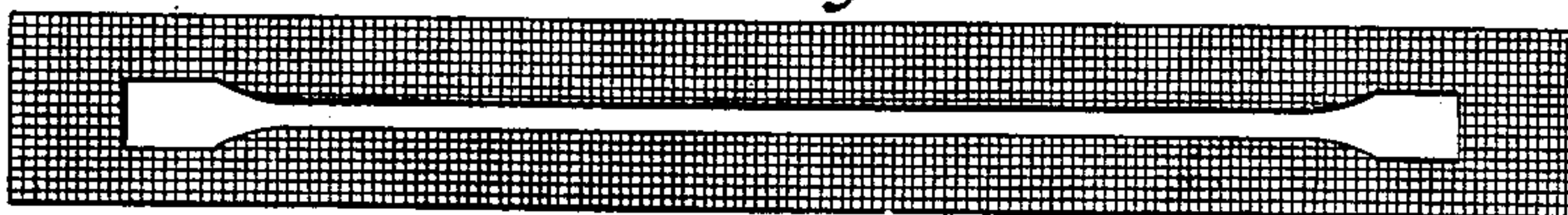


Fig. IV

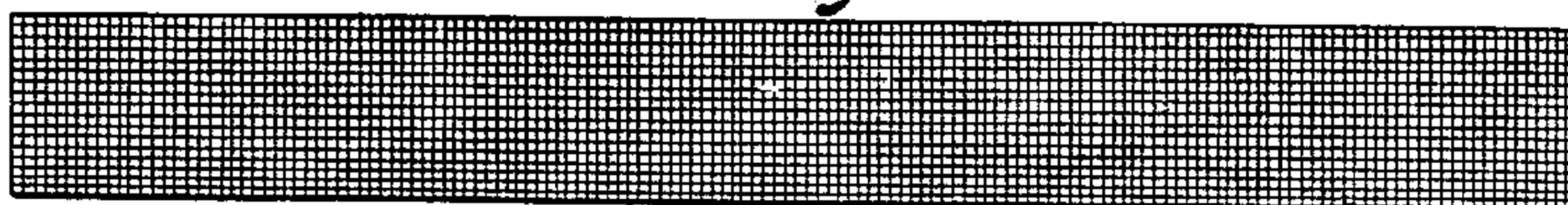


Fig. V



Fig. VI

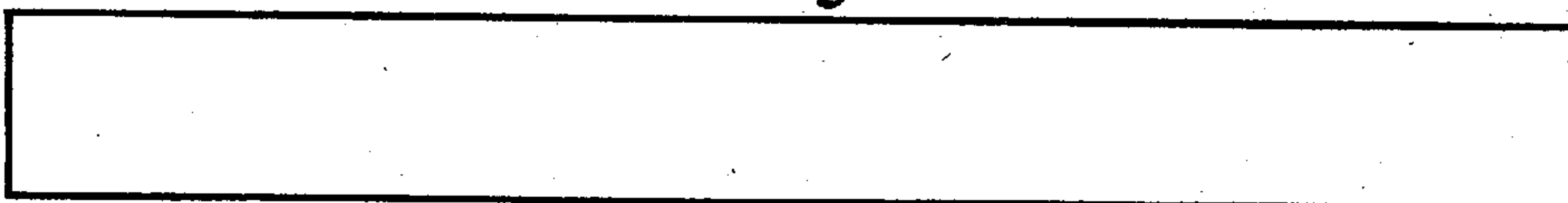
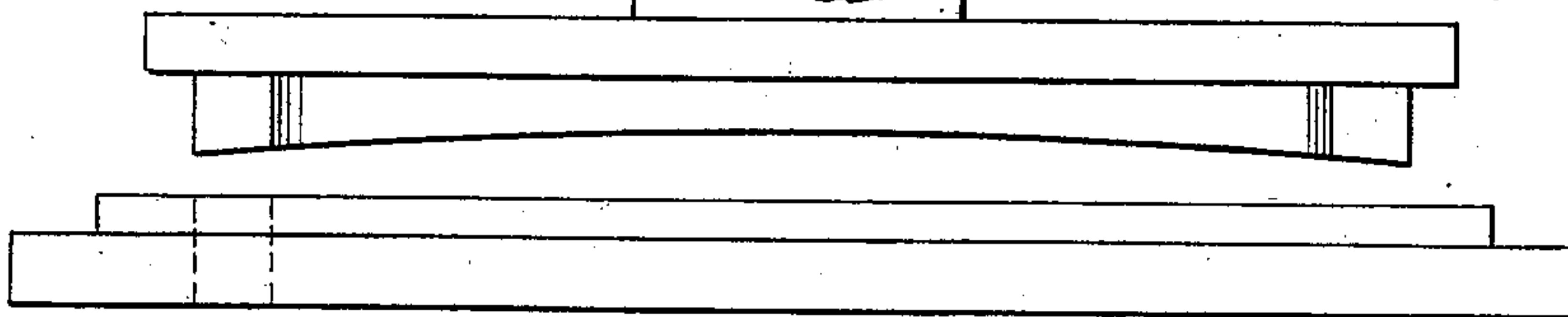


Fig. VII



Witnesses

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UNITED STATES PATENT OFFICE.

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CARBON FOR ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 254,672, dated March 7, 1882.

Application filed April 25, 1881. (No specimens.)

To all whom it may concern:

Be it known that I, HIRAM S. MAXIM, a citizen of the United States, and resident of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in the Manufacture of Carbons for Incandescent Electric Lamps, of which the following is a specification.

In the manufacture of carbons for incandescent lamps the usual method pursued is to cut out from sheets of paper or wood blanks of the shape desired for the finished carbons, and to carbonize and subsequently treat them for securing the qualities necessary for producing a durable incandescent conductor. The blanks are considerably larger than the finished carbons, which is rendered necessary by the great shrinkage which they undergo in the process of carbonization. The impossibility of subjecting all portions of the blanks to the same degree of heat causes an uneven shrinkage, which is frequently so marked as to cause irregularities in conductors, thus rendering them unfit for use. In order to avoid this, I cut out from sheets of paper or wood a number of strips, which are then carbonized. From these the conductors are cut by means of a shearing-punch, bent to the desired shape and treated as may be desired for reducing their resistance and setting them in the form to which they have been bent. The latter steps in this process are usually to retain the bent strips by temporary clamping devices, and to pass through them a current of electricity while surrounded by an attenuated atmosphere of a carboniferous vapor.

To prevent the tendency of breaking and cracking of the strips while being punched, they may be coated on both sides with a varnish such as copal after being carbonized. This penetrates the pores of the carbon, and renders it more pliable and prevents the spread of cracks. When the conductors are subjected

to the intense heat of the current in the testing receiver, as above described, the varnish is completely carbonized and all the volatile portions driven off.

The accompanying drawings illustrate the carbons as they appear at the various steps of the process. Figure I is a side view of the completed conductor; Fig. II, the same before treatment in the carbon vapor or testing receiver. Fig. III represents the strips from which the conductor has been punched; and Fig. IV, the same entire, the sectional views in both figures showing the layers of varnish. Figs. V and VI are views of the strips after and before carbonization, and Fig. VII a view of a shearing-punch of ordinary construction for cutting out the conductors.

Carbons thus made are of a uniform size throughout, besides being more uniform in structure, as all the shrinkage takes place before the form which they are to ultimately retain is given to them. The varnish used must possess qualities which cause it to penetrate the pores of the carbon, so that it not only solidifies it when carbonized, but renders it less brittle or liable to crack.

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

The process of manufacturing carbon conductors for incandescent lamps by first carbonizing at a high temperature in a flask sheets of proper material, then cutting or punching from these the conductors in any desired shape, and lastly heating the said conductors in a carbonaceous gas or vapor, substantially as set forth and described.

In testimony whereof I have hereunto set my hand this 22d day of April, 1881.

HIRAM S. MAXIM.

Witnesses:

WM. O. BARNES,

WILLIAM STANLEY, Jr.