(No Model.)

H. S. MAXIM.

PROCESS OF MANUFACTURING CARBONS FOR INCANDESCENT LAMPS.

No. 277,846. Patented May 15, 1883.

Fig. 1.

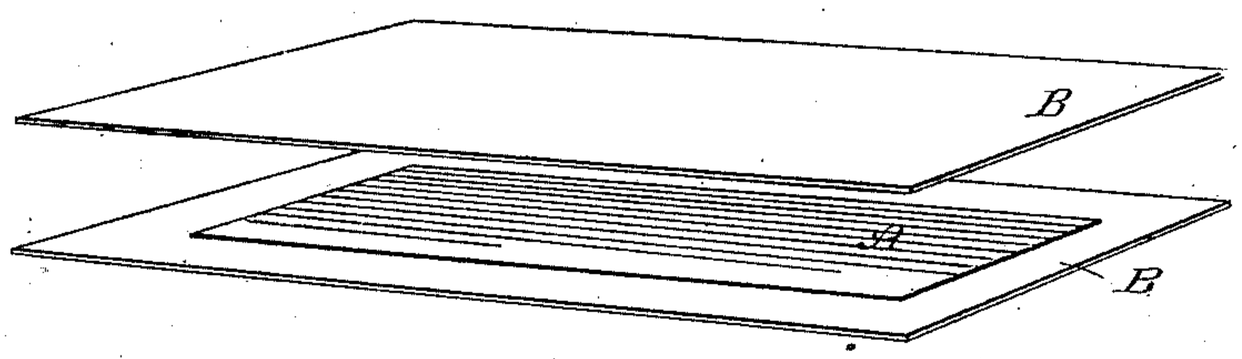
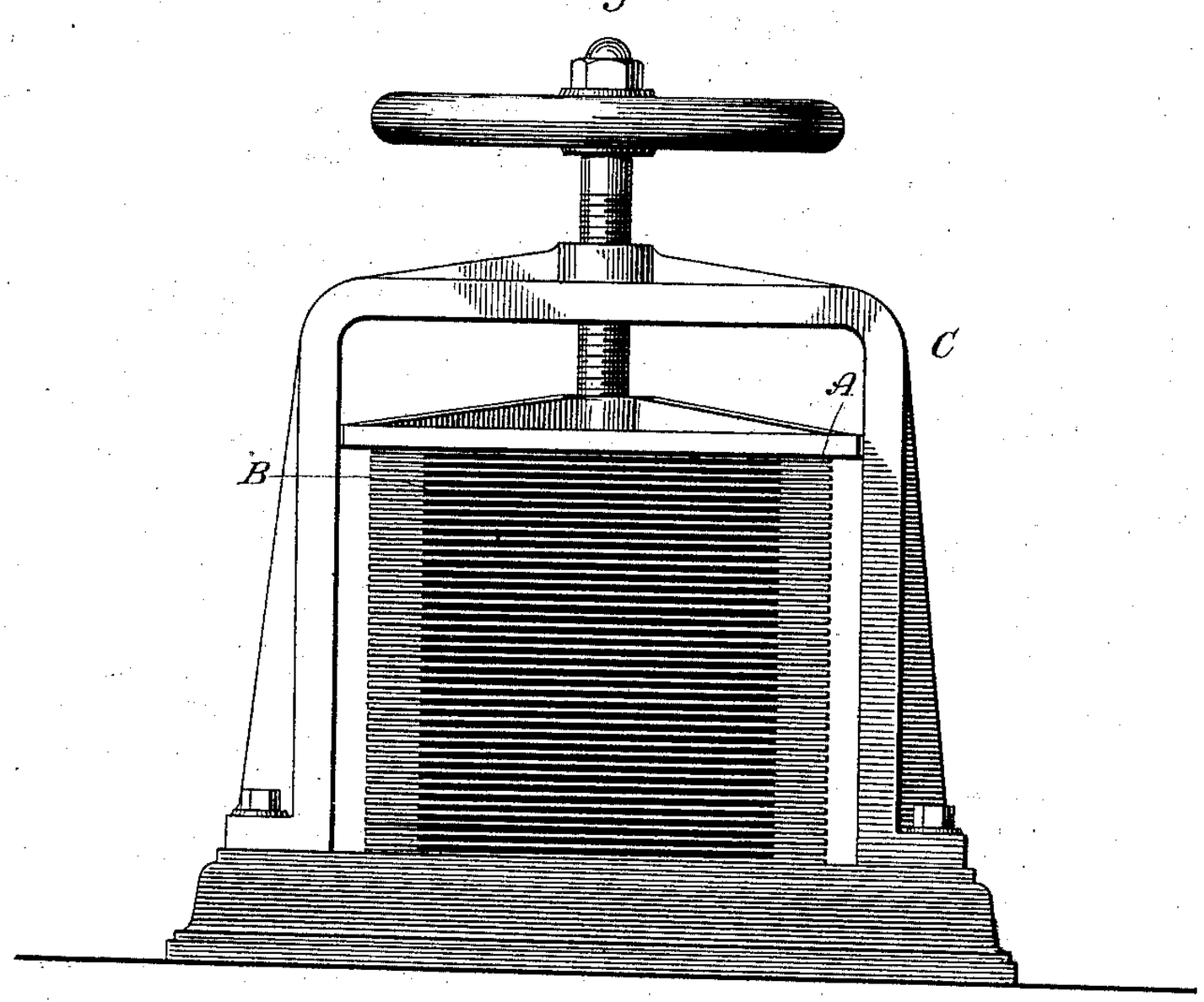


Fig. 2.



Attest:
Raymond F. Barnes.
W. Frisby

Inventor:
Hiram S. Maxim
By Parker W. Page
Atty.

UNITED STATES PATENT OFFICE.

HIRAM S. MAXIM, OF PARIS, FRANCE.

PROCESS OF MANUFACTURING CARBONS FOR INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 277,846, dated May 15, 1883.

Application filed January 11, 1883. (No model.)

To all whom it may concern:

Be it known that I, HIRAM S. MAXIM, a citizen of the United States, at present residing in Paris, in the Republic of France, have invented certain new and useful Improvements in the Process of Manufacturing Carbons for Incandescent Lamps, of which the following is a full, clear, and exact description.

My invention relates to processes of manufacturing carbon conductors for incandescent lamps from paper or similar fibrous materials. The usual process, aside from my improvements, is as follows: From paper, or material of a similar texture or character—such as wood—strips or sheets of the desired dimensions are formed. From these blanks approximating in shape to the finished conductors, though nearly a third larger, are cut or punched by means of a die. The blanks are then laid between sheets of card-board, packed in a muffle, and carbonized at a high temperature, after which they may be subjected to various treatments, or mounted at once and inserted in the lamp. That portion of the process involving the punching or cutting out of the blanks by dies or similar means is attended with many difficulties, mainly on account of the fibrous texture of the material employed and the difficulty met with in keeping the cutting-edges of the dies in good order. With the most perfect appliances it is hard to produce a large number of blanks of exactly the same character or free from frayed edges. It has been attempted to remedy this by first carbonizing the paper and cutting out the conductors from the carbonized sheets; but this process is attended by many obvious objections, mainly arising from the brittle nature of the carbon.

My improvements consist in partially carbonizing the sheets of fibrous material, and preferably under high pressure, as a preliminary to cutting out the blanks. By this treatment the material is brought to a condition midway between flexibility and brittleness, and is rendered very dense—a condition which renders it far more suitable for undergoing the subsequent steps in the process.

The method, in detail, will now be described, reference being had for this purpose to the accompanying drawings, where—

Figure 1 represents a sheet of fibrous material inclosed between sheets or plates of metal or carbon. Fig. 2 shows in elevation a press for keeping the sheets under pressure while undergoing the baking or partial carbonization process.

The sheets of paper or other material, A, are laid between metal, carbon, or similar plates, B. A number of these are built up in a pile and put under a press, C. While in this condition a gas-flame is directed against the pile, and the pressure maintained as high as possible. They are heated until they have been exposed for a short time to a temperature about as high as that of melted lead. When they are removed they should present a baked or partially-carbonized appearance—should be very smooth to the touch and somewhat brittle. From them the conductors are manufactured in the manner above described, or in any other that is substantially similar.

I would state that the special method of heating the fibrous sheets may be greatly varied, so that, without confining myself to the specific means described,

What I claim is—

1. The improvement in the process of manufacturing carbon conductors for incandescent lamps from sheets or strips of fibrous material, which consists in baking or partially carbonizing the said sheets or strips before cutting the blanks therefrom, as and for the purpose set forth.

2. The improvement in the process of manufacturing carbon conductors for incandescent lamps from sheets or strips of fibrous material, which consists in baking or partially carbonizing the said strips or sheets under pressure before cutting the blanks therefrom, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 26th day of December, 1882.

HIRAM S. MAXIM.

Witnesses:

ROBT. M. HOOPER,

DAVID T. S. FULLER.