UNITED STATES PATENT OFFICE.

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PROCESS OF MAKING INSULATING MATERIAL.

SPECIFICATION forming part of Letters Patent No. 589,256, dated August 31, 1897.

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To all whom it may concern:

Be it known that we, JOHN GRAY and CHARLES H. CASE, citizens of the United States, and residents of South Manchester, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Processes of Making Insulating Material, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of our invention is to provide an improved process for forming a material composed mainly of paper-stock or like fibrous material and that shall render it firm, hard, waterproof to a degree, and particularly usable as an insulating material, although capable of use for many other purposes in the arts.

To this end the invention consists in the process of treating paper-stock or like fibrous pulp in a bath of melted sulfur, and subsequently setting it by immersing in a cold liquid, and it also consists in details of the process resulting in various forms of the product, as hereinafter described, and more particularly pointed out in the claims.

In carrying out the invention we take a quantity of paper-stock or "stuff" mixed and beaten up in any well-known manner of preparing the stock whether it be of linen, hemp, flax, wood, or other fiber. The form in which this stock is first prepared, whether in sheet or in block, depends upon the use to which the material is to be subsequently put, but it will be largely prepared in the form of sheets of greater or less thickness, the stock preferably containing an oxid of iron or other metal. A quantity of this stock after being formed to shape is plunged into a bath of melted sulphur at a temperature of about three hundred and ten degrees (310°) Fahrenheit and retained in the bath long enough for the sulfur to thoroughly permeate and unite with the material. It is then subject to pressure, as between rolls or in a press, and if it is desired to prevent the material from warping is plunged into a bath of cold liquid, as water, after being pressed. It is preferred that the rolls or molds by means of which pressure is applied shall be heated to a degree to prevent chilling the material before it is formed. The improved material thus made can be filed, sawed, cut with the ordinary woodworking and some iron-working tools, and turned to shape, care being only required that the speed of the lathe in turning shall be about the speed required for turning metal, or but little more. This material is particularly useful for insulating purposes, and when prepared in sheets can be cut to the desired shape and form in strips for washers or for any other desired purpose.

The pulp can be molded to the desired shape for cut-out boxes, switch-bases, and for other purposes, then subjected to the sulfur treatment, to pressure, and then turned down to the required shape.

The material thus made is capable of a high degree of polish, as it is firm, non-fibrous, and capable of being cut to any desired shape with tools, as described.

After the mass of material has been treated in the melted sulfur and subsequently subjected to heat and pressure, as between rolls, a surface-scale is formed which is a detriment to the commercial use of the article unless such scale shall be removed. This may be done, as by means of any suitable cutting or grinding device. After this film has been removed the surface of the material can be brought to a high degree of polish by suitable tools.

We claim as our invention—

1. The improved process of making an insulating material consisting in forming a mass of pulp to shape, heating the same in a bath of molten sulfur, and subsequently setting such article by immersion in a cold bath.

2. The improved process of making an insulating material consisting in forming a mass of pulp to shape, heating the same in a bath of molten sulfur, then subjecting the mass to heat under pressure, and subsequently setting such article by immersion in a cold bath.

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Witnesses:
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