

UNITED STATES PATENT OFFICE.

HENRY CARMICHAEL, OF BRUNSWICK, MAINE.

PROCESS OF TREATING FIBROUS AND POROUS WARE.

SPECIFICATION forming part of Letters Patent No. 342,179, dated May 18, 1886.

Application filed November 25, 1885. Serial No. 183,974. (No specimens.)

To all whom it may concern:

Be it known that I, HENRY CARMICHAEL, of Brunswick, in the county of Cumberland and State of Maine, have invented a new and useful Improvement in Processes of Treating Fibrous and Porous Ware; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to the treatment of fibrous and porous articles—such as paper-pulp ware, woodenware, and other articles of similar nature or use.

My object is to render such articles hard and water-proof, elastic and tenacious, and to secure these qualities to such an extent that when the process is applied to articles of wood-pulp ware these articles may be used in hot water without detriment.

Heretofore such articles have been treated with boiled linseed-oil, as explained in Re-issue Letters Patent of the United States granted to me on the 6th day of February, 1883. Articles treated by the process set forth in said patent are of superior quality in the respects indicated above, but the process of said patent requiring linseed-oil, an expensive substance, it is a part of the purpose which I have had in view to obtain at less expense the results heretofore obtained by me.

The porous article—such as a vessel made of wood pulp, wood, or other material of the same general characteristics—is first thoroughly deprived of its moisture by oven heat. It is then plunged into colophony, which has been melted and raised to the highest temperature which the materials will allow, or to a temperature at which colophony is a mobile fluid, and readily penetrates the capillary spaces. After the article has been thus soaked it is withdrawn and allowed to drain and cool. While the article is cooling the more contractile colophony withdraws into the interior, leaving the surface dry, and the colophony thus withdrawn is accessible to the air of the heated oven. After the drying and cooling above described the article is placed in a

ventilated oven maintained at a temperature of about 270° Fahrenheit, and there left until no further fumes arise therefrom. It is then removed, and the colophony is found then to have thoroughly cemented the fibrous material, and is itself changed to a substance much less fusible and soluble than in its ordinary condition in which it softens and becomes sticky at less than steam-heat.

The process above described indurates the fibrous material and renders it elastic and tenacious.

Articles thus treated resist the action of hot and cold water, and the ordinary liquids with which paper-pulp ware is brought in contact. The process is therefore adapted to hollow ware of pulp or wood, to roofing material, and to artificial boards. The surface is such that it may be enameled, painted, japanned, or varnished.

While the qualities of the ware treated in the manner described with pure colophony are all that would ordinarily be required, I do not restrict myself to the use of pure colophony, but may use it in mixture with smaller quantities of oxidized linseed-oil or caoutchouc, to give the ware or other article greater flexibility. For this purpose the linseed-oil, solidified by exposure to heat and atmospheric air may be mixed with the melted colophony.

I claim as my invention—

The process of treating fibrous or porous articles of the class described, by first saturating said articles in a dry condition with colophony or a mixture thereof, and after the colophony or mixture thereof has been absorbed exposing the articles to oven heat, substantially as described.

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

HENRY CARMICHAEL.

Witnesses:

J. P. WINCHELL,
O. J. RIPLEY.