

UNITED STATES PATENT OFFICE.

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VULCANIZED WOOD AND PROCESS OF VULCANIZING SAME.

SPECIFICATION forming part of Letters Patent No. 755,240, dated March 22, 1904.

Application filed December 9, 1902. Serial No. 134,526. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM POWELL, a subject of the King of England, and a resident of Allerton, Liverpool, in the county of Lancaster, England, have invented an Improved Vulcanized Wood and Process of Vulcanizing Same, of which the following is a specification.

It is well known that most woods are porous or cellular and capable of absorbing and do absorb moisture more or less readily and that this porosity and the absorption of the moisture causes large expansions or contractions of the material, rendering many kinds of wood unsuitable in a greater or less degree for purposes where it is subjected to alternate wet and dry, and, moreover, this quality of timber renders it more prone to the attacks of fungoid growths and general decay.

According to this invention the timber is rendered non-porous and vulcanized and rendered less liable to rot and decay by filling its interstices or pores with sugar. This sugar acts as a binder between the fibers in addition to the mere filling of the interstices, much increasing thereby the solidity in the case of the less hard woods, while vulcanizing, strengthening, and toughening all timber, both hard and soft. The sugar constitutes a natural preservative which resists fermentation and rot.

The process of manufacture of the improved wood consists in first immersing the timber in a thin syrup of raw cane-sugar or other sugar, with which it becomes impregnated, the timber readily absorbing the sugar in this form. This impregnation should be effected while the liquid is hot, preferably boiling, and it may be under pressure. When so impregnated, it is subsequently dried, preferably with hot air, the sugar being thereby readily caramelized and the moisture driven off, the timber remaining an almost solid homogeneous closely-fibered mass, much harder, tougher, and stronger than in its natural state.

The process of impregnation and desiccation is carried on conveniently in a large chamber or vessel. The chamber may be divided into compartments, and the timber, either roughly cut or manufactured in blocks, (such as paving-blocks,) balks, planks, deals,

or any or other convenient form, is placed in these compartments, so that the boiling syrup can come into contact with all its surfaces.

A suitable quality of syrup is that containing one to five hundredweight of cane-sugar to one hundred gallons of water, and the timber is kept in the boiling liquid until it is "cooked" and then left in the liquor until it (the liquor) cools to 100° Fahrenheit or less. In the cooling the liquor is absorbed, and when the timber is sufficiently saturated it is withdrawn or the non-absorbed syrup is drawn off to be used for the next batch. Hot dry air is then admitted to the chamber containing the timber, so converting it into an oven. The temperature of the chamber or air at the commencement may be 60° Fahrenheit and rising up to 200° Fahrenheit or more. The moisture is thus driven out of the timber, and the saccharine matter which has been absorbed with the syrup remains caramelized in the interstices of the timber, thus converting it into a solid imporous vegetable mass.

The whole process can be completed in a comparatively few hours—that is, within twenty-four hours. As regards cost, the type of sugar mentioned—namely, low brown cane—is very inexpensive, and a ton of sugar will vulcanize a large quantity of timber, and none of the sugar is lost in the process. With regard to the vulcanizing action upon timber, the process will convert "soft" wood into "hard" wood, and articles, fittings, or fixtures made or formed of it can neither swell with damp nor shrink with heat, for it is practically solid, and therefore cannot warp, swell, or shrink. The process is designed also to prevent both soft and hard wood from splitting or warping and obviates the great loss at present sustained in "seasoning" timber, either naturally or artificially.

The term "foreign saccharine matter" as used in the appended claims means that the saccharine matter in the product of this invention is imported into the timber and is not that which is derived from its natural growth.

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

1. The herein-described vulcanized and so-

lidified timber, namely, timber with the interstices or pores filled with caramelized saccharine matter, constituting a hard solidified vegetable mass; substantially as described.

5 2. The process of vulcanizing and solidifying timber consisting in first impregnating it with foreign saccharine syrup, and subsequently artificially heating it, and solidifying and caramelizing the sugar; substantially as described.
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3. The process of vulcanizing and solidifying timber, consisting in boiling the timber in a

solution of syrup of saccharine matter, then heating such timber so saturated with the syrup by hot dry air at temperatures such as 15 specified, and driving off the moisture and solidifying and caramelizing the saccharine matter therein; as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILLIAM POWELL.

Witnesses:

S. GOODALL,

JOHN H. WALKER.