

UNITED STATES PATENT OFFICE.

JEROME I. WOOD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO JOHN W. WILSON, OF PHILADELPHIA, PENNSYLVANIA.

MANUFACTURE OF FIBROUS MATERIALS.

931,979.

Specification of Letters Patent. Patented Aug. 24, 1909.

No Drawing.

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To all whom it may concern:

Be it known that I, JEROME I. WOOD, a citizen of the United States, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in the Manufacture of Fibrous Materials, of which the following is a full, clear, and exact description.

This invention relates to the treatment of fibrous material—such, for example, as paper—for the manufacture of a hard and tough substance commonly known as “vulcanized fiber”

The object of the invention is to provide a novel process of manufacturing “vulcanized fiber” whereby a superior product is obtained, and further, whereby the product will have parchment-like characteristics and water-resisting tendencies, as will be hereinafter fully described and claimed.

In carrying out my invention, the fibrous material—such, for example, as a sheet or sheets of paper—is first passed through or subjected to a bath of chlorid of zinc and oil, such for example as linseed oil, the bath being preferably about nine-tenths chlorid of zinc and one-tenth oil, although this proportion may be carried within limits. The strength of the chlorid of zinc of the bath is preferably from 68° to 71° Baumé. After the sheet or sheets of paper have been subjected to the bath, they are removed therefrom and placed one upon the other until a mass of the desired thickness is produced. This is commonly done by drawing a strip of paper from a roller through the bath and then rolling it upon another roller and upon itself until the required thickness is produced. This being done, the superimposed layers of paper are cut parallel to the axis of the roll and the mass thus cut is flattened upon a table or any suitable support. During the passage of the paper through the bath it absorbs and is acted upon by the mixture of chlorid of zinc and oil, and the action of the chlorid of zinc upon the paper produces heat and has a solvent and disintegrating action upon the fiber of the paper. Much of the chlorid of zinc and oil remains in the paper after it has been removed from the bath, and the solvent or disintegrating action upon the fiber of the paper continues after the paper has been removed from the bath, until it cools and sets and absorbs moisture from the surrounding atmosphere, the mois-

ture reducing the strength of the chlorid of zinc. Thus the fibers of the mass or superimposed layers of paper are caused to commingle and unite with each other. This solvent action of chlorid of zinc upon fibrous material causing it to commingle and unite is common and well known. The flat mass formed of the superimposed layers of paper is now placed within an inclosed heated chamber, and is uniformly heated, the degree of heat of the chamber being sufficient to drive off the moisture from the mass, thereby increasing the strength of the chlorid of zinc contained within the mass and causing it to set up a reaction or retreatment upon the fibers thereof. This reaction of the chlorid of zinc is permitted to take place until the mass has been acted upon or the fiber dissolved to the required consistency. The mass is then removed from the inclosed chamber and is permitted to cool and again absorb moisture from the atmosphere, which again interrupts the action of the chlorid of zinc therein. The mass is then placed within and subjected to a bath of water, until the chlorid of zinc is thoroughly washed or removed therefrom. The mass is then removed from the bath of water and permitted to dry, and during the drying operation the mass contracts or shrinks into a sheet of strong and tough substance.

The oil introduced to the mass with the chlorid of zinc remains therein during the various steps of the process and it also remains in the finished product. The oil is acted upon by the chlorid of zinc and the heat of the inclosed chamber in a manner to cause it to assume a varnish like condition and thoroughly impregnate the mass, causing a more intimate association of the particles of fiber and giving to the finished product greater strength and flexibility and water- or moisture-resisting characteristics.

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

1. The herein described process of treating fibrous material which consists in subjecting a mass of fibrous material to a bath of chlorid of zinc and oil, permitting the mass to cool and set after removing it from said bath, and then removing the chlorid of zinc from the mass by subjecting the material to a bath of water.

2. The herein described process of treating

fibrous material which consists in subjecting
a mass of fibrous material to a bath of chlorid
of zinc and oil, permitting the mass to
cool and set and absorb moisture from the
5 atmosphere after it has been acted upon by
said bath, driving off the moisture from the
mass by heating it in an inclosed chamber
after it has set, and then removing the chlorid
of zinc from the mass by subjecting the
10 material to a bath of water.

3. The herein described process of treating
fibrous material which consists in subjecting
a mass of fibrous material to a bath of chlorid
of zinc, permitting the mass to cool and set

and absorb moisture from the atmosphere 15
after it has been acted upon by said bath,
driving off the moisture from the mass by
heating it in an inclosed chamber after it has
set, and then removing the chlorid of zinc
from the mass by subjecting the material to 20
a bath of water.

In testimony whereof I have hereunto
affixed my signature.

JEROME I. WOOD.

Witnesses:

A. V. GROUPE,
WM. H. SMITH.