

(No Model.)

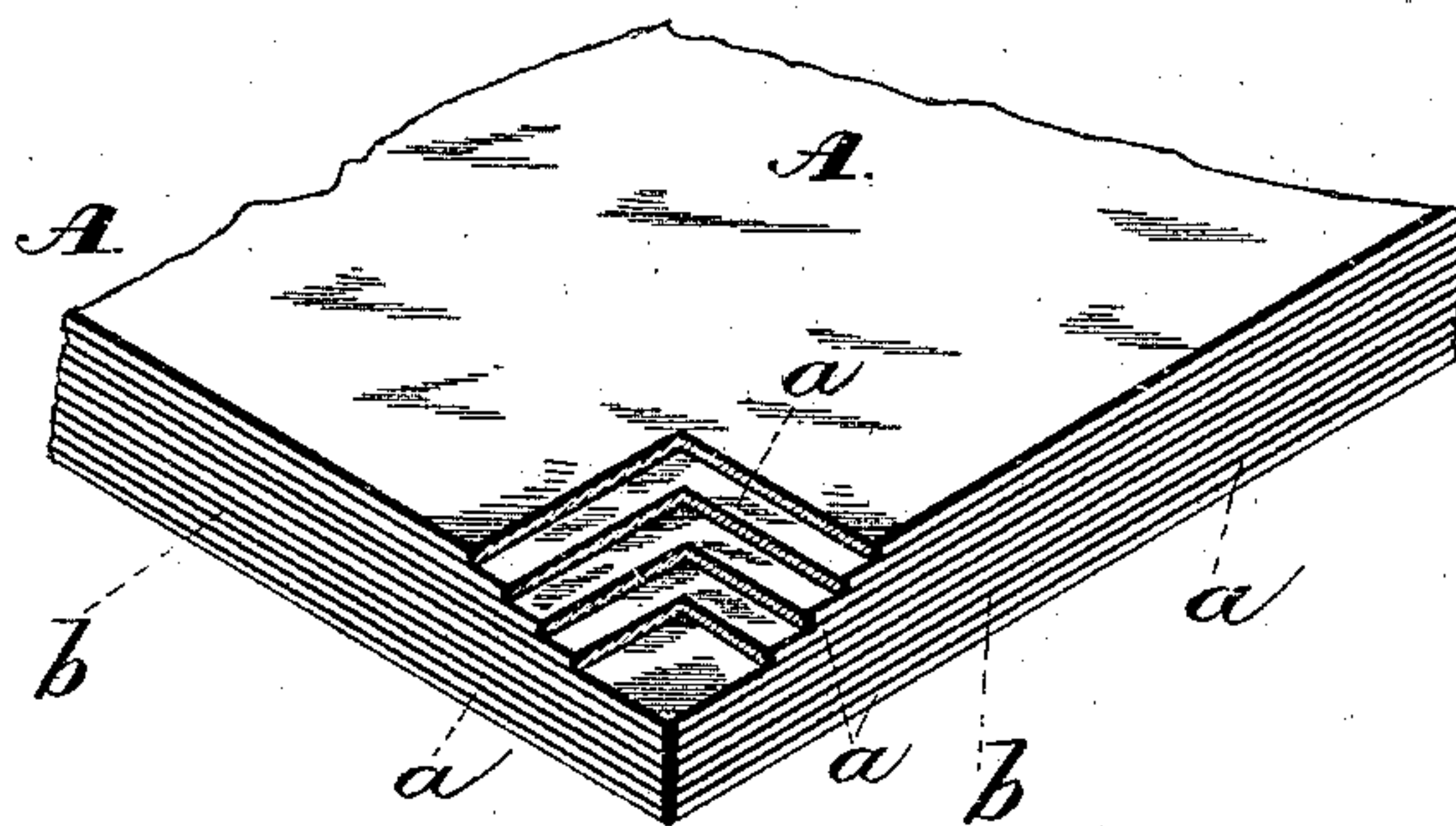
O. MACDANIEL.

PAPER BOARD.

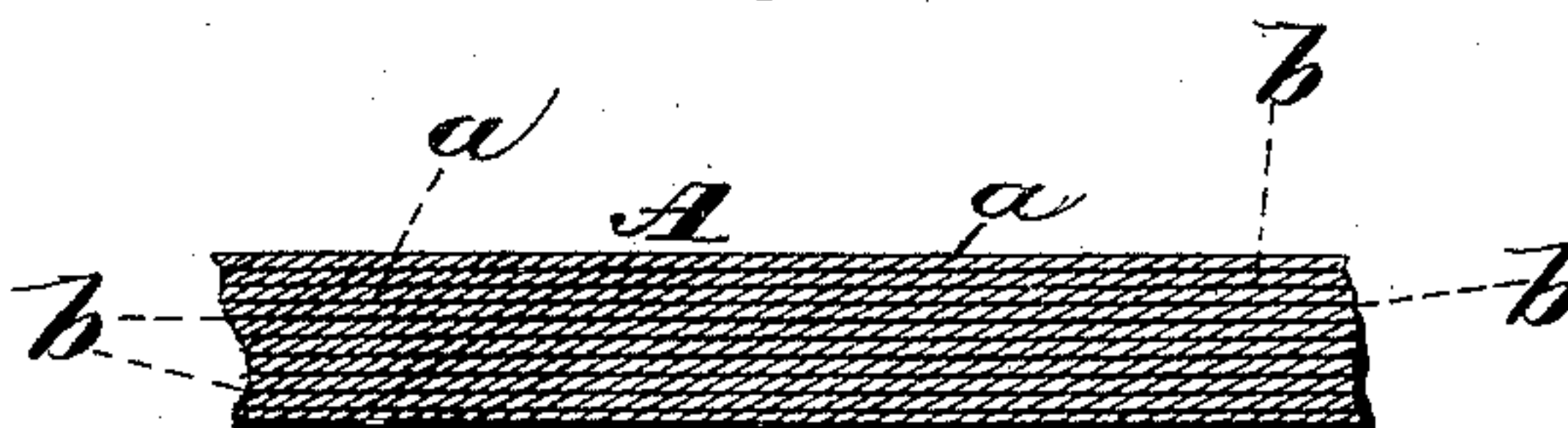
No. 368,540.

Patented Aug. 16, 1887.

*Fig. 1.*



*Fig. 2.*



*Witnesses:*  
*Chas. J. Williamson*  
*Henry L. Hazard*

*Inventor:*  
*Osborne Macdaniel*  
*by Prindle and Russell*  
*his Attorneys*



# UNITED STATES PATENT OFFICE.

OSBORNE MACDANIEL, OF NEW YORK, N. Y.

## PAPER-BOARD.

SPECIFICATION forming part of Letters Patent No. 368,540, dated August 16, 1887.

Application filed May 27, 1886. Serial No. 203,440. (No model.)

*To all whom it may concern:*

Be it known that I, OSBORNE MACDANIEL, of New York city, in the county of New York, and in the State of New York, have invented certain new and useful Improvements in Paper-Board; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a perspective view of a portion of board made in accordance with my invention, and Fig. 2 a cross-section of a piece of such board.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an artificial board which can be used for various protective, ornamental, and structural purposes, like lumber of natural wood; and to this end my invention consists in a board made of layers of paper permeated or saturated with a mixture of elastikon and pitch, substantially as hereinafter specified.

It consists, further, in a layer of fiber saturated with a mixture of elastikon and pitch, as hereinafter specified.

It consists, finally, in the board and its component parts, as hereinafter specified.

In the drawings, A designates a piece of board made in accordance with my invention, and consisting of several sheets or layers, *aa*, of paper, preferably made of straw or cane fiber. Each of these layers is saturated or permeated with a mixture of elastikon and pitch, as hereinafter set forth, and the several layers are cemented together with cement or glue placed between them at *b b*.

In carrying out my invention, a sheet of paper, preferably of straw fiber, is first saturated with a hot mixture of what is commercially known as "elastikon" and pitch. This saturation is secured by passing the sheet through or immersing it in the hot mixture. The saturated paper is then run through between pressure-rolls, preferably heated by steam, or otherwise, which remove any excess of the mixture from the sheet, and probably aid somewhat in securing the thorough-saturation of the sheet by the mixture. After being passed through these rolls the mixture-saturated sheet is cut up into pieces of the desired size, and such pieces are cemented together, preferably un-

der great pressure, by glue, or glue mixed with boiled linseed-oil. The sheets cemented together, as described, are placed in a hydraulic press and put and kept under great pressure until the board is cold and ready for use.

The elastikon which I use in making my saturating-mixture is, as is well known to those familiar with the art of manufacture of insulating materials, prepared by heating together eight parts of vegetable oil (preferably cottonseed or linseed) and two parts of sulphuric acid. This mixture of oil and acid is raised to a temperature of about 500° Fahrenheit, and the heating is continued for thirty minutes or more, according to the degree of tenacity desired in the resultant product.

The pitch which I use in making my saturating compound is either vegetable or mineral, but preferably the former. Ordinary coal-tar pitch can, however, be used, and I contemplate using it, if desired. The proportions of elastikon and pitch employed by me in making my saturating compound are about one part to six, respectively. The pitch is melted and raised to a temperature of about 300° Fahrenheit, and the elastikon is then added. While the latter material cannot by itself be melted, when added to or put in melted pitch it melts readily and mixes intimately with the pitch, forming a homogeneous mass, which when cool is hard and tough and not brittle or subject to deterioration by exposure to the atmosphere.

I have found by experiment that elastikon by itself, even while in a liquid state, cannot be made to penetrate or permeate layers of paper, but that when mixed with pitch and made into a compound therewith, as described hereinbefore, it will when hot penetrate and permeate the paper readily and thoroughly. Pitch alone, where used to saturate or coat paper or other fiber, deteriorates and decomposes under exposure to the atmosphere, and is brittle and weak.

By mixing and melting elastikon and pitch together, as described, I secure a compound which is free from several objections to its separate ingredients—that is, which will penetrate and permeate the paper readily, and which is hard, tough, and not liable to deterioration by exposure to the elements.

Board made in accordance with my inven-



tion, as described, of layers of paper saturated with this compound of elastikon and pitch and cemented together, is tough and lasting, while being flexible, like a board of wood. It  
5 can be employed for building purposes, for covering and protective coatings, for sheathing for walls and other surfaces, and, as it is capable of receiving and keeping a good rich polish, it can be used for various ornamental purposes.  
10

I do not limit myself to any particular kind of machinery or apparatus for making my board, as various different forms thereof can be used.

15 Having thus described my invention, what I claim is—

1. As an article of manufacture, a board composed of layers or sheets of paper saturated with elastikon and pitch and cemented  
20 together, substantially as and for the purpose specified.

2. As an article of manufacture, a layer of fiber saturated with a mixture of elastikon and pitch, substantially as and for the purpose shown. 25

3. The improved process of making paper-board, which consists in saturating paper with elastikon and pitch and cementing layers of such saturated paper together, substantially as and for the purpose set forth. 30

4. As an improvement in the art of making paper-board, the method of preparing the paper for use, which consists in saturating it with a compound formed of elastikon and pitch, substantially as and for the purpose described. 35

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of May, A. D. 1886.

O. MACDANIEL.

Witnesses:

WILLIAM FITCH,  
HENRY C. HAZARD.