

UNITED STATES PATENT OFFICE.

FREDERICK POPE, OF MOUNT PLEASANT, GEORGIA, ASSIGNOR TO SOUTHERN MANUFACTURING COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BATH FOR EXTRACTING PRODUCTS FROM WOOD.

947,420.

Specification of Letters Patent.

Patented Jan. 25, 1910.

No Drawing.

Application filed May 16, 1908. Serial No. 433,230.

To all whom it may concern:

Be it known that I, FREDERICK POPE, a resident of Mount Pleasant, in the county of Wayne and State of Georgia, have invented a new and useful Improvement in Baths for Extracting Products from Wood, of which the following is a specification.

This invention relates to baths for a use in extracting certain products from wood, such as turpentine, volatile oils, pitch and the like contained in pine wood.

The object is to provide a bath having great searching qualities and one which can be heated to a very high temperature in order to extract from the wood a high percentage of its products.

The bath may be variously combined and the essential ingredients of the same are pitch and pine oil and preferably some other product obtained from resinous woods and having a higher specific heat than these two ingredients. As such other ingredient I may use either washed pine tar or hard pitch, or both washed tar and hard pitch, or even rosin.

The washed tar employed is made by maintaining ordinary pine tar at a boiling temperature until practically all the volatile constituents thereof are driven off as vapor. Care must be taken not to destructively distil the tar and in no case should the temperature exceed 430 degrees Fahrenheit, and as a rule it is not necessary to employ as high a temperature as that. The boiled tar is then washed by adding lime to the hot tar and introducing steam into the bottom of the vessel. The lime combines with the phenols and other impurities, forming compounds which are carried to the top where they may be removed with a skimmer. The boiling is continued until when a stick pin is plunged into the hot bath and then into cold water the tar will adhere thereto and be brittle. Lime is introduced as long as there are any acids which will re-act with it. This washed tar is odorless, very hard and brittle and has a low melting point. It has, however, a comparatively high specific heat so that it can give up a large number of heat units for a given drop in temperature.

The pine oil used is the standard pine oil of commerce. It is the second product which is obtained in refining distillate of

fat dead pine, that is, light wood which has been distilled at a temperature of over 360 degrees and under 400 degrees Fahrenheit by one of the commercial methods. The residuum after this oil has been made is the soft pitch which is used. Its character varies more or less with the process by which it is made.

The pine oil is a thin and very mobile liquid. It soaks well into the wood softening the cellular structure, so as to facilitate the action of the heat on the products which are to be extracted. In other words, it possesses high searching qualities.

The advantages of the soft pitch are that it makes the bath mobile so that it is not likely to readily solidify. It also has a high searching action on the wood so as to give a larger yield of the products in a short time. This soft pitch is produced in the distillation of the products obtained from the pine wood.

In place of the washed tar I may make use of hard pitch or even rosin. Neither hard pitch nor rosin is the equivalent of washed tar, but they have properties which permit their use and which make them possible substitutes for washed tar.

The hard pitch used is the standard article of commerce made by the American Naval Stores Company and sold under that name and is the residue left when rosin is destructively distilled until the rosin spirit and the first run of rosin oil have been removed.

These several ingredients have been and can be joined in various proportions. Examples of a satisfactory bath are the following:—

Washed tar 70 parts, soft pitch 20 parts, pine oil 10 parts.

Hard pitch 45 parts, soft pitch 45 parts, pine oil 10 parts.

Washed tar 10 parts, hard pitch 45 parts, soft pitch 40 parts, pine oil 10 parts.

Rosin 45 parts, soft pitch 45 parts, pine oil 10 parts.

The proportions of most of the ingredients can vary within very wide limits. The exact proportions used will vary with the character of the wood being treated and also with the temperature or season of the year. For instance, in the summer it is possible to use a bath having a larger percentage of washed

tar or hard pitch and a smaller percentage of soft pitch than can be used in the winter. The soft pitch and the pine oil are the principal searching agents giving fluidity to the bath. The pine oil has the highest searching qualities of any of these ingredients.

A sufficiently fluid bath can be maintained by entirely omitting the pine oil and increasing the soft pitch. For instance, the following formulas are practical:

Washed tar 80 parts, soft pitch 20 parts.

Hard pitch 50 parts, soft pitch 50 parts.

These baths, however, have not the searching qualities of the baths containing pine oil. The bath described, and especially when it contains washed tar, is capable of being raised to a very high temperature without serious injury thereto. It has been found that such bath can be heated as high as 400 degrees Fahrenheit. This high temperature provides for the extraction from the wood of a larger percentage of products than can be obtained at a lower temperature.

In using the bath described it is heated to a high temperature and the wood to be treated is immersed therein, the heat and the searching qualities of the bath causing the volatilization of the products of the wood, which products are afterward separated from the bath in any suitable way, such as agitating the bath by introducing steam thereinto. During use it will be found desirable to renew some of the ingredients regularly from time to time, such as adding thereto from time to time a quantity

of soft pitch obtained in distillation of the products extracted by the bath, and also regularly adding thereto a lesser quantity of pine oil.

What I claim is:—

1. A bath for extracting products from wood, comprising pitch, pine oil and one of the harder products obtained in the distillation of products from pine wood.

2. A bath for extracting products from wood, comprising pitch, pine oil and washed tar.

3. A bath for extracting products from wood, comprising soft pitch and one of the harder products obtained in the distillation of products obtained from pine wood, the soft pitch constituting at least 10% of the bath.

4. A bath for extracting products from wood, comprising washed tar, soft pitch, and pine oil, in substantially the proportions specified.

5. A bath for extracting products from wood, comprising soft pitch, pine oil, and one of the harder products obtained in the distillation of products from wood, the pine oil constituting approximately 10% of the bath.

In testimony whereof I have hereunto set my name.

FREDERICK POPE.

Witnesses:

J. L. ROE,

J. D. POPE, Jr.

Correction in Letters Patent No. 947,420.

It is hereby certified that in Letters Patent No. 947,420, granted January 25, 1910, upon the application of Frederick Pope, of Mount Pleasant, Georgia, for an improvement in "Baths for Extracting Products from Wood" an error appears in the printed specification requiring correction as follows: Page 1, line 42, the word "pin" should be stricken out; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of February, A. D., 1910.

[SEAL.]

E. B. MOORE,

Commissioner of Patents.