

UNITED STATES PATENT OFFICE.

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WOOD-PRESERVATIVE AND PROCESS OF MAKING SAME.

1,283,104.

Specification of Letters Patent.

Patented Oct. 29, 1918.

No Drawing.

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To all whom it may concern:

Be it known that I, JUDSON A. DE CEW, a subject of the King of Great Britain, and resident of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Wood-Preservatives and Processes of Making Same, of which the following is a full, clear, and exact description.

This invention relates to the treatment of wood fiber by impregnation for the purpose of preserving, hardening and rendering the wood fiber more resistant to mechanical wear or to destruction by other agents.

I have discovered that I can dissolve a large proportion of rosin and creosote oil in a relatively small quantity of a more concentrated solution of rosin soap, and that by diluting this solution by special means, the free rosin in oil can be retained in either true or colloidal solution in the diluted mixture.

My invention consists essentially in preparing a composition for impregnating or treating wood or fibro-cellulose material said composition consisting substantially of rosin and creosote oil by first dissolving this composition in a soap solution such as rosin soap, the rosin and oil being either in true solution or colloidal solution depending upon the aqueous concentration or dilution of the soap. The amount of dilution or concentration of this composition will depend upon the amount of preservative which it is desired to leave within the wood to be treated. For instance, in the impregnation of wood blocks for pavements, I will use a more concentrated solution of soap and a higher proportion of free rosin and oil than in treating timber, which is merely to be made water resistant and sterile to prevent the growth of fungi. When it is only desired to preserve wood material from decay, I use a fairly dilute solution of rosin and oil in rosin soap, for in this process the lighter or more toxic creosote oils can be used and in very small quantity if only required to preserve the wood from decay.

It is recognized from official tests that one-third of a pound of creosote oil per cubic foot of wood is sufficient, when properly distributed, to preserve timber from decay. It is also known that the lighter creosote oils having a specific gravity of less than 1 have double the toxic value of the heavier creosote oils. By my process of obtaining colloidal solutions, I can obtain

sufficient preserving action by leaving one-sixth of a pound of light creosote oil within a cubic foot of wood. This creosote oil penetrates and covers the cell walls of the wood fibers to a much greater extent, owing to the fact that it is in either true or colloidal solution in rosin soap during the impregnation process. On treating the wood fibers by impregnation with these dilute aqueous solutions, the rosin and creosote oil become separated from the solution, and are deposited by adsorption on and within the cell walls of the material. The rosin soap solution, which has acted as a carrier, is also partially decomposed and will remain largely within the material, even if the latter is afterward exposed to leaching and washing conditions. When the material so treated becomes air dry, it also becomes very water resistant owing to the presence of rosin deposited throughout the material. The deposited rosin also exerts a decided preservative action, but its chief function is to hold and prevent the evaporation of the more volatile creosote, which being held permanently within the fibrous structure without loss by evaporation renders the material permanently toxic.

According to my process, the rosin soap solution is made by boiling say 100 pounds of rosin with approximately 15 pounds of sodium carbonate and about 200 pounds of water. To this is added, from 50 to 100 pounds of rosin, and about the same quantity of creosote oil or other oil preservative. When this product has been diluted to a perfect solution, it is then diluted by any means such as will prevent the separation from solution of the dissolved ingredients, the amount of dilution depending upon the percentage of material which it is desired to leave within the wood after impregnation. This method of dilution can be effected by the well known Erfurt process, as disclosed in U. S. Reissue Patent No. 12,549, or by other suitable means, such as forcing the solution under pressure into hot water and then cooling same.

By employing an injecting device operated by means of hot water under high pressure, dilute solutions can be obtained without the separation of the dissolved rosin and oil mixture. In this manner, solutions containing as low as 1 or 2% of total solids can be produced. These dilute solutions will stand a reasonable amount of heating with-

out decomposition, and can be forced into fibrous material under pressure in an apparatus similar to that used in ordinary wood preserving processes. This wood preserving composition is very advantageous in that it is neutral and non-corrosive, and will not cause such destruction of the timber as follows from the use of chlorid of zinc, sulfate of alumina and other preservative metals. Furthermore, the treated material resists the penetration or infiltration of water, which tends to wash out water soluble substances, and the preservative will therefore not be lost on exposure in wet climates. This preservative will also be more uniformly distributed throughout the wood, and will harden, strengthen and increase the density of the fiber, making it more resistant to mechanical wear. By my process, a very volatile toxic oil may be employed which could not be successfully used by other processes.

Although in carrying out my process, it is not necessary usually to follow it with any secondary treatment, yet in special cases, the wood impregnated with the above described solution may be treated with weak solutions of a coagulant, such as sulfate of alumina, which will more firmly fix all of the rosin soap within the fiber, thus completely plugging the cell openings in the woody material.

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

1. A process of making wood preservative, which consists in dissolving a toxic oil in a soap solution and diluting same by forcing it under pressure into hot water.

2. A wood preserving composition, which consists of rosin, creosote oil and soap in aqueous solution.

3. A wood preservative consisting of toxic oil in a state of colloidal suspension, the dispersion medium being a dilute aqueous solution containing a saponified product, the dispersion having been produced by forcing the undiluted mixture into hot water by means of pressure.

4. A wood preserving composition, which consists of creosote oil which has been dissolved in a soap solution containing free rosin, and further diluted in water to form a non-separating compound.

5. A process of making wood preservative, which consists in dissolving rosin and creosote oil in a soap solution, and diluting same by forcing it under pressure into hot water.

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

JUDSON A. DE CEW.

Witnesses:

FREDERICK B. BROWN,
P. M. RUSHMORE.