Nov. 24, 1936. N. ZWINGAUER 2,062,081

WOODEN PLUG

Filed March 28, 1935

Fig. 1.

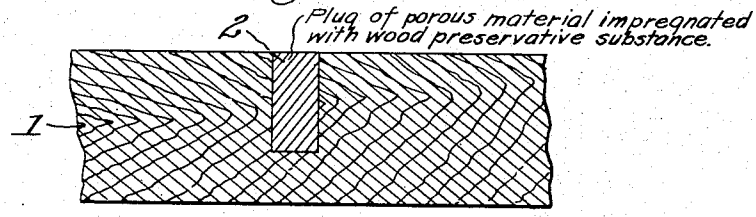
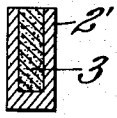


Fig. 2.



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WOODEN PLUG

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3 Claims. (Cl. 21—15)

The present invention relates to a plug, dowel, screw plug or such like acting as preservative for timber of any kind. The plug or the like, according to this invention, preferably consists of wood containing such a high percentage of water-soluble preservatives as has never been used before, and said plug or the like is used for inserting it in artificial apertures, for instance bore holes in the wood. The preservative will then spread in dissolved form in the wood, thus causing a distribution of the preservative in the wood—without any further expedients—by diffusion or osmosis, as soon as the wood is sufficiently moist. The wooden plug or such like serves as carrier or receptacle for the preservative. The shape and the size of the plug or such like preferably must be adapted to shape and size of the apertures, so that the plug or the like will fit tightly. Any kind of wood may be used for manufacturing these plugs or such like, for instance beech or pine, provided they can absorb the required amount of preservative. The use of hard wood is especially recommended, such as beech wood. However, in the place of wood it is also possible to employ suitable porous artificial substances,—such as porous artificial stone or the like—for the manufacture of plugs etc. The plugs and the like are impregnated with the preservative or its solution once or several times, with or without application of pressure, at ordinary or raised temperature, for the purpose of introducing the required quantity of the preservative.

According to this invention the contents of wood preservatives in the plug or the like is a multiple of the amount necessary to protect the impregnated wood permanently against attacks of wood destroying organisms. While in the case of customary impregnation of wood sufficient preservatives are introduced into the wood to prevent any attacks by wood pests and to provide a sufficient store for balancing the loss sustained by lixiviation, evaporation or the like, according to the present invention a multiple of the previously used amount of wood preservative is accumulated in the plug or the like, since according to my invention the preservative contained in the plugs is to protect not only the plug itself but also the wood surrounding the plug.

In carrying out my invention I employ preferably plugs which have been impregnated with an aqueous solution of potassium fluoride (KF). 100 parts of water at room temperature dissolve about 90 parts of potassium fluoride, so that very strong solutions may be prepared and used for impregnating. For example the wood may be impregnated with a 30% aqueous solution of potassium fluoride. Furthermore, for example also magnesium fluosilicate ($MgSiF_6$) may be used which is likewise readily soluble in water, or zinc fluosilicate ($ZnSiF_6$). I have found that good results are obtained if the plug or the like is saturated with strong solutions of such wood preservatives which can be dissolved into solutions having a concentration of from 15% to 50%, e. g., of 20% or more, in water at room temperature or higher temperature, for example at 70–80° C. It is also possible to use several substances, for example to impregnate the plugs etc. with the solution of several compounds, preferably drying the wood between the individual impregnating operations. The impregnation with the aqueous solutions preferably takes place according to the so-called full-cell process. The preservatives used may be inorganic or organic compounds or mixtures of same. In addition to substances acting as preservatives it is also possible to employ materials which will act hygroscopically.

An embodiment of the present invention consists in this that the plugs or the like are provided with bores which may be filled with solid impregnating substances. In the latter case this filler increases the quantity of the preservative introduced into the wood through the plugs or the like. In the case of non-filled bore holes of the plug or the like the atmospheric moisture can enter the wood more easily, thus facilitating the distribution of water-soluble substances.

The impregnated plugs or the like may be subsequently treated with oil, such as tar oil, by dipping them into the hot tar oil. This does not prevent the dissolution and the distribution of the preservative and sometimes facilitates the insertion of the plugs.

It is essential for the present invention that sufficient amounts of preservatives are introduced into the plugs or the like. As above mentioned, it is necessary to introduce into the plugs or the like a multiple of the amount of preservative used in the ordinary impregnating processes against wood pests. For instance, plugs made of red beech may be incorporated with 50–200 kilos of potassium fluoride per cubic meter by, for instance, the "full cell" process. However, my invention is not limited to such proportions. Preservatives which are not only soluble in water but also in other solvents may be used for impregnating plugs after having been dissolved in such solvents. For example, corrosive sublimate

may be dissolved in alcohol and the plugs or the like are then impregnated with the solution obtained. The impregnation of the plugs may also be carried out with the aid of molten substances. According to the present invention the plugs or the like may be used both for non-treated fresh or air-seasoned wood and for treatment of wood which has already been impregnated.

By the term "plug" as used in this application I mean also dowels, screw plugs or similar timber.

The present invention offers an essential improvement in the art of wood preserving. It is possible, according to this invention, to introduce into the wood considerable quantities of preservatives and to distribute them in the wood without applying pressure or further expedients.

The invention is illustrated in the accompanying drawing, wherein—

Fig. 1 represents an embodiment in which a solid "plug" is employed, while

Fig. 2 represents another embodiment in which a hollow "plug" is used.

In the drawing, the numeral 1 represents the block or article of wood to be treated, while 2 represents the solid plug impregnated with the preserving substance. In Fig. 2, the plug, which in this form is hollow or provided with a bore, is indicated by the reference character 2', while the preservative substance with which the bore is filled is indicated at 3.

What I claim is:

1. Process for distributing water-soluble preservatives in wood, comprising introducing into the wood plugs, dowels, screw plugs or the like in which such proportions of water-soluble preservatives are stored as exceed by several times the amount required for the permanent protection of the wooden plug itself against wood destroying pests.

2. Process for distributing water-soluble preservatives in wood, as defined in claim 1, in which the wood plugs contain the water-soluble preservatives in concentrations yielding solutions of a concentration of at least 20%.

3. Process for distributing water-soluble preservatives in wood, comprising introducing into the wood plugs, dowels, screw plugs or the like which have been saturated with an aqueous solution of from 15% to 50% of potassium fluoride according to the full-cell process.

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