

UNITED STATES PATENT OFFICE

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FUNGICIDE

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10 Claims. (Cl. 99—12)

This invention relates to fungicides and more particularly to the preservation of wood and other materials against attack from fungi and the like.

It is well known that wood and other materials such as cellulose fabrics and similar materials are subject to attack from various fungi which rot or discolor the materials and render them unfit for various uses. Accordingly, it has been proposed to treat such materials with various substances for the purpose of protecting them against attack from such fungi but these substances have generally proved to be unsatisfactory.

An object of the present invention is to protect wood and other materials such as cellulose fabrics and the like against attack from various fungi. A further object is to treat such materials with a substance which is toxic to fungi and is more satisfactory and efficient than other substances heretofore employed for this purpose. A still further object is to provide, as new articles of manufacture, materials which have been rendered more resistant to the attack of fungi. Still other and further objects are to provide a new composition of matter and to advance the art. Other objects will appear hereinafter.

These objects may be accomplished according to our invention which comprises impregnating wood or the other materials above mentioned with a-nitro-naphthalene. We have found that a-nitro-naphthalene is toxic to various blue stain and other cellulose destroying fungi, such as *Fomes annosus*, *Graphium rigidum*, *Poria incrassata*, *Lenzites trabea*, *Ceratostomella plurianulata*, and *Ceratostomella pilifera*. As compared with this compound, such compounds as 2:5-dinitro-naphthalene, tri-nitro-naphthalene, and tetra-nitro-naphthalene appear to be relatively non-toxic.

In order to illustrate the effect of this compound on various fungi, the following examples are given:

Example 1.—One part of a-nitro-naphthalene in 500 parts of rice culture effectively prevents the growth of *Ceratostomella pilifera* and *Fomes annosus*.

Example 2.—One part of a-nitro-naphthalene in 2000 parts of rice culture effectively prevents the growth of *Lenzites trabea* and *Poria incrassata*.

Example 3.—In order to test the bactericidal properties of this compound 1 part of it was incorporated in 1000 parts of nutrient agar culture but did not inhibit the growth of B-coli. Accordingly this compound does not appear to be an efficient bactericide.

In carrying out our invention we prefer to treat partially or wholly dried wood with an impregnating solution comprising a 5% solution of a-nitro-naphthalene in kerosene, benzene, o-dichlor-benzene or naphtha or any combination of two or more of these solvents. Our invention, however, is not to be limited to the use of these particular solvents as many other suitable solvents may be substituted therefor, or the compound may be employed in a molten, fluid or emulsified state. After the pores of the wood have been partially or completely filled with the impregnating material, the wood is removed from the impregnating bath and the volatile constituent or constituents of the impregnating material are allowed to evaporate. If desired, the evaporation of the volatile constituents from the wood may be effected by the use of diminished pressure or increased temperature or both. Wood treated in this manner will be found to be effectively protected against the attacks of the various blue stain and other wood rot fungi.

Cellulose fabrics and other materials subject to decay or stain due to attack by fungi may also be impregnated with a-nitro-naphthalene and thus preserved against such infection.

While we have disclosed our compound as being employed in a certain definite concentration in specific solvents, it will be readily apparent to those skilled in the art that the particular solvent employed, the concentration of the compound in the solvent and in general the method of impregnating the wood with the compound may be greatly modified without departing from the spirit of our invention. Accordingly, the scope of our invention is to be limited solely by the appended claims construed as broadly as is permissible in view of the prior art.

We claim:

1. The method of preserving materials normally subject to attack by fungi which comprises impregnating the materials with a-nitro-naphthalene.

2. The method of preserving materials normally subject to attack by fungi which comprises treating the materials with a solution of a-nitro-naphthalene.

3. The method of preserving materials normally subject to attack by fungi which comprises treating the materials with a volatile solvent containing about 5% of a-nitro-naphthalene.

4. The method of preserving materials normally subject to attack by fungi which comprises treating the materials with a member of the group consisting of kerosene, benzene, o-dichlor-ben-

zene, and naphtha containing a-nitro-naphthalene.

5 5. The method of preserving materials normally subject to attack by fungi which comprises treating the materials with a member of the group consisting of kerosene, benzene, o-dichlor-benzene, and naphtha containing about 5% of a-nitro-naphthalene.

10 6. The method of protecting wood from fungi and the like which comprises impregnating the wood with a-nitro-naphthalene.

7. The method of protecting wood from fungi and the like which comprises treating the wood with a solution of a-nitro-naphthalene.

15 8. The method of protecting wood from fungi

and the like which comprises treating the wood with a volatile solvent containing about 5% of a-nitro-naphthalene.

9. The method of protecting wood from fungi or the like which comprises treating the wood with a member of the group consisting of kerosene, benzene, o-dichlor-benzene, and naphtha containing a-nitro-naphthalene. 5

10. The method of protecting wood from fungi or the like which comprises treating the wood with a member of the group consisting of kerosene, benzene, o-dichlor-benzene, and naphtha containing about 5% a-nitro-naphthalene. 10

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DISCLAIMER

1,985,597.—*William S. Calcott*, Pennsgrove, N. J., and *Melvin O. Foreman*, Oak-harbor, Ohio. FUNGICIDE. Patent dated December 25, 1934. Disclaimer filed January 9, 1937, by the patentees; the assignee, *E. I. du Pont de Nemours and Company*, assenting and concurring.

Hereby enter this disclaimer to that part of the specification, and particularly claims 1, 2, 6, and 7 thereof which is in words as follows, to-wit:—

"1. The method of preserving materials normally subject to attack by fungi which comprises impregnating the materials with a solution of a-nitro-naphthalene.

"2. The method of preserving materials normally subject to attack by fungi which comprises treating the materials with a solution of a-nitro-naphthalene.

"6. The method of protecting wood from fungi and the like which comprises impregnating the wood with a-nitro-naphthalene.

"7. The method of protecting wood from fungi and the like which comprises treating the wood with a solution of a-nitro-naphthalene."

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