

UNITED STATES PATENT OFFICE

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ROTPROOFING AND WATERPROOFING OF MATERIALS

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8 Claims. (Cl. 91—68)

This invention relates to the treatment of materials which are liable to suffer rotting or deterioration or be adversely affected e. g. by sea water or atmospheric influences, or the influences or action of moulds, fungi, insects or other agencies which would cause rotting.

It is well known to treat materials liable to such adverse influences with fungicides or insecticides; and metallic salts of the complex acids derived from the distillation or refining of coal tars or petroleum or other crude oils have been proposed in this connection.

It has been found difficult, however, to waterproof materials so treated. The present invention provides a method and means for both rotproofing and waterproofing materials and if desired in a single operation.

The present invention contemplates a process for treating materials (of the kind hereinafter referred to) which enables them to resist deterioration notably to render them waterproof and rotproof, consisting in applying to the said materials a rotproofing agent as hereinafter specified and simultaneously or subsequently thereto a waterproofing agent, wherein the waterproofing agent is dispersed in an aqueous vehicle which is capable of holding the rotproofing agent in stable dispersion, whereby on removal of the vehicle or stabilising medium both the rotproofing agent and waterproofing agent are deposited on or/and into the materials treated.

The rotproofing agents used for the purpose of the present invention are, include metallic salts or esters of tar or petroleum acids normally insoluble in water, such as aluminium naphthenate.

Any of the materials ordinarily used as waterproofing agents may be used for the purpose of the present invention. Such materials include suitably treated rubber latex; rubber, both natural and recovered or artificial rubber; solutions or pastes of modified cellulose and cellulose esters including nitrocellulose; organic vinyl esters, for example, vinyl acetate or polyvinyl acetate, or cumarone resin varnishes or generally speaking resins derived from unsaturated hydrocarbons and substitution products thereof; other synthetic and natural resins; wax fillings and wax compositions; and bitumen or asphaltic compositions. Where a synthetic resin is employed, the medium capable of holding the rotproofing agent in stable solution or suspension may contain the finished resin or ingredients which will form the latter by mild heat treatment when deposited in or on the fibre.

The medium carrying the waterproofing agent

is capable of holding the rotproofing agent in stable dispersion within the meaning intended in this specification when it is capable of mixing with the dispersion of the rotproofing agent without, precipitating or coagulating the dispersed rotproofing agent suspension. The term "stable" therefore, does not necessarily mean that the mixed dispersion will be stable after application to the material to be treated.

The materials which may be treated in accordance with the invention, include textile materials such as threads and yarns, textile fabrics either woven, knited or netted, made for example of cotton, jute, flax, silk or rayon, or mixture thereof; or composite surfaces such as plaster or plaster boards, paper or paper boards, or fibres or fibre boards, and the like; or solid materials of a more or less porous nature such, for example, as wood or stone.

It is a great advantage in the treatment of materials in accordance with this invention to be able to complete the treatment in one operation, although two or more may be used where necessary; and the process of the invention enables the rotproofing and waterproofing agent to be made available for the treatment of the material in one and the same impregnating medium.

Dispersions prepared in accordance with this invention may be applied in any of the well known ways used in applying coating material; for example, in the case of textile fabrics by spreading, spraying, coating, dipping or otherwise. The aqueous vehicle can be removed for example by evaporation leaving the rotproofing and waterproofing agents incorporated with the fibres or fabrics.

In carrying out the invention where the waterproofing agent is rubber in the form of compounded or treated rubber latex, and the rotproofing agent is a metallic salt or ester of a tar or petroleum acid, such as aluminium naphthenate, ammonia may be employed as stabiliser for the latex and also a solubiliser for the salt or ester, and this ammonia may be removed, for example, by neutralisation, after the application of a composite liquor containing both the waterproofing agent and rotproofing agent, when both the rotproofing agent and waterproofing agent will be precipitated together, for example, into or on the fibres of a textile material. In this case there is no necessity for complete evaporation or removal of the liquid medium.

Where uncured rubber or recovered scrap rubber is employed as the waterproofing agent, vulcanising agents and curing accelerators may be

incorporated. Where a latex composition is used, in place of compounded rubber latex a vulcanised latex may be employed.

The invention includes a composite liquor for carrying out the process above described which liquor comprises an aqueous dispersion of a waterproofing agent (for example ammonia stabilised rubber latex) and of a rotproofing agent as herebefore specified, (for example, aluminium naphthenate).

It will be understood that where ammonia is referred to in this specification as a stabilising or/and solubilising agent any other miscible ammonia base such as an aliphatic amine may be employed.

The following is an example of a composite liquor suitable for rotproofing and waterproofing materials according to the present invention:—

Parts (by weight)

- | | | |
|----|--|----|
| 20 | (1) A salt of a petroleum acid, e. g., aluminium naphthenate dissolved in aqueous ammonia..... | 50 |
| 25 | (2) Rubber latex containing suitable vulcanising agents; in which case subsequent vulcanisation is effected after the application of the latex composition to the material to be rotproofed and waterproofed or pre-vulcanised latex may be used in which case subsequent vulcanisation is not required... | 50 |
| 30 | (3) Alkali silicate, e. g., sodium silicate..... | 10 |
| | (4) Any other well known "fillers", for example, kieselguhr..... | 90 |

Any of the above component materials may, however, be used in other desired proportion relatively to the others.

In the case of textile materials the impregnation may be performed as part of any of the textile-finishing processes. According to a modification of the invention, the textile or other fibrous material may be rotproofed by applying to the said materials before the batching and sizing operation an ammonia stabilised rotproofing agent, for example, an ammoniacal suspension of aluminium naphthenate, and simultaneously or subsequently carrying out the batching and/or sizing operation.

Fibrous materials so impregnated may then be easily batched and/or sized as the ammonia stabilised rotproofing agent will assist the batching and sizing operation in a similar manner to a wetting agent.

In carrying out this modification of the invention the ammonia-stabilised rotproofing agent may either be added to the oiling, softening or siz-

ing material, or the fibrous material may be first treated with the ammonia stabilised rotproofing agent and then put through the mechanical processes and sizing operations. In either case, the material may or may not be subsequently treated with the waterproofing agent.

The invention has been found particularly applicable to the preservation of textiles, fibres and fabrics, and materials, including those made with jute fibre which latter has hitherto been found difficult to preserve against rotting. Such textile materials—including jute—are thus made rot-proof and waterproof, and may be used for many purposes for which without this treatment they would be unsuitable.

What I claim is:

1. A process for proofing porous materials against water and against deterioration by rotting, especially by moulds and fungi, which consists in applying to the materials to be treated a composition comprising essentially an alkaline aqueous dispersion of neutral compounds of naphthenic acid of a group consisting of metallic naphthenates and naphthenic esters, normally insoluble in water, and a stable waterproof aqueous dispersion or rubber, causing thorough penetration of the composition into the porous materials to be treated and depositing it into the porous materials.
2. A process as set forth in claim 1 wherein the porous materials include textiles.
3. A process as set forth in claim 1 wherein the porous materials include solid building materials.
4. A process for proofing porous materials against water and against deterioration by rotting, especially by moulds and fungi, which consists in applying to the materials to be treated a composition comprising essentially an alkaline aqueous dispersion of neutral compounds of naphthenic acid of a group consisting of metallic naphthenates and naphthenic esters, normally insoluble in water, and a stable waterproof aqueous dispersion of rubber containing a filler, causing thorough penetration of the composition into the porous materials to be treated and depositing it into the porous materials.
5. A process as set forth in claim 4 wherein the filler consists of kieselguhr.
6. A process as set forth in claim 4 wherein the filler consists of silica.
7. A process as set forth in claim 1 wherein the naphthenic compound consists of aluminium naphthenate.
8. A process as set forth in claim 1 wherein the aqueous dispersion medium includes ammonia.

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CERTIFICATE OF CORRECTION.

Patent No. 2,186,750.

January 9, 1940.

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 33, strike out the word "include"; and second column, line 6, strike out "suspension"; page 2, first column, line 9, for "herebefore" read hereinbefore; line 40, beginning with the words "According to" strike out all to and including the word and period "agent." in second column, line 6; same second column, line 26, for the word "or" read of; 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 27th day of February, A. D. 1940.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.