Patented Sept. 4, 1928. 1,682,975

UNITED STATES PATENT OFFICE.

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PROCESS FOR PROTECTING WOOL AND FUR FROM MOTHS.

No Drawing. Application filed August 11, 1921, Serial No. 491,570, and in Germany May 13, 1918.

The method hitherto employed for protecting materials from the ravages of moth has been to place amongst them substances, such as naphthalene, camphor and pepper, having a penetrating odour, which are of course only efficacious so long as their odour persists.

This invention relates to a new process whereby materials liable to be attacked by moth can be permanently and completely protected.

According to this invention the materials are protected from moth by treating them with such a quantity of one or a mixture of the substances hereinafter set out and in such a manner that the substance, owing to its fixed nature or its affinity for the material, is tenaciously retained thereby in sufficient quantity to render the material moth-proof.

The substances employed are hydrofluoric acid, its salts, double salts, and complex compounds, for example, hydrofluoric acid, sodium fluoride, zinc fluoride, aluminum fluoride, titanium fluoride, the double compound of aluminum fluoride with ammonium fluoride $AlF_6(NH_4)_6$, hydrofluosilicic acid H_2SiF_6, titanium hydrofluoric acid H_2TiF_6, boro hydrofluoric acid BF_4H, stannic hydrofluoric acid SnF_6H_2, molybdic hydrofluoric acid $Mo_2F_4H_2$, etc. These substances are absorbed in sufficient quantity if the material to be rendered moth-proof is treated exactly in accordance with the method used for dyeing with acid dyestuffs.

The preserving substance (in practice dissolved in water or in a colloidal form) is combined with the material to be protected by treating the material with a bath of the substance similar to a dyebath to which may be added, if desired, an agent or agents which promote the adsorption of the substance.

The material, for example, wool, may be treated with the moth-proofing substance either before or after or during the dyeing of the wool.

The moth-proofing substance or substances referred to above may be applied to the material to be protected with satisfactory results by subjecting the material to successive treatments in, for example, different baths.

The invention is illustrated by the following examples, the parts being by weight:—

Example 1.—100 parts of wool are placed over night in a bath containing one part of titanium hydrofluoric acid H_2TiF_6, 2 parts of sulfate of zinc, 10 parts of Glauber's salt and 3 parts of formic acid. It is then rinsed and dried.

Example 2.—100 parts of wool are steeped over night in a bath (5000 parts of water) containing 3 parts antimonic acid dissolved in 2 parts hydrofluoric acid to form $SbF_3 4HF$, 3 parts concentrated H_2SO_4 and 3 parts of alum, after which it is rinsed and dried.

Example 3.—100 parts of wool are boiled for one hour in a bath (5000 parts of water) containing 2 parts hydrofluoric acid, 10 parts Glauber's salt and 3 parts concentrated sulfuric acid, after which it is rinsed and well dried.

Example 4.—100 parts of wool are boiled for one hour in a bath (5000 parts of water) containing 4–5 parts sodium fluoride and 10 parts Glauber's salt, after which it is rinsed and well dried.

Example 5.—100 parts of wool are placed in a cold solution (5000 parts of water) containing 4 parts of the double salt of aluminum fluoride with ammonium fluoride having most probably the formula $AlF_6(NH_4)_6$, 3 parts aluminum sulfate and 3 parts concentrated sulfuric acid; after two hours the goods are rinsed and dried.

I claim:—

1. Process for protecting wool, fur and other similar materials against attack by moth which comprises treating the same with a solution containing an inorganic compound of fluorine in a manner similar to the method employed for dyeing fabrics with acid dyestuffs, whereby the inorganic compound of fluorine is fixed in the material in moth-proofing quantity.

2. Process for protecting wool, fur and other similar materials against attack by moth which comprises treating the same with a solution containing an inorganic salt of fluorine in a manner similar to the method employed for dyeing fabrics with acid dyestuffs, whereby the inorganic salt of fluorine is fixed in the material in moth-proofing quantity.

3. Process for protecting wool, fur and other similar materials against attack by moth which comprises treating the same with a solution containing a complex com-

pound of fluorine in a manner similar to the method employed for dyeing fabrics with acid dyestuffs, whereby the complex compound of fluorine is fixed in the material in moth-proofing quantity.

4. Process for protecting wool, fur and other similar materials against attack by moth which comprises treating the same with a solution containing a double salt of fluorine in a manner similar to the method employed for dyeing fabrics with acid dyestuffs, whereby the double salt of fluorine is fixed in the material in moth-proofing quantity.

5. A moth-proofed material comprising a material liable to attack by moth impregnated with an inorganic fluorine compound, said moth-proofed material being substantially proof against loss of its moothproofness by dusting or by washing with water as incurred in ordinary usage and wear.

6. A moth-proofed material comprising a material liable to attack by moth and an inorganic compound of fluorine combined therewith by a dyeing procedure whereby said compound is tenaciously retained in said material against ordinary usage and wear.

7. A moth-proofed material comprising material liable to attack by moth impregnated with an inorganic double salt of fluorine.

In testimony whereof I have hereunto set my hand.

ERNST MECKBACH. [L. S.]

CERTIFICATE OF CORRECTION.

Patent No. 1,682,975. Granted September 4, 1928, to

ERNST MECKBACH.

It is hereby certified that the name of the assignee in the above numbered patent was erroneously described and specified as "Farbenfabriken vorm Friedr. Bayer and Co., of Leverkusen near Cologne, Germany," whereas said name should have been described and specified as "I. G. Farbenindustrie Aktiengesellschaft, of Frankfurt a. m., Germany"; 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 9th day of October, A. D. 1928.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)

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4. Process for protecting wool, fur and other similar materials against attack by moth which comprises treating the same with a solution containing a double salt of fluorine in a manner similar to the method employed for dyeing fabrics with acid dyestuffs, whereby the double salt of fluorine is fixed in the material in moth-proofing quantity.

5. A moth-proofed material comprising a material liable to attack by moth impregnated with an inorganic fluorine compound, said moth-proofed material being substantially proof against loss of its moothproofness by dusting or by washing with water as incurred in ordinary usage and wear.

6. A moth-proofed material comprising a material liable to attack by moth and an inorganic compound of fluorine combined therewith by a dyeing procedure whereby said compound is tenaciously retained in said material against ordinary usage and wear.

7. A moth-proofed material comprising material liable to attack by moth impregnated with an inorganic double salt of fluorine.

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