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UNITED STATES PATENT OFFICE.

JOSEPH M. ROSS, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO ISIDORE B. ROSS AND NINETEEN-FORTIETHS TO MILTON J. ROSS, BOTH OF NEW YORK, N. Y., AND ONE-FORTIETH TO BENARD JOHN PELGRIM, OF LYNBROOK, NEW YORK.

METHOD OF MOTHPROOFING.

No Drawing.

Application filed July 25, 1924. Serial No. 728,141.

This invention is an improvement in methods of moth-proofing, and with respect to its more specific features, in methods applicable in the usual procedure of converting textiles from the raw to the finished state, and without varying from such usual procedure.

As is known, textiles, especially woolens, are particularly susceptible to the ravages of moths, or rather to those of the moth larvæ, and the eggs from which the larvæ hatch may be deposited at any stage in the life of the textiles.

Certain substances, as for instance camphor, naphthalene, and the like, when placed in or about the textiles, may deter the moth from laying the eggs, but they do not prevent the development of the larvæ, nor limit their ravages. Moreover, the odor from such substances is disagreeable and tenacious, lingering after the substance itself is removed. Hence their use is possible only when the articles are in storage. Cold storage inhibits the hatching of the egg, but does not destroy the life principle, and the egg may hatch and the larvæ develop after the removal of the textiles to a more genial atmosphere.

In my application, Serial No. 650,938, filed July 11, 1923, there is described and claimed a composition especially efficacious for moth proofing textiles, in that it is destructive to moth larvæ while non-toxic to vertebrates, odorless, stainless and harmless to the most delicate fabric. The preferred method of applying the composition as set forth in the said application, is in solution, in a state of very fine sub-division, and at a temperature considerably elevated above the normal.

In some stage of the normal procedure of conversion from the raw material into the finished article, textiles of substantially every character, and particularly woolens, are subjected to the action of steam as a step in the process of manufacturing.

With floor coverings, for instance, such as carpets, steam is used in sizing. With substantially all goods, it is applied to the web during the brushing after the weaving is completed. Steam is also used in shrinking, and those materials, known in the trade

as "face-finished", are steam finished to provide luster. When the web is converted into garments, the garments are steamed and pressed, and this operation, which applies especially to men's garments, is repeated during the life of the garment at intervals varying in accordance with the taste or means of the wearer, to restore the shape and freshness of the garment. This is true also of women's garments, particularly woolens.

Steam is an ideal carrier for the composition when in atomized or nebulized condition, and is also useful in converting the solution into a nebula and a primary object of the present invention is to provide a method of applying the solution forming the subject matter of the above-mentioned application, by means of steam at some stage of the process of converting the textiles into finished articles, in such manner that it will not interfere with the usual procedure, nor complicate such procedure by additional steps, or by variations in or from the usual steps.

With this object in view, I incorporate the moth proofing compound in the liquid from which is derived the steam used to treat the goods in some stage of the normal procedure. As for instance, the compound may be used in the steam which is applied in brushing the web, or in shrinking. The solution may be mixed with the water in the boiler from which the steam is generated, or if preferred, it may be placed in a separate tank or boiler, through which the steam from the generating boiler is led, the said steam heating and atomizing the solution, which is carried along with the steam to be applied to the textiles.

The moth proofing compound may also be applied after the finishing of the material and its conversion into final form. As for instance, in materials designed for garments, the compound may be applied after the garments are tailored and during the pressing thereof. In this instance the procedure is the same, the compound being placed in the steam generating boiler, or in a separate tank, as may be desired.

Even after the garments or other finished articles have left the shelves of the retailer

and are in the hands of the purchaser, they may be moth proofed by subjecting them to the action of steam derived from the moth proofing solution. Practically all garments, and especially men's garments, are periodically pressed. The pressing operation may be done by the usual steam pressing machines, such for instance as Hoffman pressing machines, or it may be done by certain types of goose. In the first instance the moth proofing compound may be used in the boiler of the pressing machine, and the results will be the same, as above described, the machines driving the steam laden with the moth-proofing elements through all parts of the garment.

Materials other than textiles, such for instance as furs, may also be moth proofed, by treating the materials with steam laden with a moth proofing solution. This treatment may take place during the conversion from the raw to the finished state, or in any stage in the life of the material, as may be desired. While a single treatment with the composition forming the subject matter of my above mentioned application is sufficient to permanently moth proof the article, periodical treatment does not injure the material in any manner or shorten the life thereof.

While the present method is especially designed to utilize the moth proofing compound forming the subject matter of my above mentioned application, yet it is applicable with any compound having the same characteristics, that is, an odorless, colorless, stainless, non-corrosive compound, containing an element destructive to moths and moth larvæ, but harmless to vertebrates, and a mordant.

A preferred composition is sodium fluoride and sodium sulphate, and these elements may have compounded therewith other ingredients, as for instance a bitter extract. The compound is applied in solution and as before stated, preferably in a state of fine subdivision and at a relatively high temperature, about 150° F. It will be evident from the description, that applying the solution in the manner set forth will cause no variation in the normal procedure of conversion, no additional steps being required, and no variation from the usual steps. Neither is additional machinery necessary, the machinery usually employed being utilized.

The fluoride and sulphate are both readily soluble, and they may be placed in the water of the boiler in the dry state, or they may be dissolved prior to placing them in the boiler. In machines of the character in question, that is those used in cloth finishing, the steam is usually applied by passing the cloth over a steam chest or cylinder, having a multiplicity of perforations, through which the steam is delivered. The pressure inside

the chest or cylinder forces the steam through the meshes of the cloth, bringing the steam and the moth-proofing solution into intimate contact with every part of the cloth. In pressing machines, the cloth is either steamed during the pressing, or it is moistened prior thereto, in which instance the heated pressing cylinder or the like will heat the moisture and drive it through the meshes of the cloth. In both instances the solution is applied to the cloth hot and is forced into intimate contact with every part thereof.

When used in a pressing machine, such as those commonly used by tailors, pressers and valeting shops, all garments pressed upon the machine will be moth-proofed while they are being pressed, and without varying from the usual procedure. Furs and the like may be treated with the solution in the form of steam or vapor, in order to moth-proof them, and in cleaning and dyeing establishments where furs are handled, the solution may be applied in connection with some stage of the usual procedure. The solution is non-corrosive and does not stain, so that there is no possibility of injury to the most delicate fabric.

It will be understood that when steam is referred to, the low pressure moist steam used in the treatment of textiles is meant, and not live or super-heated steam. In the treatment of textiles, and especially in pressing, the steam is applied intermittently. When the reservoir or source of steam is opened, the steam rushes out, reducing the pressure greatly, and carrying with it a part of the solution in the form of a very finely sub-divided spray.

What is claimed is:

1. The method of moth proofing textiles by impregnating them with non-volatile chemicals destructive to moths and moth larvæ, which consists in treating the textiles with steam laden with the said chemicals, thereby to expand the meshes of the textile and to deposit the chemicals in the interstices thereof.

2. The method of moth proofing textiles, which consists in treating the textiles with steam, laden with sodium fluoride, associated with a chemical designed to fix the fluoride in the textile, thereby to expand the meshes of the textile and to deposit the fluoride and associated chemical, in the interstices thereof.

3. The method of moth-proofing textiles, which comprises forcing through the meshes of the textile steam laden with a nebulized solution containing sodium fluoride and sodium sulphate.

Signed at New York in the county of New York and State of New York this 22nd day of July, A. D. 1924.

JOSEPH M. ROSS.