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MOTHPROOFING

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This invention relates to the protection of wool and other fibrous materials against attack by moths.

Among the methods now employed for the protection of wool, furs and other materials from the ravages of moths is the impregnation of these materials with substances which will repel the insects.

Substances known to be efficacious are fluosilicates and cinchona alkaloids. The alkaloids are usually applied as a salt of a fatty acid dissolved in naphtha. The textile or garment to be protected is saturated with this solution, the naphtha allowed to evaporate and the residue remaining serves as a repellent to the insects. Many other substances have been proposed for this purpose. However, many of these compounds are rare chemicals and quite expensive. Cheapness and availability, as well as effectiveness, are desired.

We have discovered a class of compounds which may be manufactured easily and cheaply and which are very effective as moth repellents. This class of compounds consists of the di-aryl substituted guanidines of the formula—

$$RNH—C(=NH)—NHR'$$

where R and R′ are aryl groups such as phenyl, tolyl, xylyl, etc.

Illustrative of the guanidines which we may use are di-xylyl guanidines. These may be made by the action of cyanogen chloride on the mixed xylidines. This reaction results in the formation of the guanidine hydrochloride from which the free guanidines may be separated. From the standpoint of cost, the guanidines from the mixed xylidines are preferred, but if desired, the guanidine from a pure xylidine, for example, m-xylidine, may be used.

As an example of our invention we take 6 parts of xylyl guanidine made from commercial mixed xylidines, 4.7 parts of oleic acid, mix these together and stir into 250 parts of petroleum naphtha. This solution is then used for the impregnation of wool cloth in a proportion of about 1 pound of solution to 20 pounds to 40 pounds of wool. The naphtha is allowed to evaporate. The resulting cloth is thus protected against the ravages of the insects.

It is obvious that the proportions used may be varied. Other solvents may be used instead of petroleum naphtha. The grade of the petroleum naphtha may be varied to give any desired rate of evaporation. The guanidines may be used in the form of the salts of fatty acids other than oleic, dissolved in other solvents or may be dissolved as the free base in solvents. Other guanidines may be used instead of xylyl guanidines, for example, diphenyl guanidine, di-ortho-tolyl guanidine, di-para-tolyl guanidine, di-benzyl guanidine, di-p-dimethyl anilino guanidine, α methyl $\alpha\gamma$ diphenyl guanidine, di α napthyl guanidine and asymmetrical diphenyl guanidine, or mixtures thereof. These compounds are easily obtained, are non-volatile, stable to atmospheric conditions and are without toxic action to human beings when so used.

It will be obvious that our invention is susceptible of many other changes and variations in addition to those set forth, the scope of the invention only being limited by the appended claims.

We claim:—

1. The process of moth-proofing material which comprises treating it with a composition containing a fatty acid salt of a substance having the following general formula—

$$RNH—C(=NH)—NHR'$$

where R and R′ are aryl groups.

2. The process of moth-proofing material which comprises treating it with a composition containing a fatty acid salt of a di-aryl substituted guanidine.

3. The process of moth-proofing material which comprises treating it with a di-xylyl guanidine.

4. The process of moth-proofing material which comprises treating it with a composition containing a di-xylyl guanidine salt of oleic acid.

5. A moth-proofing composition compris-

ing a di-aryl substituted guanidine salt of a fatty acid dissolved in an organic solvent.

6. A moth-proofing composition comprising a di-xylyl guanidine dissolved in an organic solvent.

7. A moth-proofing composition comprising a di-xylyl guanidine salt of oleic acid dissolved in an organic solvent.

8. A fibrous material carrying a di-aryl substituted guanidine salt of a fatty acid.

9. A fibrous material carrying a di-xylyl guanidine.

10. As a moth-proofing composition a di-xylyl substituted guanidine.

11. As a moth-proofing composition a di-xylyl substituted guanidine admixed with a higher fatty acid.

In witness whereof, we have hereunto subscribed our names this 25th day of February 1931.

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