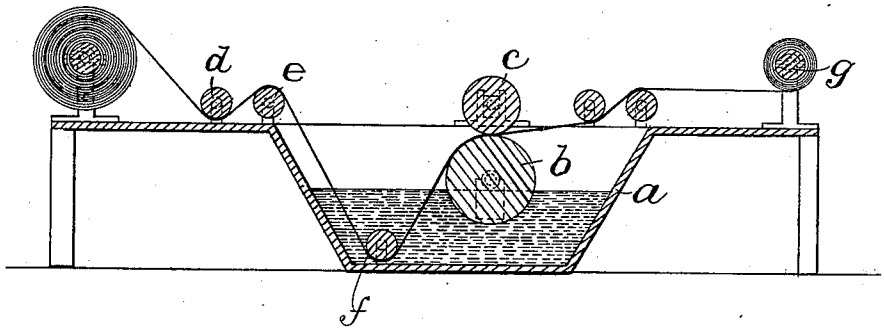
No. 676,375. Patented June 11, 1901.

# A. M. WHIPPLE.

## INSECT REPELLING FABRIC.

(Application filed June 6, 1900.)

(No Model.)




WITNESSES:

A. D. Harrison

D. F. Izzett.

INVENTOR:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

ARCHIBALD M. WHIPPLE, OF NORTH ADAMS, MASSACHUSETTS, ASSIGNOR TO GEORGE L. GILMORE, OF LEXINGTON, MASSACHUSETTS.

## INSECT-REPELLING FABRIC.

SPECIFICATION forming part of Letters Patent No. 676,375, dated June 11, 1901.

Application filed June 6, 1900. Serial No. 19,245. (No specimens.)

*To all whom it may concern:*

Be it known that I, ARCHIBALD M. WHIPPLE, of North Adams, in the county of Berkshire and State of Massachusetts, have invented certain new and useful Improvements in Insect-Repelling Fabrics, of which the following is a specification.

This invention has relation to means for rendering proof against moths and other destructive insects those fabrics and substances which are liable to their attacks. Various chemicals have been used for the purpose stated, but they have in most cases been offensively odorous and their effect has been evanescent.

The object of my invention is to provide a solution with which a flexible fabric may be impregnated and which will not only render the fabric practically permanently proof against moths and other insects, but also make immune the destructible substance or material with which the fabric may be brought into contact or in juxtaposition. Hence the fabric may be employed as an interlining for plush or other furniture or as a tick for bedding, may be made into bags for the reception of garments, furs, skins, or other destructible articles, and may be utilized in numerous other ways for preventing the destruction of materials or articles that are now mutilated by insects.

On the drawing I have represented an apparatus for impregnating the fabric with the solution.

The ingredients or component parts of the solution are oil of cedar, nicotin, starch, and water.

For about two hundred yards of fabric I use about sixteen gallons of the solution in the following proportions: two pounds of cedar-oil, six pounds of starch, eight gallons of the extract of tobacco refuse—such as stems, non-usable leaves, &c.—and eight gallons of water. Corn-starch is preferably employed, and it is boiled before it is added to the other ingredients, it serving to thicken the solution to the proper consistency, as that of thin syrup, and to prevent the separation of the oil of cedar.

The solution is placed in a vat or tank *a*, in which is journaled a moistening-roll *b* and a pressing-roll *c*. The roll *b* is partially submerged in the solution and carries the solution on its periphery to the cloth or fabric as the latter is passed between the two rolls. The fabric is drawn through the straightening-rods *d* and *e*, and thence under a submerging-rod *f*, located near the bottom of the tank, to the rolls. After it leaves the rolls it is wound upon a take-up roll *g*. The rolls are all driven by proper gearing and rotate at the desired speed. After the cloth has been saturated or impregnated with the solution, the rolls *b* and *c* expressing the superfluous solution, it is dried and is ready for the market.

While it is perfectly feasible to treat woolens and other cloths to render them directly proof against the attacks of insects, I prefer to impregnate cotton fabrics, which are immune, and to utilize them for interlinings, bags, wrappings, and the like.

After a bleached cotton fabric has been saturated with the solution and then dried it is slightly discolored, and hence I prefer to use colored fabrics to prevent the solution from showing. The odor of the oil of cedar is the most prominent; but it is hardly noticeable and is not unpleasant. If an odor is desirable, however, I use ammonia to bring out the scent of the nicotin in the extract of tobacco refuse.

Usually I allow the saturated fabric to stand some time before drying it, and I then pass it through rolls which calender its surface. The starch in the solution fills the interstices between the threads and forms a more or less glazed finish, and as the oil of cedar and the nicotine are equally distributed with the starch in the solution before impregnation all these ingredients form a filling in said interstices that causes the cloth to retain its insect-repelling qualities for a very long time.

As hereinbefore stated, the cloth is dried after being saturated to prepare it for use on the market. As cloth is not only strong, but flexible, and as the ingredients which I employ are such as to not materially affect the flexibility of the cloth after it is dried, the fin-

ished material is fully capable of being successfully put to all the uses mentioned, such as interlinings, bags, and wrappings.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without having attempted to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. As an article of manufacture for repelling insects, a dry and flexible sheet of material adapted to protect fabrics adjacent thereto or wrapped therein from the attacks of insects, said sheet being impregnated with a solution of starch and an insecticide.

2. As an article of manufacture, a dry and flexible insect-repelling cloth adapted to protect fabrics adjacent thereto or wrapped therein from the attacks of insects, said cloth being impregnated with oil of cedar combined with a thickening substance substantially as specified to hold the said oil in the interstices of the cloth.

3. As an article of manufacture, an insect-repelling cloth adapted to protect fabrics adjacent thereto or wrapped therein from the attacks of insects, said cloth being impregnated with a solution of starch and oil of cedar and extract of tobacco, the starch and the other ingredients specified forming a filling in the interstices between the threads of the cloth.

In testimony whereof I have affixed my signature in presence of two witnesses.

ARCHIBALD M. WHIPPLE.

Witnesses:

M. B. MAY,

GEO. L. GILMORE.