

Feb. 9, 1937.

J. C. EMHARDT

2,069,753

METHOD OF PRODUCING A FLOOR COVERING

Filed Feb. 2, 1934

Fig. 1.

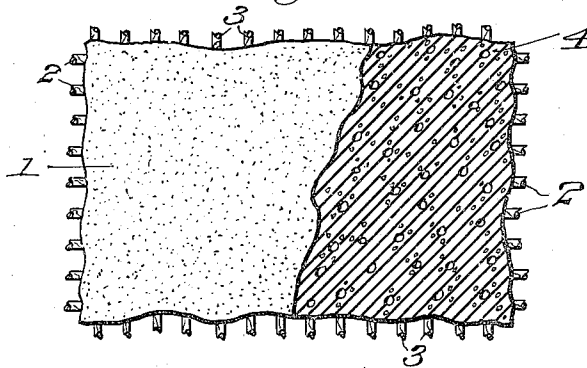


Fig. 2.

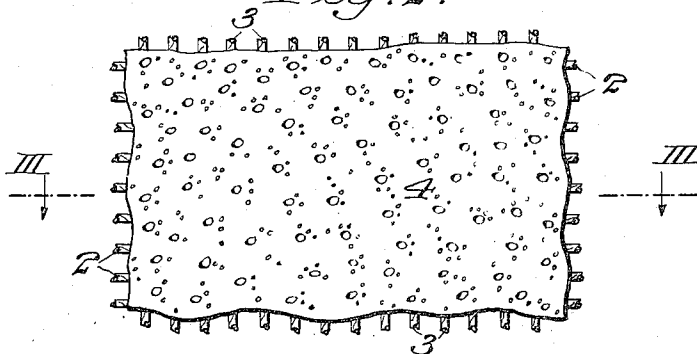
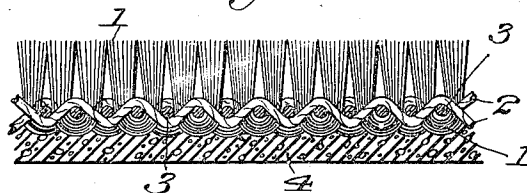


Fig. 3.



BY

INVENTOR
John C. Emhardt
BROWN & NEWARD
ATTORNEYS

UNITED STATES PATENT OFFICE

2,069,753

METHOD OF PRODUCING A FLOOR
COVERING

John C. Emhardt, Orange, Conn., assignor to
Sidney Blumenthal & Co., Inc., New York, N. Y.,
a corporation of New York

Application February 2, 1934, Serial No. 709,442
In Canada January 13, 1933

7 Claims. (Cl. 91—70)

This invention relates to the method of producing a floor covering which comprises a fibrous layer and a resilient rubber layer secured directly to each other.

An object consists in providing such a method in which the rubber is applied to the fabric in such a manner as not to injuriously affect the latter in any respect; and in which the cellular quality of the rubber is produced by boiling of a liquid medium with which the rubber is mixed or in which it is suspended or dispersed.

A practical embodiment of a material made in accordance with the method to be described is shown in the drawing, in which

Fig. 1 represents a detail plan view, partly broken away;

Fig. 2 represents a detail bottom view; and

Fig. 3 represents a detail section taken in the plane of the line III—III of Fig. 2, looking in the direction of the arrows.

In the drawing, the fabric layer is represented as V-pile fabric, in which the pile threads are denoted by 1, the warp threads by 2, and the weft threads by 3. This fabric may be of any well known or approved specifications as to material and weave; and, as the said specifications constitute no part of this invention, and many embodiments thereof are well known to operators skilled in the industry, they will not be here detailed.

The rubber layer is marked 4. It may preferably be composed of a concentrated aqueous dispersion of rubber, such as natural or artificial latex, mixed with suitable modifying and vulcanizing ingredients, and including a small amount of added water, such a composition being adapted to be vulcanized in place on the pile fabric. The mixture may include also a filler, such as chalk; and it should be refined by filtering through a wire mesh before applying to the fabric.

A preferred manner of practising this method is to weave, dye, and finish the pile fabric as desired. The aqueous dispersion of rubber is mixed with the suitable modifying and vulcanizing agents, as above indicated, the dry ingredients being sifted into the liquid during mixing, and the said mixture is applied to the back of the pile fabric by the use of a doctor blade. In performing this step, the blade may be set at

a predetermined distance above the surface of a table or the like, the fabric passed along the table underneath the blade, and a supply of the rubber mixture applied to the fabric adjacent the blade in order to cause the latter to spread it evenly and at a desired thickness on the back of the fabric. This use of a doctor blade for coating fabrics with rubber is an operation that is well understood in the art so that it calls for no illustration and no further explanation.

After the rubber mixture has thus been directly applied, in suitable thickness, to the back of the pile fabric, the material is promptly led into a heated chamber or the like. The temperature of this chamber is above the boiling point of water and may preferably be between 220° F. and 300° F. A temperature of 250° F. has been found satisfactory.

The effect of this heat upon the water constituent of the aqueous dispersion of rubber, together with such water as may have been added, is to cause it to boil and thereby impart a somewhat cellular quality to the rubber. Likewise the heat solidifies and vulcanizes the rubber so as to bring it to a tough resilient condition and to effect firm union between the rubber layer and the pile fabric, as indicated in Fig. 3 of the drawing. It has been found that, with a suitable mixture including a vulcanizing agent and an accelerator, a treatment for forty-five minutes at a temperature of 250° F. is satisfactory for producing the cellular quality of the rubber, vulcanizing it, and bringing about firm adherence between it and the fabric. At the end of this period, the fabric, with its rubber backing, may be led from the vulcanizing chamber, finished in any desired manner, and stored or otherwise disposed of.

It will be observed that this invention does not require the employment of added chemicals for the generation of gas or the like, but that it relies upon the boiling of the water present in the mixture in which the rubber is dispersed for the purpose of imparting the bubbly or cellular characteristic to the rubber. It will be observed particularly that this method does not contemplate the production of a layer of rubber separate from the fabric which is then secured to the fabric, but the rubber mixture, while in a plastic state, is applied directly to the fabric, and its vulcaniza-

tion and cellular characteristic are brought about after the application of the mixture to the fabric.

As a specific example of the character of mixture which has been found advantageous in practicing the method set forth, a typical formula may be given as follows:

	Parts by weight	
Concentrated latex (75% solids)	-----	133.0
Precipitated sulphur	-----	2.0
10 Zinc oxide	-----	7.0
Antioxidant	----- 1.0 to	1.5
Accelerator	----- 1.0 to	1.5
Penetrating agent	-----	0.06
Precipitated chalk	----- 30.0 to	50.0
15 Stabilizer	----- 0.0 to	0.5
Water	----- 5.0 to	18.0

It will generally be desirable to refine the mixture by filtering through a wire mesh, after which it is ready to be spread on the fabric material, as above described. The compound just set forth may be spread on the fabric in a thickness of approximately 0.03 inch, and such a coating will be completely dried and cured if allowed to remain in the drier forty-five minutes at a temperature of 250° F., as above noted.

This method is very simple and inexpensive, and the material produced is highly desirable for use as a floor covering and the like, particularly from the view-points of appearance, durability, resiliency and non-slipping.

This application is a continuation in part of John C. Emhardt's application, Serial No. 630,000 filed August 23, 1932.

It will be understood that various changes may be resorted to in the materials employed and the steps followed, without departing from the spirit and scope of this invention; and hence I do not intend to be limited to the details herein shown and described, except as they may be included in the claims.

What I claim is:

1. A method of producing floor covering or the like which comprises; providing a pile fabric; providing a plastic vulcanizable mixture of concentrated rubber latex; coating one face of the fabric with the rubber mixture; and subjecting the coated fabric to a temperature sufficient to boil the water in the rubber mixture; said rubber mixture comprising substantially 133 parts by weight of concentrated latex, 2 parts of sulphur, 7 parts of zinc oxide, 50 parts of chalk, together with an antioxidant, an accelerator, a stabilizer, and a small quantity of added water.

2. A method of producing a floor covering or the like which comprises the steps of providing a

quantity of concentrated latex, adding thereto a small additional quantity of water, adding and mixing therewith quantities of precipitated sulphur, zinc oxide, an antioxidant, an accelerator, and precipitated chalk, coating a fabric with said mixture in the form of a thin sheet, and subjecting it to a temperature sufficient to boil the water in the mixture and to vulcanize the rubber.

3. A method of producing a floor covering or the like which comprises the steps of providing 133 parts by weight of concentrated latex, adding thereto a small additional quantity of water, adding and mixing therewith 2 parts of precipitated sulphur, 7 parts of zinc oxide, not more than 1.5 parts of antioxidant, not more than 1.5 parts of accelerator, .06 parts of penetrating agent, and 30 parts of chalk, coating a fabric with said mixture in the form of a thin sheet, and subjecting it to a temperature sufficient to boil the water in the mixture and to vulcanize the rubber.

4. A method of producing floor covering or the like which comprises, providing a fabric, providing a plastic vulcanizable aqueous mixture of concentrated rubber latex, coating the back of the fabric with said mixture, and subjecting the coated fabric to a temperature of approximately 250° F. for sufficient time to cure and dry the rubber, thereby forming a layer of cellular rubber.

5. A method of producing floor covering or the like which comprises, providing a fabric, providing a plastic vulcanizable aqueous mixture of concentrated rubber latex, coating the back of the fabric with said mixture, and subjecting the coated fabric to a temperature of approximately 250° F. for approximately 45 minutes, thereby forming a layer of cellular rubber.

6. A method of producing floor covering or the like which comprises, providing a fabric, providing a plastic vulcanizable mixture of concentrated rubber latex containing a small quantity of added water, coating the back of the fabric with said mixture, and subjecting the coated fabric to a temperature of approximately 250° F. for sufficient time to cure and dry the rubber, thereby forming a layer of cellular rubber.

7. A method of producing floor covering or the like which comprises, providing a fabric, providing a plastic vulcanizable mixture of concentrated rubber latex containing a small quantity of added water, coating the back of the fabric with said mixture, and subjecting the coated fabric to a temperature of approximately 250° F. for approximately 45 minutes, thereby forming a layer of cellular rubber.

JOHN C. EMHARDT.