

Nov. 17, 1925.

1,562,387

C. M. TAYLOR

FLOOR COVERING

Filed Oct. 21, 1925

Fig. 1.

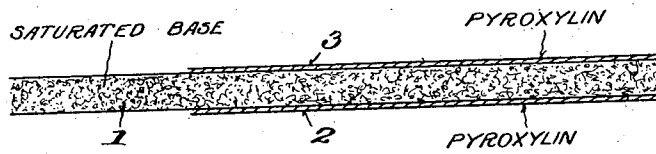


Fig. 2.

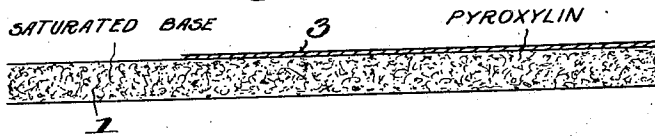
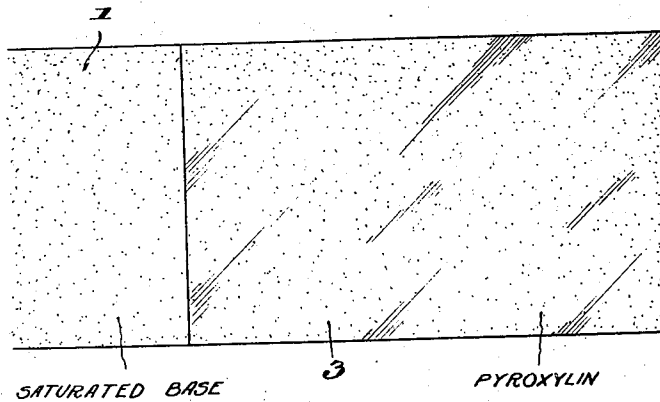


Fig. 3.



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UNITED STATES PATENT OFFICE.

CALEB MARSHALL TAYLOR, OF ELIZABETH, NEW JERSEY.

FLOOR COVERING.

Application filed October 21, 1925. Serfal No. 63,805.

To all whom it may concern:

Be it known that I, CALEB MARSHALL TAYLOR, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Floor Coverings, of which the following is a specification.

This invention relates to floor coverings and to a process of making the same, and provides broadly for a coating of a cellulose ester material on a previously completed saturated sheet of base or supporting material.

The floor covering provided is an improvement in that type known as felt base floor coverings and particularly in which an impregnated base is used. The present invention provides an improved impregnated and coated base having all of the advantages and none of the faults of floor coverings using the known asphalt or bitumen impregnated bases.

The invention is also peculiarly adapted for use in combination with all floor coverings in which either the wear surface or the opposite under face is formed of paint or other material containing linseed oil or other oil; or any material subject to saponification or removable under the action of soap and the usual floor cleaning materials.

The present invention provides broadly for a coating of a cellulose ester material over a previously saturated sheet or supporting base. The base of sheet material must have been previously saturated throughout with a binder saturant to unify the material of the base, and such saturant may be such a material as a cellulose ester in solution or a bitumen such as tar or asphalt. The base thus treated must be sufficiently dried prior to the addition of a coating so that it may be readily handled prior to and during the coating operation. The original sheet material of the saturated base, prior to saturation, may be the paper felt commonly impregnated with bitumen, or the sheet material may be of any kind of felt, relatively thick and absorbent textile goods, or closely woven grass, or porous or fibrous sheet material having adequate coherence so that it may be handled in sheet form prior to saturation. It is necessary that the resultant saturated material when dried must have a surface sufficiently smooth to be printed upon by the usual

block type printing of floor covering decorating machinery; also that the material of the saturant shall have become dry enough to render the material usable under floor covering conditions and under the conditions of manufacture of the coated article. It is important that the texture of the base be fairly even on at least one surface so that it may be coated or printed upon, and that no pronounced ribs or strands or widely separated threads, as in a loosely woven burlap, be on the surface inasmuch as such a condition would remove its usefulness as a smooth surface floor covering article. It is further extremely important that the saturated base, after having all excess unabsorbed saturant squeezed out, shall have adequate thickness to serve as a wearable article for floor coverings and must also be substantially homogeneous throughout and uniformly resistant at all points to impact and to the use accorded floor coverings. It must have sufficient thickness and weight to lie flat on the floor and remain in place under wear conditions.

Claims to such a coating over a bitumen impregnated sheet base are presented in my copending application Serial 528,298, filed January 10, 1922.

In addition to the foregoing broad conception of a coating over any type of homogeneous saturated base the present invention is directed particularly to the use of a coating over a base saturated with a cellulose ester material, in accordance with the details claimed in my application Serial No. 528,297, filed January 10, 1922.

Bitumen impregnated felt base floor coverings may be recognized by the main dark body which is particularly evident when the material is cut. The felt of such bases may be made from rags, or from paper, or any cellulose material, or from a mixture of such materials, thoroughly impregnated with asphalt or tar or some suitable bituminous material. When used as a supporting base for floor covering it is the usual practice to coat the bitumen impregnated base with a layer of paint and often to apply various painted designs, all of which may be applied in any convenient manner. Also, a coat of paint is applied to the opposite or under surface of the impregnated base to cover the dark and unsightly bitumen impregnated base.

In the manufacture of such bitumen im-

pregnated bases it has been found that the wear paint and the decorative paint may become discolored, due in part to the next interior material of the bitumen of the base.

- 5 Also in drying the paint coats it is necessary to dry at relatively low temperatures and for a longer period of time, often as long as four or five days. A higher temperature and more rapid drying would tend to liquefy
10 the bitumen and delay proper drying of the paint and also discolor the paint due to the release of materials from the base. Thus a baking temperature 175° F., or more, such as is desirable for drying the paint coats, is
15 not advisable in the usual drying of such coated bases.

- After the present known product is completed it is usually necessary to place paper between adjacent surfaces when the material is rolled or stacked in layers to prevent the adjacent painted surfaces from adhering. It is well known that all such painted surfaces, and also that the surface of the material known as linoleum, is worn
25 away by the use of soap and water because of the saponification by such cleaning materials on the oils in the paint and linoleum.

- The present invention is directed particularly to a coated impregnated felt base possessing the desirable characteristics of bitumen impregnated bases of durability, flexibility and softness, and is also waterproof and weatherproof. Most important, the impregnating material will not soil and may be subject to relatively high baking temperatures without discoloring the paint thereon. The use of the base of this invention renders it unnecessary to apply the coat of paint to the under surface of the floor covering, renders it unnecessary to use the spacing paper, and avoids all danger of discoloration of the decorative or wear coats of paint, and finally makes it possible to complete the drying of the paint coats in a much shorter length of
45 time than heretofore possible where bitumen impregnated bases are used.

- In producing the impregnated felt base of this invention, the usual rolls of felt may be used. A saturant solution is prepared of a mixture of nitrocellulose and a solvent therefor. Preferably a substantial quantity of a semi-drying or drying vegetable oil is added to the mixture as a softening material, and it is desirable to add a quantity
55 of resin, such as cumaron, or kauri, or camphor. To this cellulose mixture may be added a pigment color of any desired shade, a feature not heretofore known in floor coverings. The mixture is brought to the desired working temperature and the felt is saturated with it by being passed through tanks, or other suitable applying means, and finally it is passed through pressure rolls to press out all excess saturant solution. The
65 felt is then dried at a suitable temperature,

for instance, approximately 140° F. for 5 to 15 minutes, after which it is coated with a sealing coat of a cellulose ester solution prepared and applied according to the details hereinafter set forth. The sealing coat thus comprises a wear coat for receiving the impact and friction of floor usage.

For the coating solution a mixture of nitrocellulose and a solvent therefor is prepared. Preferably the desired quantity of a drying or semi-drying vegetable oil is added to the mixture as a softening medium. It is desirable to add a quantity of resin, such as cumaron, or kauri, or camphor. The solution is applied to one or both sides of the impregnated base by any well known coating process. The solution thus applied is quickly dried on the base at a suitable drying temperature of approximately 140° F. The coated base may be used as such for a floor covering, or preferably may be further coated with wear or decorative paint coats, or the pyroxlin coat may carry a pigment to give the desired shade of color.

Other cellulose esters than nitrocellulose, such as acetyl cellulose may be used for either the saturant solution or the coating.

One satisfactory mixture for the saturant solution may be made by using 10 parts by weight of nitrocotton, and 90 parts by weight of a solvent mixture, which mixture may be composed of 35 per cent of acetone oil and 65 per cent of such a diluent as solvent naphtha, or xylol, or toluol, or benzol. Any well known working formula may be used for combining such a mixture of drying or semi-drying vegetable oil with nitrocotton. To such a mixture 30 parts by weight of linseed oil or other semi-drying or drying vegetable oil can be added. Also, 5 parts by weight of a resin could be incorporated in the mixture. The amount of coloring pigment may be varied as desired.

One satisfactory mixture for the coating solution may be made by using 12 parts by weight of nitrocotton, and 88 parts by weight of a solvent mixture which may be composed of 35 per cent of acetone oil and 65 per cent of such a diluent as solvent naphtha, xylol, toluol, or benzol. Any well known working formula may be used for combining such a mixture of drying or semi-drying vegetable oil and nitrocotton. To such a mixture 12 parts by weight of linseed oil or other semi-drying or drying vegetable oil can be added. 12 parts of a resin may be added to advantage.

It will thus be seen that the coating is relatively hard as compared to the dried impregnated material because of the presence of a larger proportion of resin and a smaller amount of oil in the coating than in the impregnated material. The ratio of the above examples being 1 part of resin and 6 parts of oil in the saturating solution and

equal parts of resin and oil in the coating solution.

In the accompanying drawing Figure 1 represents an enlarged sectional view of a sheet of impregnated felt 1 having coatings 2 on the lower face and 3 on the upper face.

Figure 2 is a sectional view of a modification in which no under coat is provided.

Figure 3 is a plan view of the material illustrated in Figs. 1 and 2.

The resultant material may be used as the desirable tough, clean floor covering base having the above mentioned desirable qualities of a bitumen impregnated base and none of the recognized undesirable features. As a result of the treatment, the tensile strength of the base is increased at least 25 percent, and the material of the felt is cemented together. It is thus possible to use a relatively cheap grade of felt. This process toughens the texture of the felt, gives it a smooth surface and better base for paint coats than the base provided by bitumen materials, and there is no tendency to bleed sticky tarry material as where bitumen felts are used, neither is it necessary to use a sealing coat on this saturated felt before applying the print or decorative coat. It is particularly important that the surface be smooth enough to receive the decorative paint which is usually applied by the so-called block printing machine. A rough or tufted surface will not "take" the decorative designs.

The outer coatings materially increase the tensile strength of the saturated base. The material possesses good wearing qualities whether it is considered particularly in regard to the underneath coating or as an upper wear coat.

This invention provides a floor covering in which the body of the felt may be tinted, or the material of the outer coats may be tinted, and either effect provides a floor covering in marked contrast to the present known asphalt base coverings which have a black base with protective paint coats on each side.

The impregnated and coated base may be further coated with wear and decorative paint coats as provided and claimed in the copending application Serial No. 528,301 in which an outer coating of pyroxylin is applied to the surface of a decorative paint coat. The paint coat is applied directly to the present coated base.

This application is a continuation in part of my copending application Serial No. 537,959, filed February 20, 1922.

What I claim is:—

1. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a cellulose ester saturant and coated with a film of a cellulose ester material.

2. A floor covering comprising a felt base

of the smooth surface floor covering type impregnated throughout with a cellulose ester saturant and having the opposite faces of the base coated with a sealing coat of a film of cellulose ester material.

3. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout its thickness with a cellulose ester saturant and coated with a mixture of a cellulose ester and a softening medium.

4. A floor covering comprising a cellulose ester impregnated felt base of the smooth surface floor covering type coated with a mixture of a cellulose ester, a softening medium, and a resin.

5. A floor covering comprising a cellulose ester impregnated felt base of the smooth surface floor covering type coated with a mixture of a cellulose ester, a resin, and a vegetable oil.

6. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a cellulose ester saturant, and coated with a film of a mixture of nitrocellulose and a softening medium.

7. A floor covering comprising a cellulose ester impregnated felt base of the smooth surface floor covering type coated with a film of a mixture of nitrocellulose and a resin.

8. A floor covering comprising a cellulose ester impregnated felt base of the smooth surface floor covering type coated with a film of a mixture of nitrocellulose, a resin, and a softening medium.

9. A floor covering comprising a cellulose ester impregnated felt base of the smooth surface floor covering type coated with a mixture of a cellulose ester and a pigment color.

10. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a cellulose ester saturant including a drying oil and having a covering of a coating of a cellulose ester.

11. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a cellulose ester saturant and having a covering of a mixture of a cellulose ester and a softening material consisting of a vegetable drying oil.

12. A floor covering comprising a felt base of the smooth surface floor covering type impregnated with a cellulose ester saturant having a covering of a mixture of a cellulose ester, a resin, and a softening material.

13. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a cellulose ester saturant and having a covering

of a mixture of a cellulose ester and a coloring pigment.

14. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a saturant of nitrocellulose and having a coating of a cellulose ester.

15. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a saturant of a mixture of nitrocellulose, and a softening medium, and having a coating of a cellulose ester.

16. A floor covering comprising a felt base of the smooth surface floor covering type impregnated with a saturant of a mixture of nitrocellulose, resin, a softening medium, and having a coating of a cellulose ester.

17. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a saturant of a mixture of nitrocellulose including a pigment color, and having a coating of a cellulose ester.

18. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a saturant of a mixture of nitrocellulose and a softening medium, and having a coating of a nitrocellulose material.

19. A floor covering comprising a felt base of the smooth surface floor covering type impregnated with a saturant of a mixture of nitrocellulose, resin, and a softening medium, and having a coating of a nitrocellulose material.

20. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a saturant, of a mixture of nitrocellulose including a pigment color, and having a coating of a nitrocellulose material.

21. A floor covering comprising a felt base of the smooth surface floor covering type impregnated throughout with a saturant and having a coating on at least one face thereof of a cellulose ester.

22. A floor covering of the smooth surface type comprising a base of porous sheet having sufficient thickness for use as floor covering material and impregnated throughout with a binder saturant, said

sheet being comprised of material having coherence as a sheet prior to impregnation, and a coating of a film of a cellulose ester directly united to at least one face of the saturated sheet.

23. A floor covering comprising a felt base of the smooth surface floor covering type impregnated with a cellulose ester saturant and having thereon a coating of a cellulose ester, which coating is of material relatively harder than the solidified impregnating material.

24. A floor covering comprising a felt base of the smooth surface floor covering type impregnated with a mixture of a cellulose ester, a resin and oil, and having a coating of a mixture containing a cellulose ester, and oil and a larger proportion of resin than contained in the impregnating material.

25. A floor covering comprising a felt base of the smooth surface floor covering type impregnated with a mixture of a cellulose ester, a resin and oil, and having a coating of a mixture containing a cellulose ester, a resin, and a smaller proportion of oil than contained in the impregnating material.

26. A floor covering comprising a felt base of the smooth surface floor covering type impregnated with a mixture of a cellulose ester, a resin and oil, and having a coating of a mixture containing a cellulose ester, a smaller proportion of oil than contained in the impregnating material, and a larger amount of resin than contained in the impregnating material.

27. A floor covering comprising a base of the smooth surface floor covering type impregnated with a mixture containing a cellulose ester and an oil, and having thereon a coating of a cellulose ester, resin, and a softening medium.

28. A floor covering comprising a base of the smooth surface floor covering type impregnated with a mixture containing a cellulose ester and an oil, and having thereon a coating of a cellulose ester, resin, and oil, said coating having a smaller proportion of oil than the material of the impregnating mixture.

In testimony whereof I affix my signature.
CALEB MARSHALL TAYLOR