

UNITED STATES PATENT OFFICE.

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IMPREGNATED FIBROUS MATERIAL.

1,317,340.

Specification of Letters Patent. Patented Sept. 30, 1919.

No Drawing.

Application filed March 23, 1913. Serial No. 224,369.

To all whom it may concern:

Be it known that we, WILLIAM B. WIEGAND and WALTER UFFELMAN, both subjects of the King of Great Britain, residing at Montreal, Province of Quebec, Dominion of Canada, respectively, have invented certain new and useful Improvements in Impregnated Fibrous Material, of which the following is a full, clear, and exact description.

This invention relates to an impregnated fibrous material suitable for use as a substitute for leather and for other purposes, and to processes for manufacturing the same.

Heretofore certain fibrous materials have been impregnated with various compositions for the purpose of increasing their stiffness and wear-resistant qualities. It has been found however, that materials produced in accordance with the previously known methods do not possess as high a degree of porosity and power of transpiration as is desirable where such material is used as linings or insoles for footwear; for which purpose it is particularly important that the material have sufficient porosity and power of transpiration to carry away freely the perspiration of the foot.

The disadvantages noted are due in a large measure to the fact that the impregnating compositions previously used have acted to completely fill the interstices and pores in the fibrous material, rendering it substantially impervious to the passage of air and moisture.

In some instances paint pigments have been mixed with the impregnating compositions for the purpose of imparting various shades or colors to the material. Such pigments act to fill the pores in the material, thus destroying its permeability.

An object of the present invention accordingly is to provide a fibrous material impregnated with a composition imparting increased stiffness and wear resistant qualities to the material without sacrificing the flexibility and permeability and consequently the transpiratory qualities thereof.

A further object of the present invention is to impart any desired color to a fibrous base by the use of a dye, thereby avoiding the use of a paint pigment and to then impregnate such base with a composition which will increase to the required extent its stiffness and wear resisting qualities and at the

same time produce a finished product having a higher degree of elasticity, flexibility, permeability, and power of transpiration than that possessed by materials produced by treating similar bases by the previously known methods.

This invention applies both to the process of preparing the material and to the material itself as an article of manufacture.

Any suitable fibrous base may be employed, for example knitted, woven, braided, felted, or other fibrous structure, but for the purpose of clearness the description is confined to the treatment of felt.

In practising the invention, a quantity of the impregnating composition is first prepared. One composition that has given very satisfactory results for impregnating felt to be used as insoles for footwear is compounded substantially as follows:—

51 pounds 9 ounces of resin are melted up with one gallon of linseed oil. The resulting solution is then thinned with 25 gallons of 67-70 Baumé gasolene. To the resulting solution is then added one pint of brown Japan drier.

Another way of preparing the composition is as follows:

A solution consisting of 51 pounds 9 ounces of resin and 25 gallons of 68-70 Baumé gasolene is first prepared. To this solution is then added one gallon of linseed oil and one pint of brown Japan drier.

It is to be understood that the impregnating compositions described have been set forth merely by way of illustration, and that the nature thereof may be considerably changed by varying the proportions and ingredients used, without departing from the spirit and scope of our invention.

After the composition has been prepared it is applied in a manner to thoroughly impregnate the felt. Any suitable means may be used for the purpose, for example, the felt may be immersed in the composition and then passed through squeeze rollers to remove any surplus. When the felt has been suitably impregnated it is dried by subjecting it to a heat of from 200° to 220° F. for a period of approximately 45 minutes. The duration of the drying treatment and the degree of heat employed may be varied in accordance with the character of the material it is desired to obtain. Upon comple-

tion of the drying step of the process the material may be pressed and sheared depending upon the finish it is desired to obtain.

5 When it is desired to impart an artificial color to our improved product, the base employed is first dyed to any suitable shade or color and then impregnated as hereinbefore set forth.

10 It has been found that the impregnating composition forms a filmiform coating around the individual fibers of the base impervious to the passage of the dye, which feature is particularly important in material

15 used for insoles, as it protects the hoisery of the wearer against the undesirable staining that has resulted where pigment colored materials have been used. The use of a dye instead of a pigment also effects a substantial reduction in the weight and cost of the completed product.

20 The material prepared by the described process possesses many of the desirable properties of leather, and is particularly characterized by its high degree of porosity and power of transpiration.

25 Another advantage of the material adapting it for use as insoles is that it will hold rubber cement very tenaciously thereby obviating the necessity of using a rag backing which has been required with certain other impregnated materials heretofore used.

30 It has also been found that insoles made of the material will soften sufficiently under vulcanizing temperature to permit them to readily conform to the shape of the lasts to which they are applied thereby obviating the unsightly appearance and discomfort to the foot arising from the retention of the sharp edges, which characterize leather and

treated felt insoling manufactured according to the previously known methods.

A further advantage possessed by insoles made of the material is that they yield sufficiently under the warmth and pressure of the foot to provide a comfortable, elastic cushion therefor.

An additional advantageous feature of the improved material is its extremely light weight, which feature permits a desirable reduction to be effected in the weight of footwear and results in a substantial economy in the cost of transportation and factory handling.

Although the invention has been set forth in detail various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

60 Having thus described our invention what we claim and desire to protect by Letters Patent is:—

1. A new material for articles of footwear comprising, a sheet of felted material, and a stiffening composition of resin, oxidizable oil and a drier incorporated therewith for rendering it transpiratory.

2. A new material for articles of wearing apparel of the kind mentioned comprising a felted material having dyed fibers and a stiffening composition covering the fibers and dye and forming a protective coating for the dye without affecting the appearance thereof and comprising resin, linseed oil, and a drier.

Signed at Montreal, Can., this 15th day of March, 1918.

WILLIAM B. WIEGAND.
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