

UNITED STATES PATENT OFFICE

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ART OF MAKING PILE FABRICS

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My invention relates to improvements in pile fabric and in the art and means of making the same. In the textile industry pile fabrics, which usually include plain and fancy corduroys, plushes and the like, have pile surfaces or areas in which the pile threads are woven or bound to the base fabric. The variations of design and color are limited to the capacity of the machinery used in making the fabric and if fancy effects within the limits of the machinery are produced the resulting fabric is very expensive. The object of my invention is to produce a pile fabric which is not necessarily a textile fabric and which at far less expense can be given a much wider range of beauty and embellishment without restricting its more prosaic and utilitarian applications.

To this end I take a base or web which can be of any desired material and cement to one or both surfaces thereof fibers the free portion of which will rise from the base surface and form the pile area. In carrying out this idea I preferably use an adhesive coating which will dry quickly and will not be sticky after it is dried as, for example, some of the pyroxylins, and the coating is also preferably a siccative coating. The fibers are deposited on the coating while the latter is still plastic and adhesive and when the coating is dried the free parts of the fibers will rise from the surface of the base material and can be combed or otherwise treated like pile in textile fabrics.

It will be seen therefore that I can use as a base light, cheap, limp material which is capable of carrying the coating and deposit the fibers on this coating, or the base fabric be more substantial and of any desired rigidity. It may be textile, paper, leather, wire mesh or any suitable base material. Likewise the fibers deposited thereon and secured thereto may be vegetable, animal or mineral according to the purpose to which the fabric is to be put, and the pile may be made of any necessary height. Thus it will be seen that the invention can be carried out in a way to produce a great variety of effects. For a purely decorative purpose a light fabric and a comparatively light coating of adhesive

may be applied and it will be readily seen that the pile material secured to the fabric may be of variegated colors or may be applied to produce effects in stripes or otherwise, and that if the base fabric is entirely covered with pile the latter may be cut, printed or manipulated like ordinary pile to produce a desired effect.

Therefore, within the scope of the invention it will be seen that the pile fabric may be made to have the appearance of true textile pile, may be embellished to a far greater extent and can be used for any purpose to which it is suitably adapted. It will also be seen that if it is desired to produce a fire resisting fabric the base or web can be wire mesh and the deposited and adhering pile may be, for example, asbestos fiber which may be in any desired color.

In carrying out the invention it is a simple matter to coat the base with the adhesive material, deposit the pile thereon, dry the material, comb it or otherwise treat it to raise the pile, and then trim, print or otherwise handle the material to produce the desired effect. It will also be noted that by properly selecting the base, by regulating the amount of adhesive coating and also by selecting the desired pile, the fabric can be made as limp and flexible or as rigid as desired. It will be noted that my improved product and improvement in the art is quite different from the common practice of coating a fabric with material and cementing or sticking a further coating of material thereon as my invention is intended not merely to coat and cover the base fabric but to produce a pile area or areas thereon in which the pile can be made to appear like the pile of a true textile fabric, and, as outlined above, can be given a far greater range of utility and ornamentation. Such a fabric is well adapted for use as an ornamental covering for any material or wall, for hangings of various kinds, for a fire resisting surface if desired and for many other purposes which will appear. All this will be better understood by reference to the diagrammatic drawings hereto attached. Reference is to be had to the accompanying drawings in which similar reference char-

acters refer to similar parts throughout the several views. Figure 1 is a diagram showing one way of carrying out the invention, Figure 2 is a broken cross section of the material with the pile on one face and Figure 3 is a view similar to Figure 2 but with pile on both faces of the fabric.

In the drawings I have shown a base fabric or web 10 which as stated can be of any approved material and for convenience I have shown this as coming from a supply roll 11, although the material is not necessarily rolled. The web or base passes over a guide roller 12 and it is coated with an adhesive coating which can be flowed on from a tank 13. The depth of this coating is regulated by a scraper 14 which can be set to make the coating thin or a little heavier if desired and I have marked this coating as 10'. This in the drawings is very much exaggerated in size to make it appear clearly. As the stock is carried forward the fiber 15 is deposited thereon from a chute 16, although it may be placed on the base fabric in any approved way, and guide rollers 17 serve to lightly press the fabric into contact with the coating. The stock with the deposited fiber is then passed through a dryer 18 of any approved kind where the adhesive sets and as the stock issues from the dryer a wire brush 20 of any approved kind turning against the direction of the stock feed engages the fiber or pile and raises the free portions thereof. I have shown an exhaust 21 for carrying off the loose fiber on the material and this exhaust also assists in raising the pile. As the stock advances further the pile 15' is raised as shown and as the stock passes over the guide roller 22 the pile is cut to the desired height by a suitable cutter 23. If it is desired to leave the surface fuzzy and uneven the cutter is of course not used. In the example shown the fabric is finally rolled as at 24 but if the fabric is of such a nature that it is more desirable not to roll it it will of course be left unrolled and can be handled in any convenient way.

Obviously the base fabric 10 can be coated on both sides and the pile surface produced on both sides as in Figure 3.

The means for applying the pile material or fiber to the base 10 can of course be varied greatly and I have merely shown diagrammatically a simple means of carrying out my improved method, adapting thereto standard mechanisms modified for this purpose of course and other parts can be substituted for them. The essential thing is to provide means for coating the base, depositing the pile fibers or material thereon, drying the stock, and if necessary or desirable, raising the pile and trimming it.

From the description which I have given, it will be evident that the fabric can be made as limp or as rigid and the pile as heavy as

desired; that in producing it a great variety of materials can be used including materials that have not heretofore been available for pile fabrics because of their shortness or otherwise. It will also be evident that the pile can be colored to suit the taste that as it is applied it can be printed, trimmed or otherwise treated to give it the desired appearance and that it may be applied uniformly to the surface or only to desired portions of the same so as to produce designs.

If the fabric is not to be made fire resistant I prefer to use a pyroxylin coating as an adhesive as this makes a smooth, strong flexible coating which does not crack or peel, but if the fabric is to be fire resistant, some form of non-inflammable adhesive will be used.

I am aware that fibrous material has been applied to rubber sheets by imbedding it in the soft rubber and sometimes vulcanizing the rubber in the attempt to make the rubber goods appear like cloth which will have waterproof qualities, but material of this kind has never been successful because the rubber is objectionable for most purposes as it is heavy, offensive in odor sometimes, and particularly because it deteriorates so quickly and is so subject to changes under temperature variations. This is especially true where the rubber is soft enough to have a cementitious action when the fiber is pressed into it. Such goods, moreover, cannot be made to appear like pile fabric.

I claim:—

1. The herein described apparatus for making pile fabric comprising means for feeding a web of stock, means for depositing an adhesive coating thereon, means for applying the pile material to said coating, a dryer through which the stock and deposited pile passes and means for raising the pile.

2. The herein described apparatus for producing a pile fabric comprising the following instrumentalities arranged one behind the other: means for depositing an adhesive coating on a web or base, means for applying pile material to said coating, means for drying the stock, means for raising the pile and means for trimming the pile.

In testimony whereof, I have signed my name to this specification this 29th day of April, 1927.

NELSON SLATER.