ORNAMENTED FABRIC AND PROCESS OF MAKING THE SAME

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BY

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This invention relates to a textile fabric that is ornamented by applying designs to a base fabric a process commonly known as "flocking". Flocking, as it is known in the art at the present time, consists in applying relatively small and simple designs to the surface of a textile fabric by applying an adhesive field corresponding to the design to be produced, to the surface of the fabric to be ornamented, and then applying to the adhesive field by a blower or by some other distributing means, a layer or coating of some fibrous material or fuzz, such as short lengths of artificial silk fibres, silk, cotton, wool, or the like. This fuzz-like substance or nap adheres to the adhesive field and the resultant fabric consists of a smooth base and spaced ornamental pile figures formed as just described.

Up to the present time the number of designs capable of being produced by the process just described is exceedingly limited. The instrumentality used for applying the adhesive to the base fabric usually consists of a rotary stencil. As is well-known in the stencil art, stencils can only be made in a certain way. That is, where spaced apertures of any reasonable size are cut in the stencil it is necessary to connect such apertures by integral tongues to hold the part of the stencil body that is situated between the apertures, in place. Thus, any designs produced by stencil-work, though the use of stencils made as in the past, have had their continuity broken by the connecting tongues of the stencil. Additionally, when the stencil employed has been provided with relatively large apertures through which the adhesive was forced on to the fabric, the spreaders employed within the rotary stencil to force the adhesive through the same, often caught on the edges of such apertures, thus either damaging the stencil or else wholly destroying the same.

It has also been found impractical to produce fabrics having designs composed of large solid figures for additional reasons. One of the primary shortcomings of a fabric formed with large, solid figures is that the formation of such designs requires the application to the surface of the fabric of large unbroken areas of adhesive. Such areas of adhesive, when dry are stiff, hard and inflexible. Thus, a fabric when well covered with a design largely composed of such adhesive areas, is stiff, hard and inflexible and wholly unsatisfactory. To the present time, manufacturers have had to be content in producing fabrics ornamented by "flocking" with exceedingly simple and small designs. Where large solid figures were formed as a part of the design, the parts of the figures had to be separated, due to the stencil connections, and also a stiff and hard fabric resulted.

The object therefore, of this invention is to provide a process whereby a flocked fabric may be produced in which the designs on the fabric may be formed in any reasonable size, shape and arrangement required. All of the effects of large, continuous and solid designs may be had without imparting to the fabric that undesirable stiffness, harshness and inflexibility so characteristic of flocked fabrics of the past. The limitations of stencil work are no longer imparted to the designs produced through my improved process.

The result of the process employed is that a new fabric is produced in which designs never before contemplated by the flocking process, can be made. It is now possible to simulate in a fabric produced by flocking, the design of woven or cut pile fabric, at least as far as the production of designs therein is concerned.

More specifically, my invention contemplates the use of a stencil in which a design is formed by a plurality of minute, closely-spaced holes through which small, spaced globules or dots of adhesive are applied to the surface of the fabric to be ornamented. These spots or adhesive globules are so separated that they maintain their respective locations permanently without intermingling or merging. The glue dots or areas are preferably spaced so closely to one another, yet without co-mingling, that when the fuzz or pile is applied, the effect of a single large figure is formed. Since the adhesive base consists of the minute, spaced adhesive globules, the stiffness and hardness of a large area of glue
is avoided and the resultant fabric is soft and pliable.

In the preferred embodiment of my invention shown in the accompanying drawings, Fig. 1 is a diagrammatic view indicating the manner in which the rotary stencil applies the adhesive globules to the fabric to be ornamented; Fig. 2 is a plan view of a part of the stencil showing the design to be applied to the fabric; Fig. 3 is a plan view of a portion of the fabric after the adhesive field has been applied; Fig. 4 is a plan view of the fabric in its finished form with the nap or pile held on the fabric by the adhesive; Fig. 5 is an enlarged sectional view of the fabric to which the adhesive has been applied, showing the spaced arrangement of the globules of adhesive; and Fig. 6 is a sectional view of the finished fabric.

In practicing the process of this invention I utilize a rotary stencil, a portion of which is shown at 1 and which is preferably made of a cylinder of sheet metal, such as copper or the like, and which is pierced as at 2 to form the design to be produced on the fabric. A portion of the stencil is shown in Fig. 2 where it will be seen that the design to be reproduced on the fabric is wholly composed of a number of spaced, minute holes arranged or grouped very closely together to provide the effect of a solid figure when the design is reproduced. In the drawings the holes 2 are shown much larger than they actually are in practice. I find it desirable to use, in producing these holes, a No. 60 drill or even a drill of smaller size if possible, although, of course, I do not limit myself to the formation of the stencil, to the use of a drill of this or any other particular size. Sufficient to say that the holes 2 in the stencil through which the adhesive is forced, are located at a sufficient distance apart to provide a plurality of small, closely-spaced glue globules 3 to the surface of the fabric to form the pattern.

These spaced globules 3 are located so close together that when a nap or pile consisting of short fibres of cotton, wool, silk, artificial silk or other fibrous material, shown at 4 in Figs. 4 and 6, is applied to the glue field and is held on the fabric thereby, there is a sufficient merger or mingling of the applied nap or pile to create the general effect or aspect of a solid pile figure substantially as shown in Fig. 4. At the same time the glue globules producing the adhesive field which retains or supports the nap or pile, are constantly maintained in their spaced or separated positions so that the hardness and stiffness of a solid glue area is entirely absent, and as a matter of fact, the entire ornamental figure shown in Fig. 4 is exceedingly soft and flexible and the fabric on which it is produced may be folded, crushed or crumpled without cracking or destroying the figure.

From the foregoing, the process by which the fabric is ornamented will be readily understood. In Fig. 1 a support such as a table or belt is shown at 5. The base fabric to be ornamented is shown at 6, and the same is fed beneath the rotary stencil 1 which bears numerous repetitions of the design of Fig. 2 or any other suitable design. The glue or adhesive is shown as at 7 within the stencil 1 and one or more spreaders 8 are employed to force the glue through the design apertures 2 so that the glue globules 3 are applied to the face of the fabric substantially as shown in Figs. 3 and 5. Thereafter, nap or pile 4 is applied to the adhesive field by blowing, beating or otherwise impinging the nap against the adhesive, causing the same to adhere thereto. As the glue tends to penetrate the fabric, it is found desirable to apply a certain amount of nap or pile as at 9 to the under or reverse side of the fabric where it will there adhere to the adhesive that has penetrated the fabric.

A sufficient amount of the nap or pile usually adheres to the glue globules to cause a substantial co-mingling or merging of the pile retained by adjacent glue globules with the result that the reproduced ornamental figure presents the substantial effect of a solid pile area, despite the fact that the pile is maintained in position by separated glue globules which enables the fabric to be folded or creased and affords the softness and flexibility of the fabric so much desired.

In other words, the spacing of the glue globules is such that the stiffness of the fabric which would be produced by lines of glue areas of glue patches or an extensive area of solid glue, is avoided. In this connection it can be understood that where glue areas are employed, the only freedom to flexibility of the fabric is provided by the space between the areas, while such freedom would be only between adjacent lines, where the line form was applied; in the latter case, even the breaking of the lines into short length would not provide the result of this freedom unless the breaks were themselves aligned in such manner as to produce a plurality of flexing lines in different directions. By the use of the dot effect, each dot is like an island which offers restraint against freedom of flexing only within the limits of the dot or globule, which are relatively minute.

This isolating effect to produce the freedom to flex the fabric is usable for the purpose of simulating pile-figured fabrics as herein disclosed because of the fact that the nap applied thereto is such that the nap fibers employed will each present secured and free portions of the fiber, with a free portion of the fiber extending into the nap-mingling zone found in the spacing between globules. The fiber may connect adjacent globules—the free portion then being the intermediate por-
tion of the fiber—or may have the secured portion as the intermediate portion so that the ends then project into such zone. The presence of the nap-merging zones between the globules permit the freedom of flexibility as well as the continuity of surface conditions essential in producing a simulation of this kind.

The stencil structure per se is not claimed herein, this forming the subject matter of a companion application Serial No. 568,297.

It will also be noted that through the formation of the stencil employed, wherein almost any design desired can be produced, there are no connecting tongues or bars such as used in ordinary stencils which serve to greatly detract from the reproduced designs and incidentally impose limitations upon the types of designs that may be produced.

What I claim is:

1. In the art of ornamenting textile fabric to simulate pile-figured fabrics, the method of producing the pile simulations which consists in applying to a face of the fabric a plurality of independent adhesive globules within the design field, and thereafter applying nap to the design field while the globules retain the adhesion characteristic, the relative positions of adjacent globules within the field being such that the globules will preserve their independent characteristics during and subsequent to the nap application, and nap applied to one globule will merge with nap applied to an adjacent globule of the field to produce a simulated continuous nap appearance, whereby the field will present the characteristics of a pile-figured fabric with the nap fibers each presenting secured and free portions extending into the nap merging zone, and applying nap fibers to the opposite face of the fabric within the design area to nap-cover fabric portions through which the globule adhesive may seep.

2. A fabric having simulated pile designs permanently secured thereto, the simulated pile design comprising nap fibers secured to independent globules of adhesive carried by a surface of the fabric with the fibers each having secured and free portions, the securing points of the fibers of the design being individually spaced and positioned to produce a nap-merging zone therebetween wherein the free portions of the fibers of the zone are free from adhesive connection with the fabric, whereby the fabric face will present a simulation of pile fabric as a design figure of the fabric while preserving substantially the freedom to flexibility of the fabric being ornamented, the fabric being characterized by nap fibers secured to the opposite face of the fabric at points of seepage of adhesive material through the fabric.

Signed at the city, county and State of New York, this 10th day of October, 1931.

HALLET J. FOSTER.