

Jan. 9, 1951

H. WURZBURGER

2,537,323

UNWOVEN FABRIC

Original Filed Sept. 27, 1944

Fig. 1

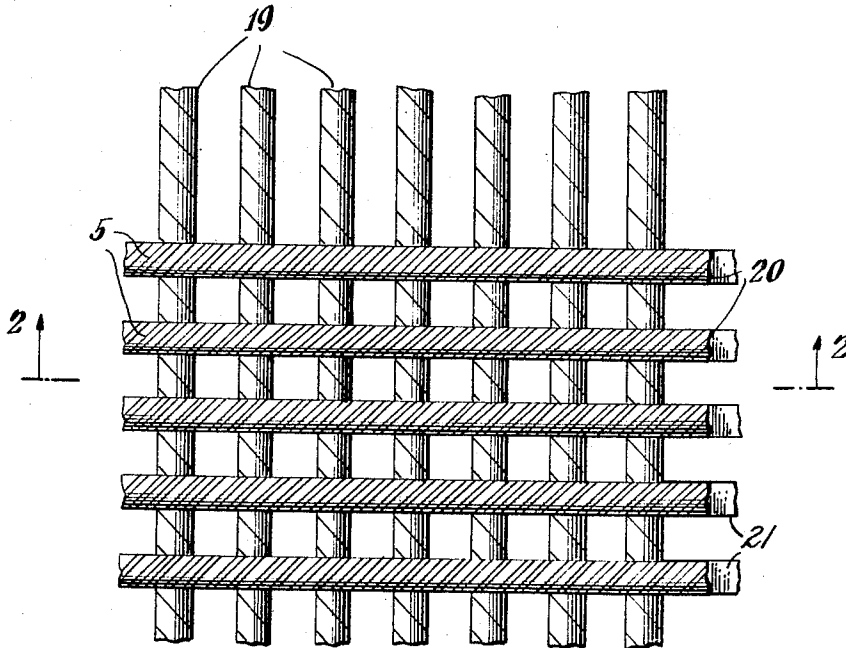
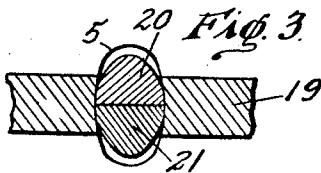
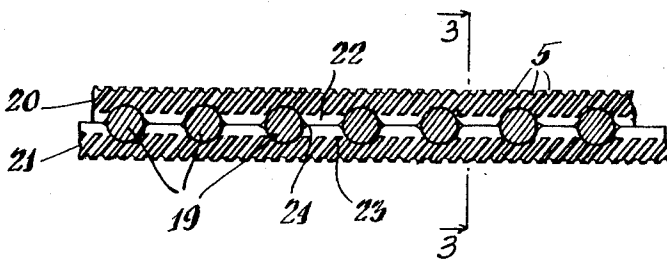


Fig. 2



INVENTOR

Hugo Wurzbürger

BY

Robert S. Dunham

ATTORNEY

UNITED STATES PATENT OFFICE

2,537,323

UNWOVEN FABRIC

Hugo Wurzburger, New York, N. Y., assignor to
Paul D. Wurzburger, Cleveland Heights, Ohio

Original application September 27, 1944, Serial
No. 556,003. Divided and this application De-
cember 4, 1947, Serial No. 789,607

5 Claims. (Cl. 154—46)

1

This invention relates to unwoven fabrics and particularly to those fabrics which are formed at least in part of organic plastic material molded in situ, without resorting to spinning, weaving, knitting or other conventional textile methods of forming fabrics.

The present invention is a division of my prior and co-pending application Ser. No. 556,003, filed September 27, 1944, for Imitation Fabrics now Patent No. 2,434,532, granted January 13, 1948. The subject matter of the present invention relates to the matter disclosed in my parent application aforesaid, particularly in Figs. 11 and 12 thereof, and the associated description, and further includes such other subject matter as may properly be covered in the present application which has as its preferred form the disclosure of said Figs. 11 and 12, for example, certain of the subject matter of Fig. 13 of said prior application.

A general object of the present invention is to provide an unwoven fabric, which may be formed substantially in situ. Such a fabric may be formed of a plurality of warp filaments of any known or desired textile material, whether natural or synthetic in origin, combined with weft filaments which are of a synthetic organic plastic material and which are formed in situ on the warp as by laying weft filaments transversely of the warp filaments. The weft filaments are arranged in pairs aligned transversely of the fabric, i. e. in a direction perpendicular to the plane of the warp filaments, the weft filaments of each pair being in contiguity between the warp filaments. Thus one of each pair of weft filaments will be wholly on one side of the plane of the warp filaments and the other aligned weft filament of each pair will be wholly on the other side thereof.

The prior art has made various attempts at providing imitation fabrics of the type to which the present invention generally pertains and disclosed, for example, in the United States patent to Bügge, No. 2,276,608, granted March 17, 1942. These fabrics have been formed by molding synthetic organic plastic material between rolls, one or both of which have been so shaped, as by engraving or otherwise, as to provide the desired configuration for the fabric for simulating textile produced by any of the ordinary methods as by weaving, knitting or otherwise.

All such fabrics, whether they simulate cloth woven in any one of the known ways, knitted material, lace, tulle or other known fabrics, comprise a plurality of threads of simulated filaments which cross one another at various points throughout the fabric. Most of the fabrics of the prior art which are formed in situ from plastic

2

material, rather than by conventional textile methods, are relatively stiff and did not satisfactorily imitate the desired natural textile material due to this stiffness and lack of flexibility, primarily because at the crossing points the simulated filaments were usually rigid with one another, either by being formed integrally or by adhesion; and no means were provided for relieving this added stiffness by offsetting or compensating for this additional rigidity.

A further object of the present invention is to provide an unwoven fabric of the type above generally set forth, wherein means are provided for compensating at least in part for the additional rigidity inherent in this type of fabric by providing particular flexibility for the simulated filaments intermediate and/or adjacent to the crossing points.

A further and more detailed object of the present invention is to provide an unwoven fabric as aforesaid, wherein the warp and weft filaments are formed of the same organic plastic material and are either formed wholly integral in situ or are welded together at their crossing points.

A further object of the invention is to provide a fabric as aforesaid in which the warp filaments are of some known textile material, such as cotton, wool, linen, etc., wherein the weft filaments of each pair are welded together between the warp filaments, so that the pairs of weft filaments, while originally made as two separate filaments, become in effect an integral composite filament in the finished fabric and the crossing points are permanently spaced from one another by intermediate welded portions of each pair of the weft filaments.

A further specific object of the present invention is to provide for relieving the stiffness of the fabric formed as aforesaid by providing helical grooves in at least one of each pair of the weft filaments and possibly also in both filaments of each pair, these helical grooves including at least one groove intermediate each of the crossing points and each groove preferably extending at least about one-third of the way around each filament such, for example, as could be formed by a properly shaped roller or platen press used to form the weft filaments when the material of such filaments is soft and impressionable.

Other and more detailed objects of the present invention will become apparent from the following specification and appended claims and taken in connection with the accompanying drawings, in which

Figure 1 is a view in plan of a fabric in accordance with the present invention, the right hand ends of the lower weft filaments of each

pair being shown extended beyond the ends of the corresponding upper filaments of each pair for clarity;

Fig. 2 is a view in section on the line 2—2 of Fig. 1, showing the construction of the fabric, both figures being taken on a substantially enlarged scale in respect to that of the fabric contemplated for use in accordance with the present invention; and

Fig. 3 is an enlarged detail view in section on the line 3—3 of Fig. 2.

In the drawings there is shown an unwoven fabric in accordance with the present invention, which may be desirable for certain purposes. The fabric simulated is one having a plurality of pairs of weft filaments, each such pair including an upper weft filament 20 lying above the warp filaments 19, as shown in Fig. 2, and a lower weft filament 21 respectively below and aligned with each filament 20. The arrangement is such that the warp and weft filaments are not apparently woven together as in the ordinary woven cloth, but the weft filaments merely lie across with one filament of each pair on each side of the warp filaments and integrally or adhesively joined thereto.

It is contemplated that the warp filaments 19 may be either of some type of synthetic organic plastic material the same as or different from the simulated weft filaments 20 and/or 21 or the warp filaments may be of any known textile material including such ordinary threads as cotton, wool, linen or other known materials. The weft filaments 20 and 21 of each pair are rigid with the warp filaments 19 at their crossing points, which may be effected either by the process of making them of the same material as the warp filaments, which is preferably of synthetic organic plastic material as hereinabove set forth and which will adhere thereto or penetrate thereto; or, either one or both the warp and weft filaments may be provided with adhesive material to effect rigid joints at the crossing points. As shown in Fig. 2 the weft filaments are so formed that pairs of simulated weft filaments, initially separately formed, will lie opposite one another on opposite sides of warp filaments and will weld with each other and with the warp filaments preferably in the process of making the fabric. To this end the simulated weft filaments 20 and 21 of each pair may be substantially semicircular in cross section as shown in Fig. 3 and may be provided with a plurality of grooves as hereinafter more specifically set forth, these grooves being preferably substantially parallel and helical as shown. The weft filaments 20 and 21 of each pair have parts extending between the warp filaments and contiguous with one another, as shown at 22 and 23, these parts being preferably welded on a line generally indicated at 24. Furthermore, in the event that the warp filaments 19 are of the same material as the weft filaments 20 and 21, the warp and weft filaments may be welded to one another at their crossing points.

An imitation fabric formed in situ without resorting to the usual weaving operation on separate yarns or filaments is ordinarily quite rigid due to the rigid connections between the filaments at their crossing points; and hence while it might simulate usual fabric in appearance, at least from a distance, it would not be as flexible as ordinary fabric made up of yarns of about the same diameter. In order to offset or compensate at least in part for this added rigidity incident to an imitation fabric of this type, I may provide the

simulated yarns or filaments at least intermediate their crossing points with one or more grooves as shown at 5. These grooves extend at a substantial angle to the axis of the simulated filaments, rather than parallel thereto, and preferably extend at least one-third of the way around the circumference of the filaments as best shown in Fig. 3. In the specific embodiment shown in Fig. 1, for example, the grooves 5 are substantially parallel helical grooves, which is a preferred embodiment of the invention in this respect, as it not only provides for added flexibility for the unwoven fabric as a whole, but also tends to simulate the appearance of usual doubled and twisted yarn or filaments produced by known twisting and spinning operations. This grooved form of the invention is not always essential, but may be desirable where flexibility is of importance.

While there is shown herein but one embodiment of the present invention, some equivalents have been indicated as the description proceeded, and others will be apparent from the appended claims, which are to be construed validly as broadly as the state of the prior art permits.

What is claimed is:

1. An unwoven fabric, comprising warp filaments, and simulated pairs of weft filaments aligned transversely of said fabric, said weft filaments being of synthetic organic plastic material, the weft filaments of each of said pairs being contiguous to one another between each of said warp filaments.

2. An unwoven fabric in accordance with claim 1, wherein said warp filaments are formed of the same material as said weft filaments.

3. An unwoven fabric in accordance with claim 1, wherein said warp filaments are formed of the same material as said weft filaments, and wherein said warp and weft filaments are welded together at their crossing points.

4. An unwoven fabric in accordance with claim 1, wherein said warp filaments are formed of natural textile fibers.

5. An unwoven fabric, comprising warp filaments, and simulated pairs of weft filaments aligned transversely of said fabric, said weft filaments being of synthetic organic plastic material, the weft filaments of each of said pairs being contiguous to one another between each of said warp filaments, each of said weft filaments having a plurality of helical grooves formed therein, there being at least one such helical groove between each pair of adjacent crossing points of each weft filament with said warp filaments, and each of said grooves extending at least about one-third of the way around a weft filament, whereby the stiffness of the fabric is reduced.

HUGO WURZBURGER.

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