

March 13, 1956

L. A. RUNTON ET AL

2,738,296

PILE FABRIC

Filed July 26, 1954

Fig. 1

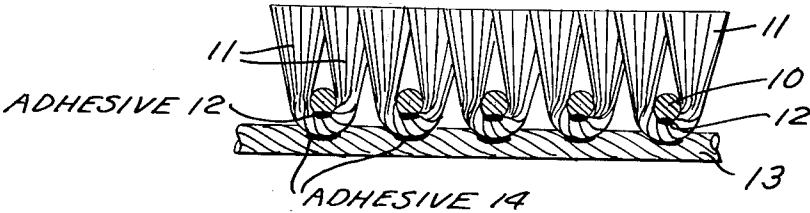


Fig. 2

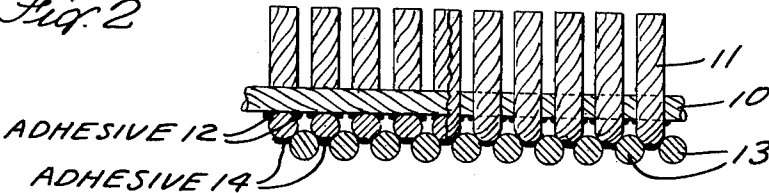


Fig. 3

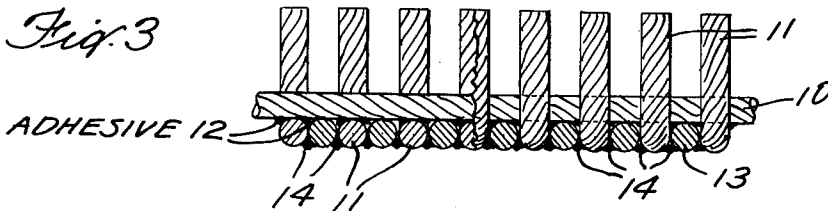
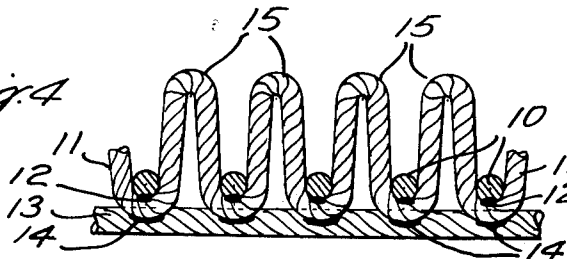


Fig. 4



INVENTORS
LESLIE A. RUNTON
EWART H. SHATTUCK
BY

[Signature]

ATTORNEY

1

2,738,296

PILE FABRIC

Leslie A. Runton, Harrison, and Ewart H. Shattuck,
Ardsley, N. Y., assignors to Alexander Smith, Incorporated,
White Plains, N. Y., a corporation of New York

Application July 26, 1954, Serial No. 445,778

6 Claims. (Cl. 154—49)

This invention relates to a non-woven pile fabric and has for an object to provide a fabric of this type having novel and improved characteristics.

This application is a continuation-in-part of our co-pending applications Serial No. 382,962, filed September 29, 1953, now Patent No. 2,698,044, and Serial No. 404,630, filed January 18, 1954, now Patent No. 2,698,045, which disclose and claim an apparatus and method for making the novel fabric.

The method in general comprises spacing a series of parallel warp yarns peripherally around a circle to form elements of a cylinder, feeding the yarns longitudinally of the cylinder, wrapping one or more pile yarns around the cylinder of warp yarns, securing the wrapped pile yarns to the warp yarns adhesively, or by heat if the yarns are thermoplastic, cutting the pile yarn between successive warp yarns if cut pile are to be formed, reducing the diameter of the cylinder of yarns to bring the warp yarns into closely spaced relationship while folding the pile yarns inwardly as U-shaped tufts or loops with their bights attached to the warp yarns, wrapping a series of filler yarns around the last cylinder of warp yarns, and securing the filler yarns adhesively or by heat to form a non-woven crossed backing carrying the pile yarns.

The fabric is shown in the drawing wherein

Fig. 1 is a fillerwise section through a fabric embodying the invention showing the tufts spread out;

Fig. 2 is a broken warpwise section through the same fabric but with the tufts tightly twisted;

Fig. 3 is a section similar to Fig. 2 illustrating a modified filler arrangement; and

Fig. 4 is a section similar to Fig. 1 showing a loop pile fabric embodying the invention.

Referring to the drawing more in detail, a series of warp yarns 10 carry U-shaped pile tufts 11 which are secured thereto by a suitable adhesive 12. The warp yarns 10 are bound together by filler yarns 13 which cross the warp yarns 10 at approximately a right angle and contact either the warp yarns 10 between the pile tufts 11, as shown in Fig. 3, or span and contact successive pile tufts 11 as shown in Fig. 2, depending upon the size and spacing of the filler yarns 13. The filler yarns may contact only one pile tuft or may extend at a slight angle to cross successive warp yarns at different pile yarn positions.

The filler yarns 13 are secured adhesively to the pile or warp yarns at the points of contact, as indicated at

2

14. The adhesive may be a quick drying or a heat setting adhesive, or if the yarns are composed of thermoplastic filaments, or are spun yarns containing at least some thermoplastic fibers, the cross overs may be secured by heat which renders the thermoplastic material tacky.

Examples of thermoplastic filaments are: copolymers of vinyl chloride and vinylidene chloride, acetate rayon, nylon, Dacron, etc., either in twisted continuous filament or monofilament form or as spun staple.

The pile yarns may be cut into pile tufts 11 as shown in Figs. 1 to 3, or may be in the form of loops 15, as shown in Fig. 4.

In this construction the warp and filler yarns may be compacted as closely together as desired because there are no crossings or interlacings to hold the yarns separated. Conversely the spacing can be made as great as desired because interlacing is not relied upon for the tuft bind. Hence the fabric can be made to have any desired number of tufts per inch.

The fabric above described may be used as shown if a light, flexible backing is desired, or may be backsize by the usual carpet backsize technique for increased stiffness and tuft bind, or may be secured to a woven or non-woven backing of the underlay type.

The tufts are shown in Figs. 2 and 3 as tightly twisted to give a pebbly effect. They may, however, be soft twisted or spread out as in Fig. 1. This effect can be obtained by using pile yarns which are temporarily set in hard twisted condition and steaming the surface after weaving to remove the temporary set and cause the tufts to "bloom," as shown in Fig. 1.

Of course, combinations of the above may also be made by using some hard twisted permanently set pile yarns and other soft twisted, or hard twisted temporarily set pile yarns according to a pattern.

What is claimed is:

1. A non-woven fabric comprising a series of parallel warpwise yarns, U-shaped pile yarns having bights extending around said warpwise yarns and adhesively secured thereto to form warpwise pile strips, and non-woven fillerwise yarns laid across the backs of said warpwise pile strips secured in place solely by adhesive to form a supporting base for said pile yarns.

2. A non-woven pile fabric, as set forth in claim 1 in which the fillerwise yarns are in contact with said warpwise yarns.

3. A non-woven pile fabric, as set forth in claim 1, in which said fillerwise yarns are in contact with the bights of said pile yarns.

4. A non-woven pile fabric, as set forth in claim 1, in which said pile yarns have upstanding legs forming a cut pile surface.

5. A non-woven pile fabric, as set forth in claim 1, in which said pile yarns are continuous to form pile loops.

6. A non-woven pile fabric, as set forth in claim 1, having a backsize disposed over the back of said fabric.

References Cited in the file of this patent

UNITED STATES PATENTS

2,677,632	Easton	May 4, 1954
2,680,469	Ahier et al.	June 8, 1954