

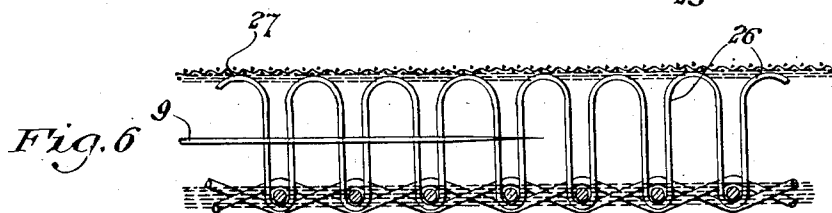
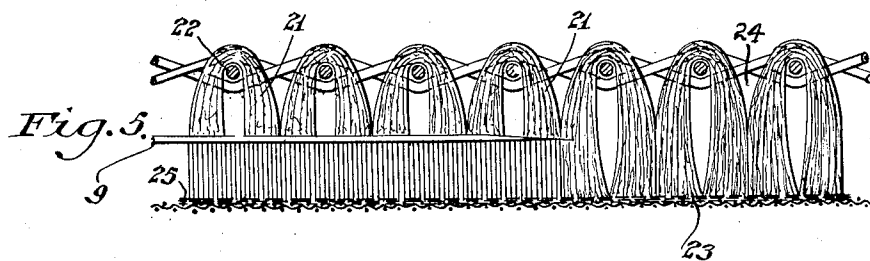
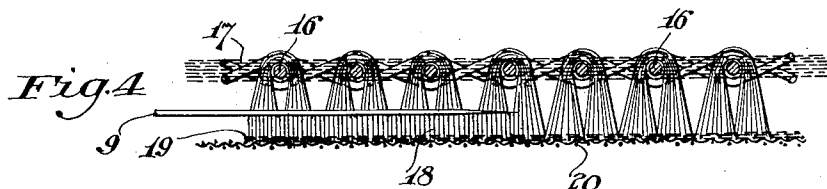
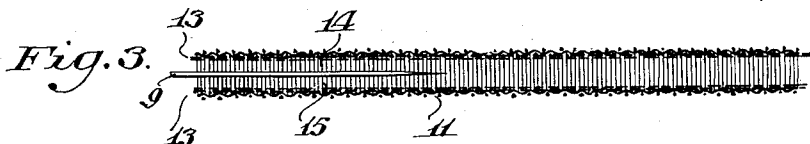
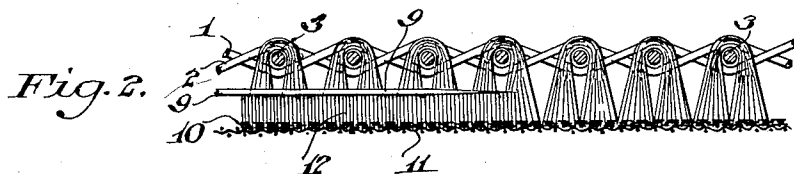
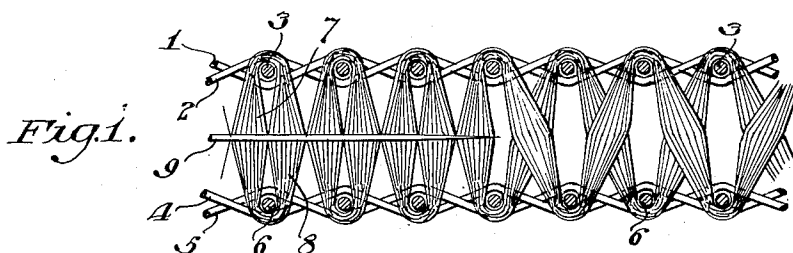
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M. G. CURTIS

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FILE FABRIC AND METHOD OF MAKING THE SAME

Filed Nov. 22, 1927



Inventor:
Melville G. Curtis,

By *[Signature]*
Attorney.

UNITED STATES PATENT OFFICE

MELVILLE G. CURTIS, OF CYNWYD, PENNSYLVANIA, ASSIGNOR TO COLLINS & AIKMAN CORPORATION, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF DELAWARE

PILE FABRIC AND METHOD OF MAKING THE SAME

Application filed November 22, 1927. Serial No. 235,060.

My invention is an improved method of producing pile fabrics and novel products resulting therefrom. It involves the utilization of the backing of a pile fabric, and preferably the woven backing of a pile fabric having pile enmeshed therein, as a matrix to position and hold the fibres of the pile while the tips thereof are embedded in an adherent material adapted for solidification into a flexible backing or fabric separable from the original backing to form a new pile fabric by splitting the pile between the backings. The operation may be carried on repeatedly with the same original matrix until the pile thereof becomes too short for further splitting, or any backing which is split off with sufficiently long pile adhering thereto may be used as a new matrix.

By my improvements, I am enabled to produce a multiplicity of pile fabrics with but one weaving operation, and to produce novel pile fabrics having pile filaments substantially normal to the surface of the backing and spaced substantially uniformly throughout their lengths, instead of having the pile filaments bunched together adjacent the backing and spreading at the top as results from the tufts formed when pile warps are woven into the backing.

In the preferred practice of my invention, a double pile fabric is woven and split in the usual way to form the original matrix having projecting therefrom pile fibres, which, if desired, may be temporarily stiffened by a soluble sizing. These fibres after stiffening or without stiffening have their ends embedded in an adherent composition which, when solidified and, if desired, reenforced, forms a pliable impervious backing for one of the plurality of pile fabrics resulting from splitting the pile between the solidified coating and the original backing. Any stiffening substance may then be washed out of the pile so as to form a soft nap projecting from the backings.

My invention is also applicable to the production of a plurality of pile fabrics from pile fabric initially woven with a single backing and having pile loops projecting therefrom. These loops may be cut by pile

wires or suitable machines or may be left uncut. The pile in an uncut or cut condition is embedded in an adherent coating which is solidified to form a second backing separable from the original backing to form a plurality of fabrics by splitting the pile.

Preferably the pile of the original fabric is of considerable length so that when the first coating is applied to the pile tips and the pile split, each fabric is adapted for further treatment. Or the fabrics may be so split that one fabric has piles of the length desired in a finished fabric and the other fabric has piles of a length suitable for further backing and splitting.

The adherent composition is preferably a quickly solidifiable cellulose solution, such as a viscose or pyroxylin compound liquefied by a suitable solvent, but may be made from any suitable substance such as a rubber or rubber-and-glue solution, casein, or other agglutinant and may be reenforced either before or after the embedding of the pile tips by a textile or felted fabric. Solidification may be effected by coagulation, vulcanization, heating or the like. The composition is substantially insoluble after solidification and may be so colored or embossed as to give desired effects independently of or in conjunction with pile decoration resulting from printing, cutting, singeing, acid treatment or the like.

The characteristic features and advantages of my invention will more fully appear from the following description and the accompanying drawings illustrating diagrammatically the practice of my invention and products resulting therefrom.

In the drawings, Fig. 1 is a diagrammatic view of a double pile fabric which is being split to form a plurality of fabrics; Fig. 2 shows diagrammatically one of the fabrics formed by splitting the fabric of Fig. 1 with the pile tips thereof embedded in a reenforced, adherent composition and again being split to form a plurality of fabrics; Fig. 3 shows diagrammatically the fabric split from the lower portion of Fig. 2 with its pile tips embedded in a reenforced, adherent composition and again being split to form a plurality

of fabrics; Fig. 4 illustrates diagrammatically a split pile fabric having a loosely woven backing with the loops of piles interlocked therein by an adherent composition permeating the backing and the tips of the piles embedded in a reenforced, adherent composition, the pile being shown partly split to form a plurality of fabrics; Fig. 5 shows diagrammatically a woven split pile fabric having 5 rovings or loosely twisted slivers looped therein to form tufts which spread to form a uniform surface, the tips of the fibres being embedded in a reenforced adherent composition; the pile being shown partly split to form a plurality of fabrics; and Fig. 6 shows diagrammatically a section of terry cloth having uncut loops embedded in a reenforced, adherent composition, the loops being partly split to form a plurality of fabrics.

As illustrated in Figs. 1 to 3 inclusive, a double pile fabric is woven in the usual manner with an upper backing composed of backing warps 1 and 2 and weft threads 3 and a lower backing composed of backing warps 4 and 5 and wefts 6. The two backings are united by pile warps 7 and 8 looped over the respective wefts 3 and 6. The double fabric so formed is split by a cutter 9 to form a plurality of fabrics having cut piles, which may 30 be stiffened by a soluble size, if desired.

As shown in Fig. 2, the tips of the cut pile are embedded in a sheeted, viscous, adherent composition 10, which may be reenforced by a backing 11 of woven or felted material. The composition is preferably in a very soft condition when the cut ends of the pile are applied thereto so that the pile tips penetrate the composition readily and uniformly and are locked in place by the solidification thereof. Since the pile fibres of the initial fabric tend to spread and arrange themselves uniformly at the cut surfaces, the tips embedded in the composition are substantially uniformly spaced and normal to the surface of the backing formed by the solidified composition. When the composition is solidified, the pile is again split by a cutter 9 to form a plurality of fabrics having substantially normal, uniformly spaced pile fibres 12; and these fabrics may have their pile tips embedded in adherent compositions 13 as indicated in Fig. 3. The composite fabric formed by the solidification of the composition is again split to form a plurality of fabrics 14 and 15 each having piles spaced substantially uniformly and normal to the surface.

As illustrated in Fig. 4, a double pile fabric may have its woven backing beaten up so loosely and the wefts 16 so spaced that, when the pile is split, the pile threads are not sufficiently secured to withstand handling. Their attachment to the backing fabric and the reenforcement of the latter may be effected either before or after the splitting by an adherent backing composition 17 similar to the

composition used for forming additional backings. The free ends of the cut pile 18 is embedded in an adherent backing composition 19 preferably reenforced by a woven or felted fabric 20. The double fabric thus formed is cut into two pile fabrics by splitting the pile as before.

Fig. 5 illustrates a method of producing pile fabrics with uniformly spaced normal pile fibres from substantially untwisted filaments which in the form of slightly twisted slivers or rovings 21 are looped through a backing 22 either during the weaving thereof or after the weaving of the backing 22 has been completed. The roving loops are cut to form tufts which provide a substantially uniform face 23 but are constricted adjacent to the fabric so as to form spaces 24 between the bases of the tufts. By embedding the opened out faces or tops of the tufts in an adherent reenforced backing composition 25, the filaments are secured therein with substantial uniformity of spacing, and, when the pile is cut, one of the resultant fabrics has a pile of finer quality, free from tufts.

Fig. 6 illustrates the application of my invention to a terry cloth having uncut loops 26 which are embedded in a reenforced adherent composition 27 and the pile split to form a plurality of fabrics.

The adherent compositions used are preferably such as are used in the manufacture of artificial leather or artificial silk dissolved in solvents so as to provide a strong, durable and attractive base from which the pile projects.

Having described my invention, I claim:

1. The method of making pile fabric which comprises utilizing the backing of a pile fabric as a matrix to position and hold the fibres of the pile, embedding the tips of the pile in an adherent material adapted for solidification into a backing, and splitting the pile to form a plurality of fabrics.

2. The method of making pile fabric which comprises utilizing the woven backing of a pile fabric having pile enmeshed therein as a matrix to position and hold the fibres of the pile, embedding the tips of the pile in adherent material, solidifying the adherent material to form a backing, and splitting the pile to form a plurality of fabrics.

3. The method of making pile fabric which comprises looping pile warps through a backing, applying an adherent material to the pile loops below the tips of the pile so as to form a nap, embedding the pile tips in an adherent material solidifiable into a backing, and splitting the pile to form a plurality of fabrics.

4. The method of making pile fabric which comprises enmeshing pile in a backing, agglutinating the pile and backing together leaving the pile tips free to form a nap, embedding the pile tips in a solidifiable adherent

material, and splitting the pile to form a plurality of fabrics.

5 5. The method of making pile fabric which comprises weaving a loose textile backing with pile warps so loosely enmeshed therein as to be normally movable relatively thereto, impregnating said fabric and the base of said pile with an adherent composition, embed-
10 ding the tips of said pile with a solidifiable adherent composition, and splitting said pile to form a plurality of pile fabrics.

15 6. The process of making pile fabric which comprises looping a loosely twisted roving through a textile fabric, cutting said roving to form tufts, embedding the tips of said tufts in a solidifiable adherent material, and splitting the tufts to form a plurality of fabrics.

20 7. The process of making pile fabric which comprises looping a roving through a textile fabric, uniting the loops with said fabric by an adherent material, cutting said roving to form tufts having constricted portions adjacent to said fabric and expanded faces, embed-
25 ding the faces of said tufts in a solidifiable adherent material, and splitting the tufts to form a plurality of fabrics.

30 8. The method of forming a pile fabric which comprises embedding the pile tips of a woven pile fabric in an adherent coating and splitting the pile to form a plurality of fabrics.

35 9. The method of forming a pile fabric which comprises weaving double pile fabric, splitting the pile to form a plurality of pile fabrics, embedding the pile tips of one of the split fabrics in an adherent coating, and again splitting the pile to form a plurality of fabrics.

40 10. The method of producing pile fabrics which comprises forming tufts looped in a fabric, the tufts being opened out at their tops, embedding the opened out tops of the tufts in a solidifiable adherent coating, and
45 splitting the tufts to form a plurality of fabrics.

50 11. The method of producing pile fabrics which comprises enmeshing a loosely twisted sliver in a backing, cutting the sliver to form a pile face of substantially uniformly spaced filaments, embedding the cut ends of the filaments in a solidifiable adherent coating, and splitting the filaments to form a plurality of fabrics.

55 12. The method of forming a pile fabric which comprises forming a loosely woven backing having piles loosely looped therein, embedding the looped portions of said piles in a solidifiable adherent coating, embedding
60 the free ends of said piles in a solidifiable adherent coating, and splitting the piles to form a plurality of fabrics.

In testimony whereof I have hereunto set my hand this 21st day of November, 1927.

65 MELVILLE G. CURTIS.