

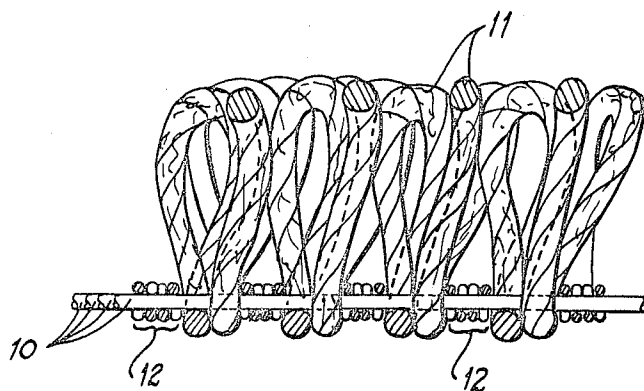
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LOOP PILE FABRIC

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## LOOP PILE FABRIC

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This invention relates to loop pile fabric and has for an object to provide a loop pile fabric having novel and improved characteristics.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

In one embodiment the invention provides a fabric having a uniform overall tone and in which the loops, although randomly disposed, appear to the eye to be grouped as lines or hooks which extend in various directions over the surface of the fabric. These lines are due to the displacement of the loops by the warp ends between pairs and by the action of the lay of the loom which cause the loops of each pair to be pressed together and successive pairs of loops to be more widely spaced than the loops of each pair.

The nature of the invention will be better understood from the following description, taken in connection with the accompanying drawing in which a specific embodiment has been set forth for purposes of illustration.

In the drawing:

The figure is a weftwise section of a fabric, on an enlarged scale, illustrating the arrangement of the pile loops.

Referring to the drawing more in detail, the fabric is shown as composed of filler yarns 10 under which pairs of pile loops 11 are bound. The pile loops of each pair are closely spaced and the pairs of pile loops are separated by a plurality of chain warps 12. In the embodiment shown, each pair of pile loops is separated by four chain warps. In certain instances, however, the number of chain warps may be varied. For example, the pairs of pile loops may be separated by two chain warps instead of by the four chain warps as shown, depending upon the relative sizes of the various yarns. In any case the chain warps between the pairs of loops cause the loops, when beaten up by the lay of the loom, to lie closely together and the pairs of loops to be more widely spaced. This effected is enhanced by the used of relatively coarse pile yarns as hereinafter set forth. The loops of each pair are shown in the drawing as disposed in successive fillerwise rows. They may, however, be disposed in the same fillerwise row depending upon the effect desired.

The pile fabric according to the present invention is woven on a stationary wire loom having a leno motion wherein the pile warps are fed through the eyes of a doup heddle adapted to lay the pile warps over the stationary wires, first in one direction and then in the other, so that successive loops, as formed over the wires, of a single warp yarn are oppositely inclined with respect to the warpwise direction.

The pile loops are arranged in pairs in a weftwise direction. The two loops of each pair are shown as not separated by intervening ground warps. They may, however, be spaced by a lesser number of ground warps than that between adjacent pairs of loops so that the two loops of each pair appear to lie closely together in the finished fabric.

The two pile yarns of each pair are woven over adjacent wires and the loops are formed over successive filler shots so that the two loops of each pair appear in successive and alternate fillerwise rows across the fabric. In some instances, however, all of the loops may be disposed over the same filler shots so that they appear in the same row across the fabric, depending upon the effect desired.

A further feature of the invention is the use of rela-

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tively large pile yarns, as set forth in the following examples. The yarns are of multiple plies and are preferably cabled. The yarns may be composed essentially of wool, but one or more of the plies may be made of continuous filament synthetic material such as nylon or polypropylene which have been artificially bulked, as in a stuffer crimper or of a synthetic spun yarn such as a yarn spun from acrylic staple fibers.

### Example 1

The pile yarn may comprise 3-ply yarn composed of 3 wool ends having a total weight of 16 to 23 yards to the ounce and having a ply twist of not over 2½ but preferably 1¾ turns per inch, 6 yarns per inch, each weaving singly. In this example the pile yarns may be either of the same twist or alternating S and Z twist. The two yarns of each pair are woven through adjacent heddle eyes and over adjacent pile wires and four ends of cotton adjacent to each other are woven as double chain warps between successive pairs of pile loops. The pile is interwoven with the ground warp ends and 14 pound jute filler, 9½ to 10 picks per inch, making about 5 loops per inch in each yarn. The pile is formed by looping the pile yarns over stationary gauges or wires by use of a leno motion with doup heddles. Each pile yarn forms successive loops which extend in opposite directions over the stationary gauge wire and the loops formed by adjacent pile yarns are staggered so that they lie in alternate fillerwise rows across the fabric.

When such loops are pressed together by the lay of the loom, a series of such loops are caused to lie closely together and appear to the eye as a line in the fabric. The lines may be formed by loops of the same warpwise row or by loops of adjacent rows, in which case the lines extend randomly back and forth across two or more warpwise rows of loops.

### Example 2

An improved effect is obtained by using for the pile yarns a cabled wool yarn composed of two-ply ends wherein one of the ends comprises 4 singles each having a weight of 120 yards to the ounce and a twist of from 4 to 4½ turns per inch and plied with a ply twist of two turns per inch, the other of the ends comprises a 2-ply yarn composed of 2 singles each having a weight of 120 yards per ounce and a singles twist of 4 to 4½ turns per inch plied with a ply twist of 3 to 5¼ turns per inch, the two ends being cabled with a cable twist of 1¼ to 1.4 turns per inch. The cabling of two ends having different ply characteristics has been found to produce a loop pile, which over the surface of the fabric, has a more random appearance than would be the case if the two ends had the same characteristics.

### Example 3

Instead of using all wool yarns as referred to in Examples 1 and 2, one or more of the ends may be composed of synthetic yarns such as continuous filament nylon or polypropylene which have been artificially bulked as in a stuffer crimper, or of a yarn spun from acrylic staple fibers or of other synthetic staple fibers, the synthetic ends having substantially the same overall bulk as the wool ends referred to above. In this embodiment the synthetic yarn serves to support the wool yarns and to improve the wear resistance of the fabric. The synthetic yarn may be of the same color as the wool yarn or may be of contrasting color.

### Example 4

The pile loops may be formed of all synthetic yarns of the type specified in Example 3, the synthetic yarns being plied or cabled as set forth in Examples 1 and 2

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and having substantially the same bulk as the wool ends or yarns described in the above examples.

#### Example 5

The weave, as set forth in any of the above examples, may be modified by weaving the pile loops of adjacent pile warps in the same row across the fabric instead of having the loops staggered. In this case the loops of adjacent pile warps are closely spaced and have the appearance of a single loop formed from a much coarser yarn. 5

What is claimed is:

1. A loop pile fabric comprising pile yarns having a bulk equivalent to wool yarns having a weight of the order of 16 to 23 yards per ounce, said pile yarns being arranged in pairs with the successive pairs separated by sets of double chain ground warps, said pile yarns each being formed in succession of pile loops having the characteristics of loops formed over a stationary wire by a leno motion, the loops of each pair being held in closely spaced relationship and the loops of successive pairs being more widely spaced by said ground warps, said loops being randomly disposed in groups and appearing to the eye as lines which extend in various directions over the surface of the fabric, said fabric containing about 6 pile yarns per inch in a weftwise direction and about 10 picks per inch in a warpwise direction. 10 20 25

2. A pile loop fabric as set forth in claim 1 in which the pile loops of the pile yarns of each pair, lie in alternate fillerwise rows across the fabric.

3. A pile loop fabric as set forth in claim 1 in which the pile loops of said pile yarns lie in the same fillerwise row across the fabric. 30

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4. A loop pile fabric as set forth in claim 1 in which said pile yarns comprise cabled yarns each composed of a pair of multiple ply ends cabled together, the two ends of each yarn having different numbers of plys.

5. A fabric as set forth in claim 4 wherein said two ends of each yarn are substantially the same weight.

6. A fabric as set forth in claim 4 in which one of the ends comprises 4 singles each having a bulk equivalent to a wool yarn having a weight of 120 yards to the ounce and a twist of from 4 to 4½ turns per inch and plied with a ply twist of 2 turns per inch, the other of the ends comprises a 2-ply yarn composed of 2 singles each having a bulk equivalent to a wool yarn having a weight of 120 yards per ounce and a singles twist of 4 to 4½ turns per inch plied with a ply twist of 3 to 5¼ turns per inch, the two ends being cabled with a cable twist of 1¼ to 1.4 turns per inch.

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