Dec. 5, 1950 F. P. GROAT 2,532,903

METHOD OF WEAVING PILE FABRICS

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Fig. 5.

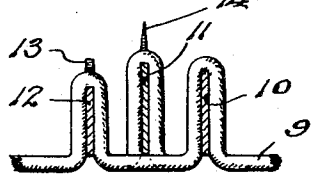


Fig. 1.

Fig. 2.

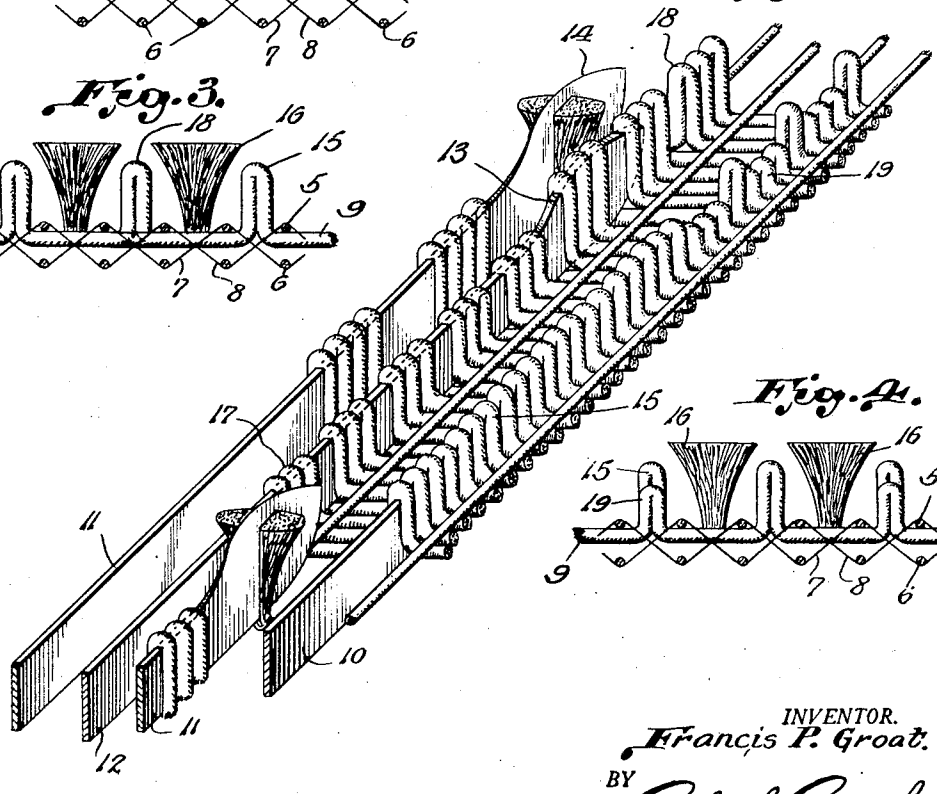


Fig. 3.

Fig. 4.

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METHOD OF WEAVING PILE FABRICS

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5 Claims. (Cl. 139—39)

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This invention relates to woven pile fabrics and particularly a method of weaving a pile fabric having weftwise rows of pile loops with the loops of some rows being of irregular height and arranged in alternation with the rows of loops of uniform height, either with or without intermediate rows of tufts.

Heretofore, pile fabrics have been woven to produce weftwise rows of loops of irregular height with or without intermediate rows of tufts to obtain decorative effects. All previously known methods for weaving pile fabrics of this character require a plurality of sets of pile warps. Applicant's prior application filed June 3, 1947, Serial No. 752,217 discloses a method in which pile warps are selectively raised over cutting and knob wires arranged in alternation, so that when the cutting wires are withdrawn the loops formed thereon will be cut forming rows of tufts, while the withdrawal of the knob wires will raise the loops formed thereon which reduces the height of the loops in the preceding row of loops formed from the same pile warps, thereby forming rows of loops of irregular height. Other methods are known for producing an all loop pile fabric, the rows of loops being irregular in height, but in these methods it is necessary to use a plurality of sets of pile warps.

It is the primary object of the present invention to provide a method of weaving a pile fabric having a single frame of pile warps and selectively raising portions of the pile warps to form rows of loops of regular and irregular height arranged in alternation, either with or without intermediate rows of tufts.

A further object of the invention resides in providing a method of the above-mentioned character which can be carried out on a conventional Jacquard Wilton loom by a novel arrangement of plain, cutting and knob pile wires over which the pile warps are selectively raised as the wires are successively inserted in the fabric.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawing forming a part of this specification and in which like numerals are employed to designate like parts throughout the same:

Fig. 1 is an exploded view in perspective of a pile fabric woven in accordance with my invention,

Fig. 2 is a similar view showing the arrangement of the pile wires of the loom in carrying out the method,

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Fig. 3 is an end view of the fabric shown in Fig. 1,

Fig. 4 is a fragmentary sectional view of the fabric shown in Fig. 1, and,

Fig. 5 is a fragmentary sectional view of the fabric with the pile wires inserted in the fabric during the process of weaving.

The fabric is woven on a conventional Jacquard Wilton loom with a single frame of pile yarn and employing a novel arrangement of plain, cutting and knob pile wires over which the pile warps are selectively raised in accordance with a pattern. The backing of the fabric is conventional and comprises upper and lower weft threads 5 and 6 bound together by sets of binder warps 7 and 8. A single frame of pile warps 9 extends between the upper and lower weft threads and stuffer warps, not shown, are disposed beneath the pile warps. It is apparent a backing of another construction may be employed if desired.

In carrying out the method plain wires 10, cutting wires 11 and knob wires 12 are successively inserted in the fabric being woven with a cutting wire between each plain and knob wire. The wires are inserted as the pile warps 9 are selectively raised by the Jacquard and after insertion of each wire the pile warps are restored to the backing forming rows of loops on the wires. The shank of the cutting wires 11 is higher than the shank of either the plain or knob wires 10 and 12 and the plain wire 10 is higher than the shank or knob wire 12 being of a height corresponding to the height of the knob end 13 wire 12, as clearly shown in Fig. 5. Thus, the loops formed on the plain, cutting and knob wires will be of different heights but the loops on each wire will be of the same height. In selecting the pile warps to be raised over the wires, all of the pile warps may be raised over the plain wires whereas only some of the warps are raised over the cutting and knob wires. After the desired number of wires have been inserted they are successively withdrawn in the usual manner. When a plain wire is withdrawn the row of loops 15 will be a uniform height. Withdrawal of a cutting wire will cause the knife blade 14 at its end to sever the loops formed thereon thus forming a row of tufts 16 higher than the row of loops 15. When a knob wire is withdrawn the loops 17 formed thereon are increased in height, as at 18, as the loops pass over the knob end 13 which pulls the pile warps from which the loops are formed thus reducing the height of some of the loops, as at 19, formed by the preceding plain

wire. The pile warps from which the loops are formed that are to be reduced, pass beneath the cutting wire in order that the pull on the pile warps upon withdrawal of the knob wire will reduce the height of the loops. Ordinarily the pile warps which are raised over the cutting wire pass beneath the knob wire but they may be raised over the knob wire in which event the withdrawal of the knob wire will reduce the height of one leg of the tuft formed by the cutting wire thus producing a different decorative effect that may be desirable.

In the finished fabric the pile will comprise rows of loops with intermediate rows of tufts, with some of the rows of loops being of uniform height and others of irregular height. The rows of loops formed by the plain wire may have a full complement of loops of irregular height, the rows of tufts formed by the cutting wires will have less than a full complement and the rows of loops formed by the knob wires will have less than a full complement of loops of uniform height corresponding to the height of the highest loops in the row of irregular loops.

If it is desired to produce an all loop pile fabric, the cutting wires may be eliminated and only the plain and knob wires are used. The plain and knob wires are successively inserted in the fabric with all the pile warps being raised over the plain wires and selectively raised over the knob wires. Upon withdrawal of the wires the loop pile will comprise rows of loops having a full complement of loops of irregular height and intermediate rows of loops of uniform height having less than a full complement of loops.

Thus, it is seen I have provided a method of weaving a pile fabric having an embossed or relief effect that requires only one frame of pile warp and which will be simple and inexpensive to practice.

Having thus described my invention, I claim:

1. A method of making a pile fabric having a backing and pile warps held therein by elements of the backing which comprises selectively raising portions of the pile warps from the backing between adjacent weft shots in accordance with a pattern to form alternate transverse rows of high pile loops, and intervening rows of low and intermediate height loops raised in alternation between the rows of high loops, cutting the raised portions forming the rows of high pile loops to form tufts, and raising the intervening rows of low pile loops to reduce the height of only those intermediate height loops of the immediate preceding row of loops raised from the same pile warps of which portions are raised to form the low loops.

2. A method of making a pile fabric having a backing and pile warps held therein by elements of the backing which comprises forming the backing with the pile warps held therein by elements of the backing, selectively raising portions of the pile warps from the backing in accordance with a pattern to form transverse rows of pile loops of low, high and intermediate height, cutting the rows of high loops to form tufts, and raising the rows of low loops to reduce the height of those loops of intermediate height of the immediate preceding row of loops formed from the same pile warps.

3. A method of weaving a pile fabric on a loom having transverse pile wires which comprises inserting a plurality of non-cutting, cutting and knob wires successively in sheds of selected warps with a cutting wire intermediate a non-cutting and knob wire, said knob wire being of less height than said non-cutting wire and said non-cutting wire being of less height than said cutting wire, weaving the pile warps over said wires to form weftwise rows of loops of intermediate, high and low height, and successively withdrawing said wires to cut the rows of high loops and raise the rows of low loops to reduce the height of those loops of intermediate height of the immediate preceding row of loops formed from the same pile warps.

4. A method as described in claim 3 wherein the low loops are raised to a height no greater than the height of the loops of intermediate height.

5. The method of weaving on a wire loom a pile fabric floor covering having a warp pile face comprising high and low loops which comprises inserting into a shed a non-cutting pile wire having a straight loop forming edge, weaving the pile warps over said wire to form a weftwise row of loops, inserting into a subsequent shed a non-cutting wire of less height than said first wire having a straight loop forming edge with a raised portion at its end, selectively weaving the pile warps over said last mentioned wire to form a weftwise row of loops of less height than said first row of loops, withdrawing said first mentioned wire and then withdrawing said second mentioned wire to increase the height of the loops thereon whereby the loops in the first row of the same pile warps as the loops in said second row are reduced in height.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,090,462	Shuttleworth	Aug. 17, 1937
2,164,090	Shuttleworth	June 27, 1939
2,270,103	Baynton	Jan. 13, 1942
2,477,249	Harding	July 26, 1949
2,516,465	Jackson	July 25, 1950

FOREIGN PATENTS

Number	Country	Date
273,409	Great Britain	July 6, 1927