

July 9, 1940.

H. FLEISHER

2,207,397

KNITTED PILE TUCKED FABRIC

Filed Aug. 27, 1938

2 Sheets-Sheet 1

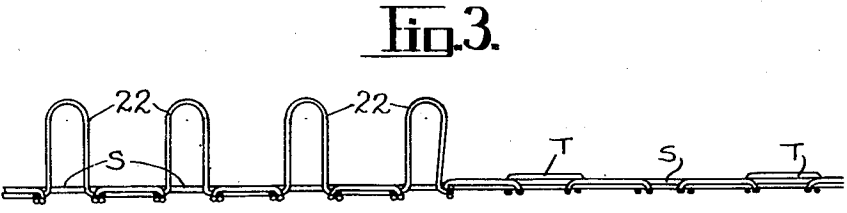
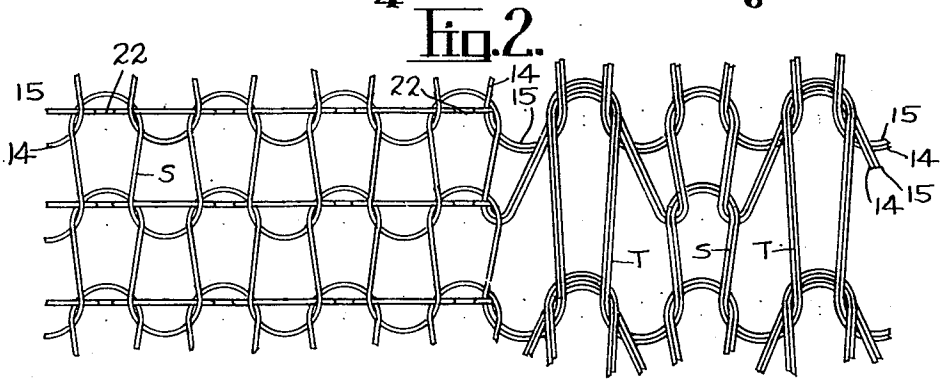
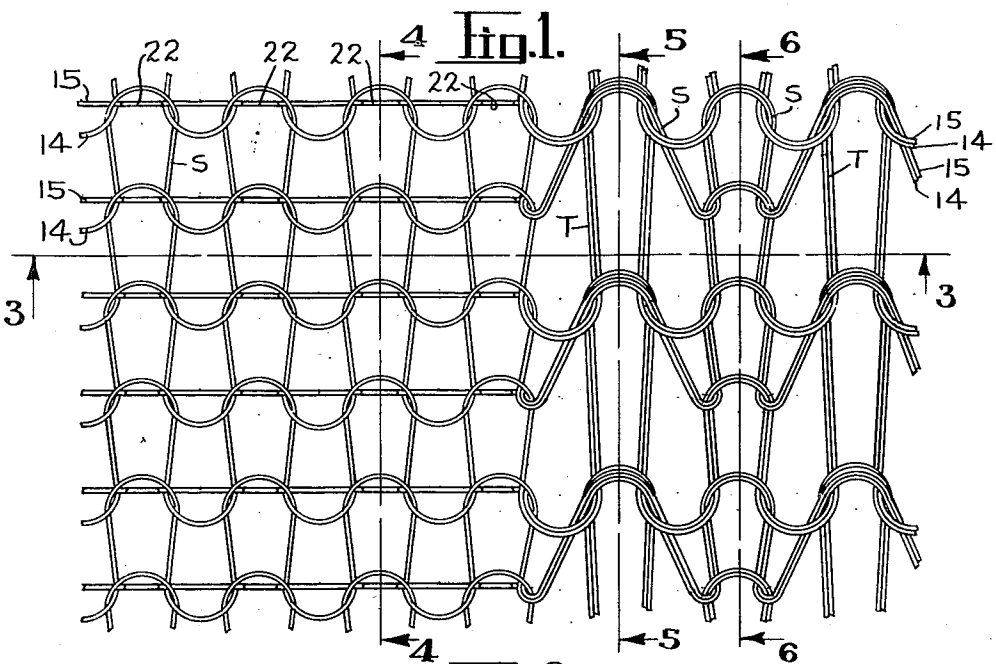


Fig. 13.

WALES									
COURSE	YARN	1	2	3	4	5	6	7	8
1	14	S	S	S	S	S	S	S	S
	15	22	22	S	22	22	S	S	S
2	14	S	S	S	S	S	T	S	T
	15	22	22	S	22	22	T	S	T
PRESSER		17	17	17	17	17	16	17	16
SINKER		12	12	13	12	12	13	13	13

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2 Sheets-Sheet 2

Fig. 4.

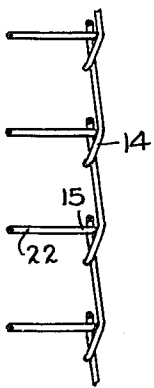


Fig. 5.

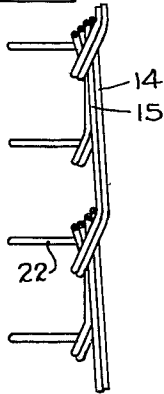


Fig. 6.

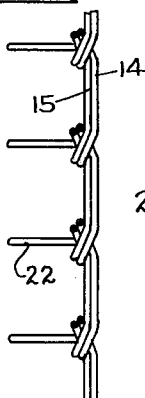


Fig. 7.

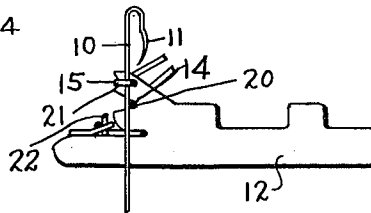


Fig. 8.

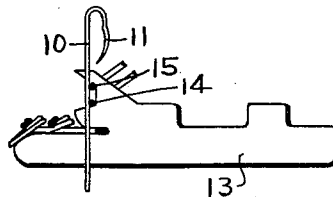


Fig. 9.

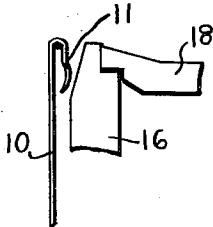


Fig. 10.

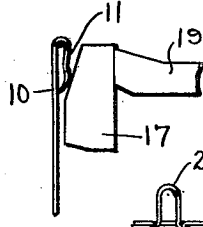


Fig. 12.

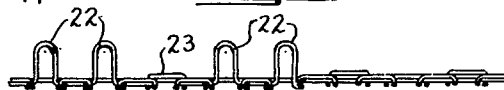


Fig. 11.

WALES

COURSE	YARN	1	2	3	4	5	6	7	PRESSER CAM
1	14	S	S	S	S	S	S	S	18
	15	22	22	22	22	S	S	S	
2	14	S	S	S	S	T	S	T	19
	15	22	22	22	22	T	S	T	
3	14	S	S	S	S	S	S	S	18
	15	22	22	22	22	S	S	S	
4	14	S	S	S	S	T	S	T	19
	15	22	22	22	22	T	S	T	
PRESSER		17	17	17	17	16	17	16	
SINKER		12	12	12	12	13	13	13	

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UNITED STATES PATENT OFFICE

2,207,397

KNITTED PILE TUCKED FABRIC

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Application August 27, 1938, Serial No. 227,166

8 Claims. (Cl. 66—191)

This invention relates to knitted fabrics, and more particularly to a knitted pile tucked fabric wherein the yarns constituting the same are so arranged that the fabric may be readily napped to give it a ridged woolly appearance, will be somewhat run-resisting, and of highly attractive appearance.

One object of this invention is to provide a knitted fabric of the above nature having a novel arrangement of stitches including pile loops interlocked with plain stitches and tucks in every other course.

Another object is to provide a knitted fabric of the above nature having a plurality of rows of pile loops along its length separated by rows, each consisting of a series of alternating tucks and plain stitches and a series of plain stitches, whereby the combined rows of pile loops will give the fabric a raised ridged appearance.

A further object is to provide an improved knitted pile tucked fabric of the above nature which will be substantially simple and easy to manufacture, flexible, elastic, non-crushable, substantially run-resisting, very durable in use and of particularly pleasing appearance.

With these and other objects in view, there have been illustrated in the accompanying drawings two forms in which the invention may be conveniently embodied in practice.

In the drawings:

Fig. 1 is a greatly enlarged open view of the front surface of the fabric embodying the principles and features of this invention.

Fig. 2 is a similar view of the reverse surface of the fabric.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1 through a complete sequence of stitches or wales of one course.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1 through a series of stitches of one wale, and showing the pile loops.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1 through a series of stitches of another wale, and showing the tucks.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 1 through a series of stitches of a third wale, and showing double yarn plain stitches.

Fig. 7 is a side view of a special form of sinker used when making pile loops in the fabric of this invention.

Fig. 8 is a side view of another special sinker used for producing plain stitches and tucks.

Fig. 9 is a side fragmentary view showing the engagement of a high cut needle-beard presser with a low cut presser cam to produce a tuck.

Fig. 10 is a similar view showing the engagement of a plain presser with a plain presser cam to produce a plain knitted stitch.

Fig. 11 is a chart showing the relative arrangement of the courses, yarns, wales, presser cams, pressers and sinkers.

Fig. 12 is a sectional view similar to Fig. 3, showing a section of a modified form of fabric wherein the plurality of rows of pile loops is interrupted and a row of plain knitted stitches is inserted therebetween.

Fig. 13 is a chart similar to Fig. 11, showing the relative arrangement of the courses, yarns, presser cams, pressers and sinkers for making the modified fabric shown in Fig. 12.

One important advantage obtained by the new and novel arrangement of the yarns in the improved knitted pile tucked fabric herein disclosed is that the same may be made on a plain circular knitting machine using spring-bearded needles without requiring complicated mechanisms or special attachments, it merely being necessary to provide special forms of sinkers, pressers and presser cams arranged to act upon the yarns provided at each course in a novel manner.

The fabric of this invention may be made on a standard form of circular knitting machine similar to that shown and described in Patent No. 2,124,361 issued to Harry Fleisher July 19, 1938, and in which all of the needles rise and fall in the same manner and have the same length of butt, and wherein only two forms of presser cams, two forms of pressers, and two forms of sinkers are employed. Two yarns are fed into this type of machine at each feeding point for producing the courses, and the arrangement of stitches repeats itself every seven wales and at every two courses in the preferred form, and the arrangement of stitches repeats itself every eight wales and at every two courses in the modified form (Figs. 12 and 13).

Referring now to the drawings wherein like reference numerals denote corresponding parts throughout the several views, the numeral 10 designates the usual form of needle having a spring beard 11 (see Figs. 7 to 10 inclusive) which in the above type of machine is adapted to rise and fall under the control of a suitable cam (not shown) to act upon the yarns fed thereto to form knitting stitches in the usual manner. Provision is also made of two special forms of "long" and "no-loop" sinkers 12 and 13, which control the position of the yarn with respect to the particular needle 10 adjacent thereto, said sinkers being actuated by a cylindrical cam (not shown). The

arrangement of the sinkers is shown in the charts 11 and 13. Two yarns 14 and 15 are fed into the machine at each feed (see Figs. 11 and 13) and are acted upon by the sinkers 12 and 13 in the particular sequence indicated throughout the seven wales (Fig. 11) and eight wales (Fig. 13) of the fabrics shown, and then repeated.

Two special forms of needle beard pressers 16 and 17 are also provided,—the presser 16 being termed "high cut" and the presser 17 "plain". These pressers serve to close the spring-beards 11 of the needles 10 at the desired intervals during the knitting operation under the action of presser cams 18 and 19, respectively. The cam 18 is herein termed a "low cut" cam and the cam 19 a "plain" cam. Both of the cams 18 and 19, during the operation of the machine, act successively upon all of the pressers 16 and 17 to cause them to close the beards 11 at all knitting points except when the "high cut" presser 16 is engaged by the "low cut" presser cam 18, at which times the beards 11 of the needles 10 remain open, and the yarn is not cast off but stays on the needle 10 to be carried along thereby and be cast off 25 with the next stitch, thereby forming a tuck.

In accordance with the principles of this invention, each "long" sinker 12 is provided with a pair of spaced notches 20 and 21, whereby the yarn 14 will seat in the notch 20 in front of the needle 10 in position to be engaged by the spring beard 11 thereof at the downward stroke of the needle and carried through the preceding knitting stitch in the usual manner, as illustrated in Fig. 4. The other yarn 15 will seat in the notch 21 and will be retained in the fabric in the form of a pile loop 22, as illustrated in Figs. 4 and 7. The notch 21 is spaced from the notch 20 an amount sufficient to produce a pile loop 22 of the desired length.

Referring again to the chart shown in Fig. 11, the arrangement of the needle-beard pressers 16 and 17, the presser cams 18 and 19, and the sinkers 12 and 13 is such that at the first wale of the first and all succeeding odd numbered courses, the yarn 14 is plain knitted into the fabric as indicated by the letter "S" due to the use of the long loop sinker 12, the beard presser 17 and the presser cam 18. Also the yarns 15 will be formed into a pile loops 22 at the first, second, third and fourth wales at all courses due to the action of the rear notches 21 in the long loop sinkers 12 upon said yarns 15.

At the first, second, third and fourth wales of all courses the yarns 14 will be plain stitched (S in the chart), and the yarns 15 will be formed into pile loops 22.

At the fifth wale of all even numbered courses, the high cut pressers 16 will be engaged by the plain presser cams 19 to close the needle beards 11 of the needles 10 and the yarns 14 and 15 carried over from the odd numbered courses and those engaged at the even numbered courses will be cast off and knitted into the fabric.

At the sixth wale of each odd numbered course, both yarns 14 and 15 are knitted into the fabric in the usual manner by the needles 10, due to the use of the "no-loop" sinker 13, and the plain presser 17.

At the seventh wale of the first and third courses, the yarns are acted upon in the same manner as they were in the fifth wale—tucks T being formed at the second and fourth courses.

At the sixth wale of all courses both the yarns 14 and 15 are knitted into the fabric, due to the use of the "no loop" sinker 13, the plain presser

17 and the plain presser cam 19, as indicated by "S" in the chart of Fig. 11.

Referring now to the modified form of fabric illustrated in Figs. 12 and 13, it will be noted that it is similar in all respects to the previously described fabric with the exception that plain knitted stitches 23 have been inserted in the fabric after the second wale of each course. The insertion of this row of plain stitches further enhances the appearance of the fabric, by slightly separating the rows of pile loops 22 into two groups of two piles each, and thus produces in the fabric a "shadow stripe" which extends the entire length of the fabric. Such a "shadow stripe" is due to partial covering of the knitted stitches at this point by fibres brushed from the adjacent pile loops 22 during the operation of napping.

As indicated in the chart of Fig. 13, the pattern of stitches, pile loops and tucks repeats itself every eight wales and every two courses in the modified fabric. In this instance, the pile loops 22 occur in the yarns 15 in every first, second, fourth, and fifth wale of each course, and plain knitted stitches occur in the third and seventh wales of each course, and tucks occur with both yarns 14 and 15 at the sixth and eighth wales.

As will be evident, in both forms of the invention pile loops 22, wherever they occur, are firmly interlocked and held in place in the fabric between successive plain knitted stitches of the yarn 14, the interlocked piles together with the tucks making the fabric substantially run-resisting.

It will also be understood that the first form of fabric as above described, after napping, will have a wool-like series of wide raised ribs separated by slightly wider depressions. In the modified form, in view of the insertion of a plain knitted stitch to separate the rows of pile loops, the "shadow stripe" formed therein will be positioned at regularly spaced-apart lines across the width thereof.

While there have been disclosed in this specification two forms in which the invention may be embodied, it is to be understood that these forms are shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosures, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent, is:

1. A knitted pile fabric consisting of a series of repeating courses of two yarns each, at least one course having one yarn formed into a series of adjacent pile loops at the first four wales and plain stitches at the next succeeding three wales, and a succeeding course having one yarn formed into a series of adjacent pile loops at the first four wales and alternating tucks and a plain stitch at the next succeeding three wales.

2. A knitted fabric consisting of a series of repeating courses of two yarns each, every other course having one yarn formed of a plurality of adjacent pile loops alternating with a plurality of plain stitches, and the other courses having one yarn consisting of a plurality of adjacent pile loops and alternating plain stitches and tucks.

3. A knitted pile fabric consisting of a series of repeating courses, each course having two

- yarns, every other course having a plurality of adjacent pile loops formed from one yarn and plain stitches formed from the other yarn alternating with a plurality of plain stitches formed from both yarns, and the other courses having a plurality of adjacent pile loops formed from one yarn and plain stitches formed from the other yarn alternating with alternating plain stitches and tucks formed from both yarns.
- 10 4. A knitted pile fabric consisting of a series of repeating courses, each course having two yarns, each series consisting of at least one course having a series of adjacent pile loops formed from one yarn and plain stitches formed from the other yarn at the first four wales, and plain stitches formed from both yarns at the next succeeding three wales and repeating, and another course having a series of adjacent pile loops formed from one yarn and plain stitches formed from the other yarn at the first four wales, tucks at the fifth and seventh wales formed from both yarns and plain stitches at the sixth wale formed from both yarns.
- 25 5. A knitted pile fabric consisting of a series of repeating courses of two yarns each, each series consisting of one course having pile loops formed from one yarn at each of a plurality of adjacent wales, and plain stitches at a succeeding plurality of wales, and the next succeeding

course having one yarn formed into pile loops at each of a plurality of adjacent wales and alternating plain stitches and tucks at a succeeding plurality of wales.

6. A run-resisting knitted fabric which comprises a plurality of courses formed of two yarns, each course having one yarn plain knitted, and the other yarn formed into a pile loop at each of a plurality of successive wales, both yarns at alternating courses in a plurality of wales being formed into tucks.

7. A run-resisting knitted fabric which comprises a plurality of courses formed of two yarns, each course having one yarn plain knitted, and the other yarn formed into a pile loop at each of a plurality of successive wales, both yarns at alternating courses in a plurality of wales being formed into tucks, said tucks being separated by plain knitted stitches in an intervening wale.

8. A knitted pile fabric comprising a plurality of courses of two yarns each, each of certain of said courses having one yarn formed into a pair of groups of successive pile loops spaced apart by a single plain knitted stitch to produce a shadow stripe in said fabric, said pair of groups being followed by a third group comprising a tuck, a plain stitch and a tuck.

HARRY FLEISHER.