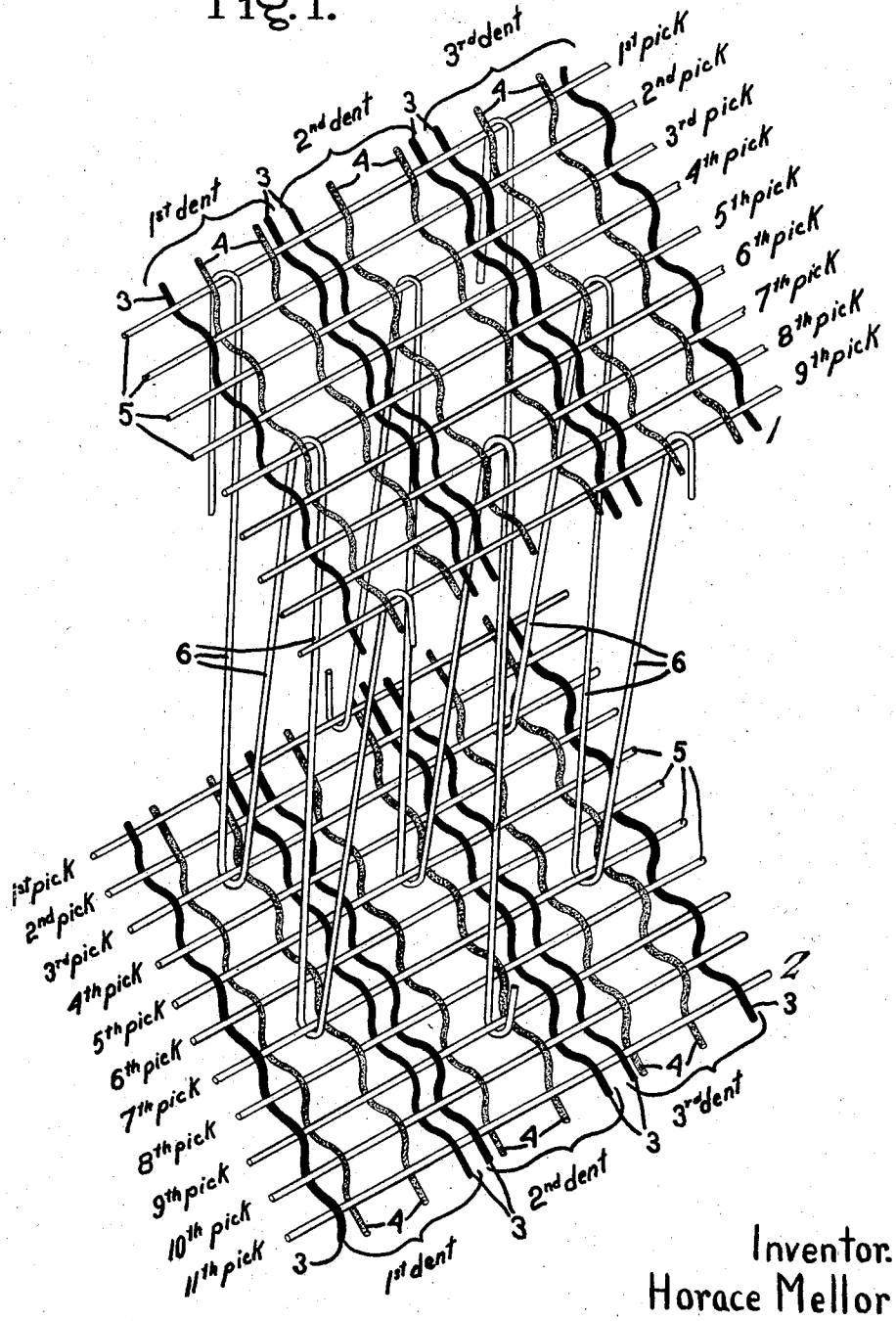
June 30, 1931. H. MELLOR 1,812,602

PILE FABRIC AND METHOD OF MAKING THE SAME

Filed Dec. 30, 1929 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

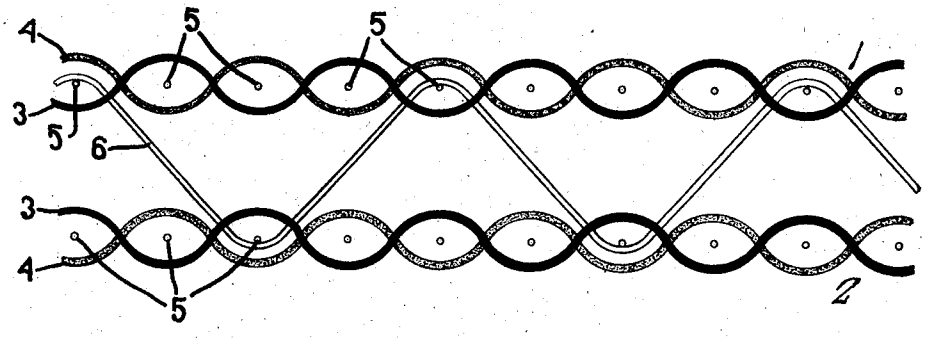
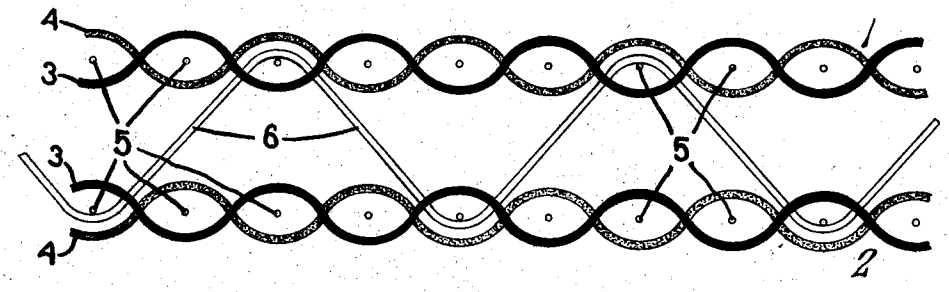


Fig. 3.



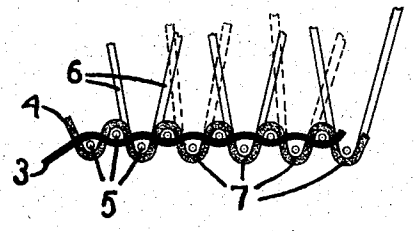


Fig. 4.

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UNITED STATES PATENT OFFICE

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PILE FABRIC AND METHOD OF MAKING THE SAME

Application filed December 30, 1929. Serial No. 417,339.

This invention relates to a double pile fabric and method of weaving the same and especially to a pile fabric of the so-called "V-weave" type. This expression "V-weave" is employed to designate a pile fabric in which each pile loop is looped about a single filling thread. In the weaving of such fabrics it is the common practice to employ both a so-called ground or "tight" warp and a "slack" warp. The warp threads of the ground warp are under tension during the weaving process while the warp threads of the slack warp have little or no tension applied thereto. Hence the term "slack warp." These slack warp threads are utilized for the purpose of assisting in holding the V-shaped pile loops in the fabric.

One of the objects of the present invention is to provide a double pile fabric of this type which will require in its manufacture a reduced amount of the pile warp threads but will have an appearance substantially equal to that of the V-weave pile fabrics as usually woven.

In these fabrics the pile warp is usually made of material which is considerably more expensive than that of the other warp and the saving in the amount of material used in the pile warp is, therefore, of considerable advantage.

In carrying out my invention I so manipulate the pile warp threads that each pile thread will be looped about every fourth filling thread in each fabric, the filling threads in either fabric about which any single pile warp thread is looped having a staggered relation relative to those in the other fabric. Furthermore, the slack warp and tight warp are so manipulated that during the formation of any shed in either fabric all of the slack warp threads will be in one-half of the shed and all of the tight warp threads will be in the other half of the shed while in the two corresponding sheds in the two fabrics the slack warp threads in one shed will be in the opposite half of the shed from the slack warp threads in the other shed, the same being true of the tight warp threads. With this method of weaving the fabric the pile threads will be looped about the alternate picks of filling thread, the remaining filling threads having no pile ends looped thereabout, and because of the way in which the tight and slack warp threads are manipulated the filling threads which have no pile loops looped thereabout, these being the alternate filling threads in each fabric, will be partially drawn into the fabric so that the back of the fabric will present a ribbed appearance, the ribs indicating the position of the filling threads that have the pile loops looped thereabout.

In order to give an understanding of the invention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a diagrammatic perspective fragmentary view illustrating my improved weave;

Fig. 2 is a diagrammatic view illustrating the interlacing of the threads which occupy the alternate dents of the reed;

Fig. 3 is a view illustrating the interlacing of the threads which occupy the other dents of the reed;

Fig. 4 is a view illustrating one of the fabrics after the double fabric has been cut.

In the drawings the two fabrics comprising the double fabric are indicated at 1 and 2 respectively, 1 being the upper fabric and 2 the lower fabric. Each fabric is formed of a so-called "tight" warp comprising the warp threads 3, and a slack warp comprising the slack warp threads 4, these threads being interwoven with the usual filling threads 5. The pile warp threads are indicated at 6. They extend from one fabric to the other as usual in double pile fabrics.

In threading up the loom for weaving this fabric I propose to place two tight warp threads 3 and two slack warp threads 4 of each fabric as well as a pile warp thread 6 in each dent of the reed, so that there will be nine warp threads in each dent as indicated in Fig. 1 wherein the threads which belong in the first, second, third, etc., dents are so indicated.

The fabric is woven as follows. In forming the shed for any one pick, which for con-

venience I will designate as the first pick, all the slack warp threads 4 of the upper fabric are raised and placed in the upper part of the shed while all the tight warp threads 3 are placed in the lower part of the shed. During the same pick, however, all the tight warp threads 3 in the lower fabric are raised and are carried into the upper part of the shed while all the slack warp threads 4 are lowered and carried into the lower part of the shed. The pile thread 6 in one dent will be raised and that in the next dent will be lowered so that when the first pick of filling is inserted in each fabric the alternate pile threads will pass over the first pick of filling in the upper fabric and the other pile threads will pass under the first pick of filling in the lower fabric.

At the formation of the shed for the next pick the position of the tight and slack warp threads will be reversed, that is, in the upper fabric all the tight warp threads 3 will be raised and all the slack warp threads 4 lowered, while in the lower fabric all the slack warp threads 4 will be raised and all the tight warp threads 3 lowered. All the pile warp threads will be carried to the center of the fabric and will thus lie between the picks of filling inserted in the two fabrics.

At the formation of the shed for the third pick in each fabric all the slack warp threads 4 in the upper fabric are raised and all those in the lower fabric are lowered, while all the tight warp threads 3 in the upper fabric are lowered and all those in the lower fabric are raised. The alternate pile warp threads 6, which in the first pick were looped over filling threads in the upper fabric, will be carried into the lower part of the shed in the lower fabric and thereby looped about the third pick of filling in the lower fabric while the other pile warp threads will be carried into the upper shed of the upper fabric and thus looped about the third pick of filling in said upper fabric.

The sheds in the upper and lower fabrics for the fourth pick are formed in the same way as for the second pick, that is, in the upper fabric all the tight warp threads 3 are carried into the upper part of the shed while all the slack warp threads 4 are carried into the lower part of the shed, and in the lower fabric all the slack warp threads 4 will be in the upper part of the shed and all the tight warp threads 3 will be in the lower part of the shed.

All the pile warp threads will be carried to the center so that when the fourth pick of filling in each fabric is laid the pile warp threads will lie in the center or between said picks and will not be looped about either pick.

The fifth pick is a repetition of the first pick, the sixth pick a repetition of the second, the seventh pick a repetition of the third and the eighth pick a repetition of the fourth and so on. With this manner of weaving each pile warp thread will be looped about every fourth filling thread in each fabric and the filling threads about which any one pile warp thread is looped are midway between those about which the adjacent pile thread is looped. In other words, in the upper fabric, for instance, the alternate pile warp threads will be looped about the first, fifth, ninth, etc., filling threads while the other pile warp threads will be looped about the third, seventh, eleventh, etc., filling threads.

This manner of weaving the cloth produces a fabric which has a ribbed appearance on the back face. It will be noted that all the tight warp threads 3 are on the back of each of the picks of filling which have no pile threads looped thereabout, to wit, the second, fourth, sixth, eighth, etc., and are on the front side of the picks of filling which have the pile threads looped thereabout. Because of this manner of weaving the fabric the greater tension of the tight warp threads 3 over those of the slack warp threads 4 will tend to draw the filling threads which have no pile loops looped thereabout to wit, the second, fourth, sixth, eighth, etc., filling threads, somewhat into the body of the fabric and will also tend to crowd the other filling threads which have the pile loops looped thereabout, to wit, the first, third, fifth, seventh, ninth, etc., toward the back of the fabric.

This is illustrated in Fig. 4 and it will result in the production of ribs 7 along the back of the fabric each rib presenting the position of one of the filling threads which have the pile loops looped thereabout.

When the pile warp threads are cut to sever the two fabrics it will be found the the pile ends will stand at a considerable inclination to the plane of the fabric as seen in Fig. 4, this being due to the fact that in passing from one fabric to the other the pile warp threads pass from one pick in one fabric to the second next pick in the other fabric. The fabric is thus woven with the pile warp threads at a considerable angle in passing from one fabric to the other, which angle is maintained after the two fabrics are cut apart. Moreover, since each pile warp thread is looped about each fourth filling thread only in each fabric the total length of pile warp which is necessary to weave a given length of fabric is considerably less than is required in weaving a V-weave fabric in the ordinary way where each pile warp thread is looped about every other pick of filling in each fabric.

Another peculiarity of the present fabric is that in forming the shed for each pick all the tight warp threads in the upper fabric will be on the opposite side of the shed from that which they occupy in the lower fabric, the same being also true with reference to

the slack warp threads. As a result, in forming the sheds for those picks about which the pile warp threads are to be looped the slack warp threads will be in the upper shed of the upper fabric and the lower shed of the lower fabric, while the tight warp threads will be in the lower shed of the upper fabric and the upper shed of the lower fabric.

In forming the shed for those picks of filling about which no warp threads are looped, to wit, the second, fourth, sixth, eighth, picks, etc., the tight warp threads will be in the upper shed of the upper fabric and lower shed of the lower fabric while the slack warp threads will be in the lower shed of the upper fabric.

I claim:

1. The method of making a double pile fabric containing both tight warp threads and slack warp threads in each fabric, which consists in arranging both the tight warp threads and the slack warp threads in pairs with the pairs of slack warp threads alternating with those of the tight warp threads, interweaving the tight warp threads and slack warp threads with filling threads and in so doing forming the successive sheds in the two fabrics so that in each shed of both fabrics all the slack warp threads will be in one part of the shed and all the tight warp threads in the other part of the shed and in the corresponding sheds in the two fabrics both the slack warp threads and the tight warp threads of one fabric will be in the opposite part of the shed from what they are in the other fabric, and passing the pile warp threads from one fabric to the other so that each pile thread will be looped about every fourth filling thread in each fabric between the slack warp threads of a pair.

2. A pile fabric comprising both slack warp threads and tight warp threads which are interwoven with filling threads and pile loops looped about alternate filling threads only, all the tight warp threads passing under the filling threads which have no pile loops looped thereabout and over the filling threads which have the pile loops looped thereabout and all of the slack warp threads passing over the filling threads which have no pile loops looped thereabout and under the other filling threads, whereby the first-mentioned filling threads are drawn somewhat into the body of the fabric and the other filling threads forced toward the back of the fabric thereby to produce a ribbed effect.

3. A pile fabric comprising both slack warp threads and tight warp threads with both the tight warp threads and slack warp threads arranged in pairs of adjacent threads and with the pairs of slack warp threads alternating with those of tight warp threads, filling threads interwoven with said slack and tight warp threads, the threads of each pair passing over and under the filling threads together and pile loops looped about alternate filling threads only, each pile loop being situated between the threads of a pair of slack warp threads, all the tight warp threads passing under the filling threads which have no pile loops looped thereabout and over the filling threads which have the pile loops looped thereabout and all of the slack warp threads passing over the filling threads which have no pile loops looped thereabout and under the other filling threads, whereby the first-mentioned filling threads are drawn somewhat into the body of the fabric and the other filling threads forced toward the back of the fabric thereby to produce a ribbed effect.

In testimony whereof, I have signed my name to this specification.

HORACE MELLOR.