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WOVEN PILE FABRIC.
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Fig. 1.

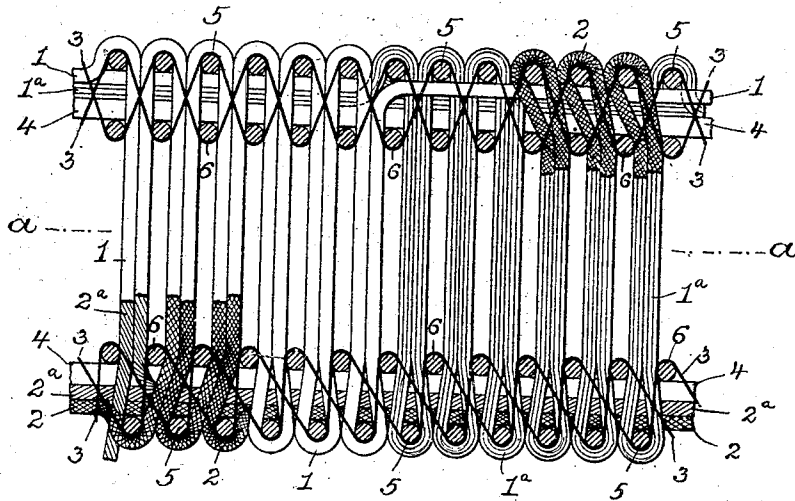


Fig. 2.

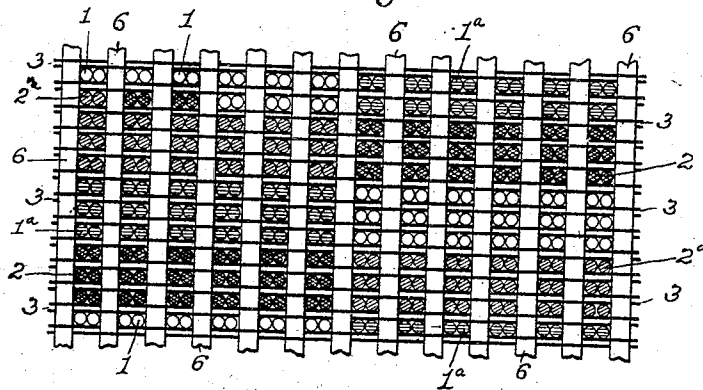
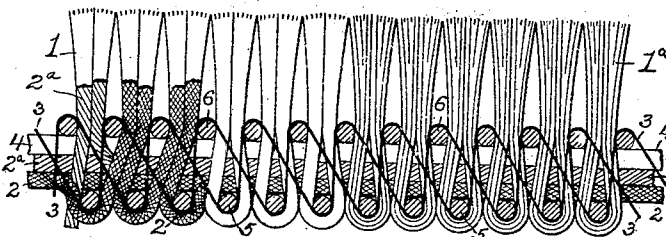


Fig. 3.



Witnesses
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WOVEN PILE FABRIC.

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To all whom it may concern:

Be it known that I, GEORGE ZIMMERMANN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain improvements in Woven Pile Fabric, of which the following is a specification.

My invention relates to that class of pile fabrics which are originally woven double by carrying pile-forming warp threads back and forth between suitably spaced backing webs, and interweaving each of said pile-forming warp threads with each of the backing webs, said warp threads being afterwards severed, midway between the backing webs, in order that each of the latter may present upstanding cut pile tufts.

One object of my invention is to so weave such a fabric that each of the webs will resemble one produced by an "oriental" carpet or rug weave, in that it will present, on the back, a substantial duplication of the face pattern but in the form of close lying loops instead of raised pile.

A further object of the invention is to restrict each row of pile tufts to its proper weft line, and prevent it from overlapping or mingling with the tufts of the adjoining rows, thereby insuring a sharply defined pattern and avoiding confused or muddled effects where the pattern changes color.

These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, in which—

Figure 1 is an exaggerated section of a double web woven in accordance with my invention, the section being taken on the line of the warp and on different planes, in order to indicate the relations of the different pile-forming warp threads to the weft threads; Fig. 2 is a horizontal section of the fabric on the line *a—*a**, Fig. 1, and Fig. 3 is an exaggerated section of one of the cut webs also taken on different planes to indicate the different dispositions of the warp and weft threads.

Each of the backing webs of the fabric contains a succession of sets or groups of warp threads disposed side by side throughout the width of the web, each set of such warp threads comprising one or more, and usually a plurality of pile-forming warp threads, a pair of binding warp threads, and by preference, a stuffer warp thread. In the fabric shown in the drawing there are, in each set of warp threads, two pile-forming warp threads, represented, respectively, at 1

and 1^a, and 2 and 2^a, the binder warp threads being represented at 3—3, and the stuffer warp thread at 4.

The pile-forming warp threads of each web I term "running" pile warp threads, in order to distinguish them from the pile warp threads drawn from the other web, the latter being termed "foreign" pile warp threads.

With the warp threads of each backing web are combined outer weft threads 5 and inner weft threads 6, and each pile-forming warp thread, before being carried into the other backing web from that in which it constitutes the running pile warp thread, is carried first around an outer weft thread 5 of its own web, then to the other web and around an outer weft thread 5 of the same, then back to its own web and around an outer weft thread 5 of the same, and so on, the result being the production, on the back of each web, after the webs have been cut apart, of a close-lying loop corresponding in color and position with each upstanding cut pile tuft on the face of the web, and a consequent showing of pattern on the back corresponding to that of the face, this being a characteristic of all expensive carpets or rugs produced by the usual oriental weaves.

In order to sharply differentiate the rows of pile tufts, weft way of each web, I, in weaving the double web, so dispose the inner weft threads 6 of each web, (which, after the webs have been cut apart, become face weft threads) that they bear a different relation to the tuft-forming loops produced from the running pile warp threads of said web than to the tuft-forming loops produced from the foreign pile warp threads of the same, thus, it will be noticed, on reference to Figs. 1 and 3, that the inner or face weft threads 6 are outside of the tuft-forming loops of the foreign pile warp threads and inside of the tuft-forming loops of the running pile warp threads. The purpose of this will be understood when it is noted that if, on introducing the running pile warp thread 2 at the left hand end of Fig. 1, it was lifted between the first two of the inner weft threads 6, instead of between the second and third of said weft threads, it would overlap the loop formed by the foreign pile warp thread 1, and this overlapping would occur whenever a color change took place, an objection which is effectually overcome by disposing the inner or face weft threads in the manner shown and described.

Although, in the fabric shown in the drawing, each of the backing webs contains but two running pile warp threads, the pile warp threads of both webs aid in the formation of the pattern, hence a four-color effect can be produced therein, and the color effects can be increased or diminished by increasing or diminishing the number of running pile warp threads in either or both of the webs.

By carrying each of the pile-forming warp threads to the back of the web before carrying it across from web to web, the pattern is clearly indicated to the weaver, to whom only the back of the upper web is visible, and breakage or other accident leading to failure in the proper shedding of any of the pile warp threads can be at once detected and the loom stopped until such defect has been remedied, whereas when the pile-forming warp threads are not thus disposed, a defect in the weaving may continue indefinitely without the knowledge of the weaver.

In weaving the double fabric the weft threads are inserted in the following order, first a back weft thread of the upper web, then a back weft thread of the lower web, then a face weft thread of the upper web and then a face weft thread of the lower web.

I claim:—

1. A woven pile fabric having a backing web composed of running pile warp threads, binding warp threads, and back and face weft threads, and an upstanding cut pile face composed in part of tufts formed from said running pile warp threads and in part of tufts formed from foreign pile warp threads, each of said pile tufts being looped around a back weft thread.

2. A woven pile fabric having a backing composed of running pile warp threads, binding warp threads, and back and face weft threads, and an upstanding cut pile face composed in part of tufts formed from said running pile warp threads and in part of tufts formed from foreign pile warp threads, each of said pile tufts being looped around a back weft thread and the rows of upstanding pile tufts being sharply differentiated from each other weft way of the fabric.

3. A woven pile fabric having a backing composed of running pile warp threads, bind-

ing warp threads, and back and face weft threads, and an upstanding cut pile face composed in part of tufts formed from said running pile warp threads and in part of tufts formed from foreign pile warp threads, each of said pile tufts being looped around a back weft thread, the face weft threads being inside of the loops formed from the running pile warp threads and outside of the loops formed from the foreign pile warp threads.

4. A woven pile fabric having a backing composed of running pile warp threads, binding warp threads, stuffer warp threads, and back and face weft threads, and an upstanding cut pile face composed in part of tufts formed from said running pile warp threads and in part of tufts from foreign pile warp threads, each of said pile tufts being looped around a back weft thread.

5. A woven pile fabric having a backing composed of running pile warp threads, binding warp threads, stuffer warp threads, and back and face weft threads, and an upstanding cut pile face composed in part of tufts formed from said running pile warp threads and in part of tufts formed from foreign pile warp threads, each of said pile tufts being looped around a back weft thread, and the rows of upstanding pile tufts being sharply differentiated from each other weft way of the fabric.

6. A woven pile fabric having a backing composed of running pile warp threads, binding warp threads, stuffer warp threads, and back and face weft threads, and an upstanding cut pile face composed in part of tufts formed from said running pile warp threads and in part of tufts formed from foreign pile warp threads, each of said pile tufts being looped around a back weft thread, the face weft threads being inside of the loops formed from the running pile warp threads and outside of the loops formed from the foreign pile warp threads.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEORGE ZIMMERMANN.

Witnesses:

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