

June 2, 1942.

R. C. GEBERT

2,285,332

CARPET

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4 Sheets-Sheet 1

Fig. 1.

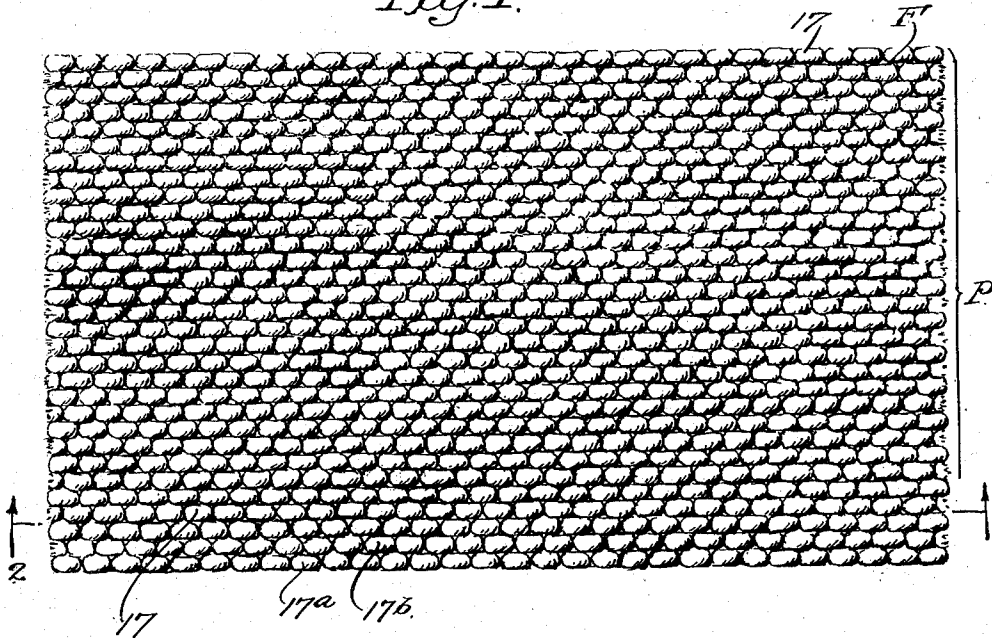
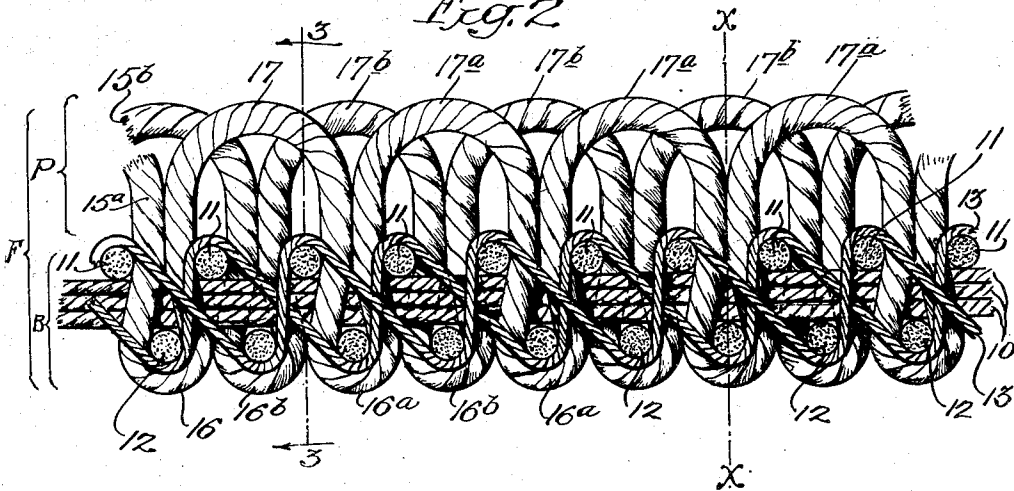


Fig. 2



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Fig. 3

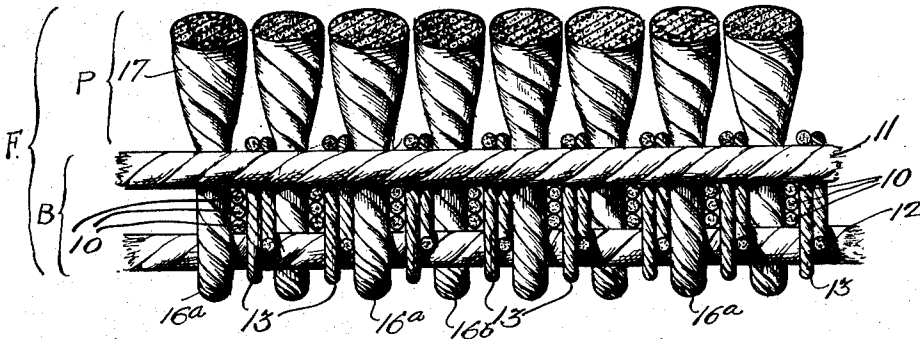


Fig. 4

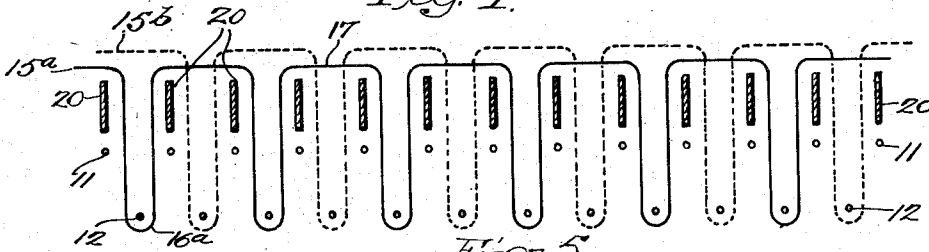


Fig. 5

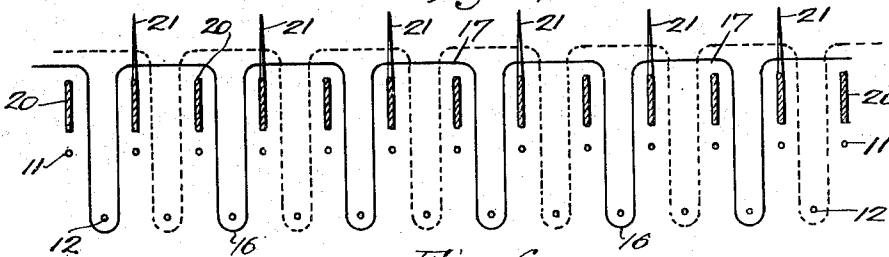
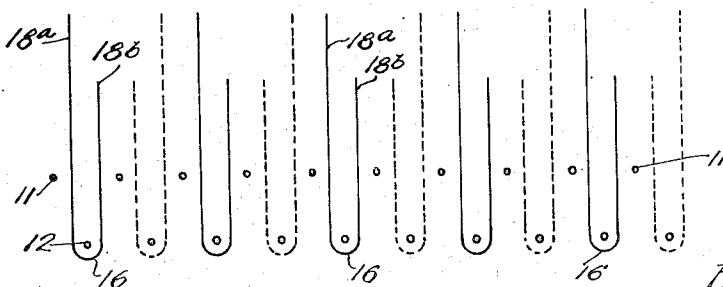


Fig. 6



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Fig. 7

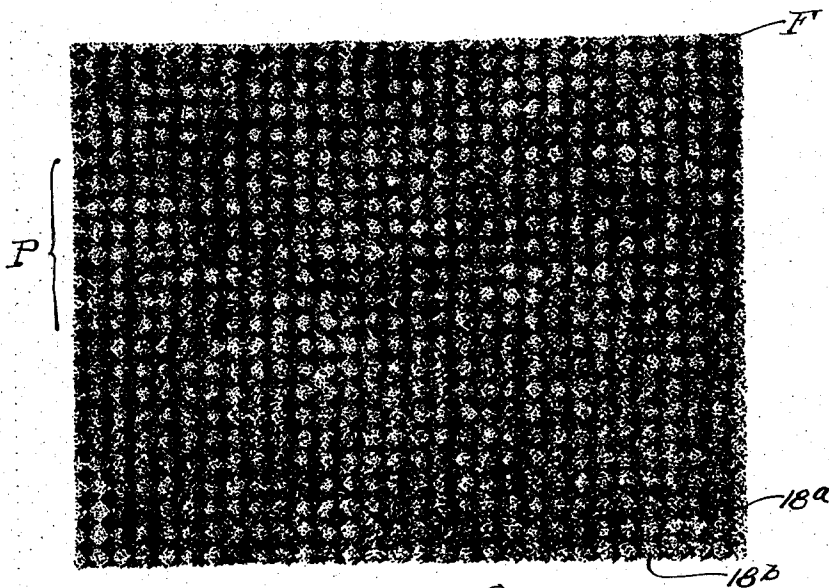


Fig. 8

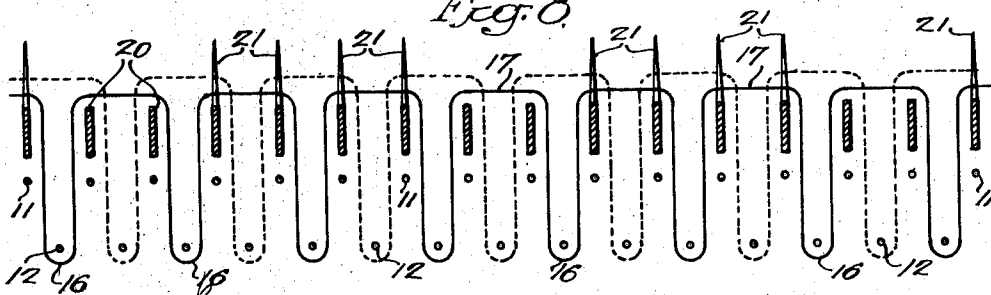
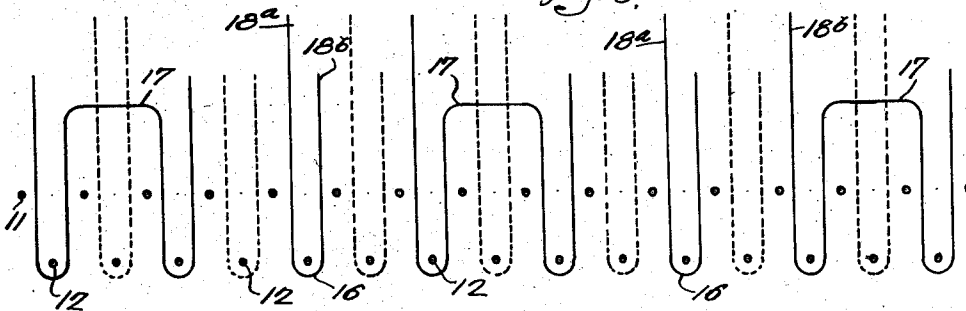


Fig. 9



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Fig. 10.

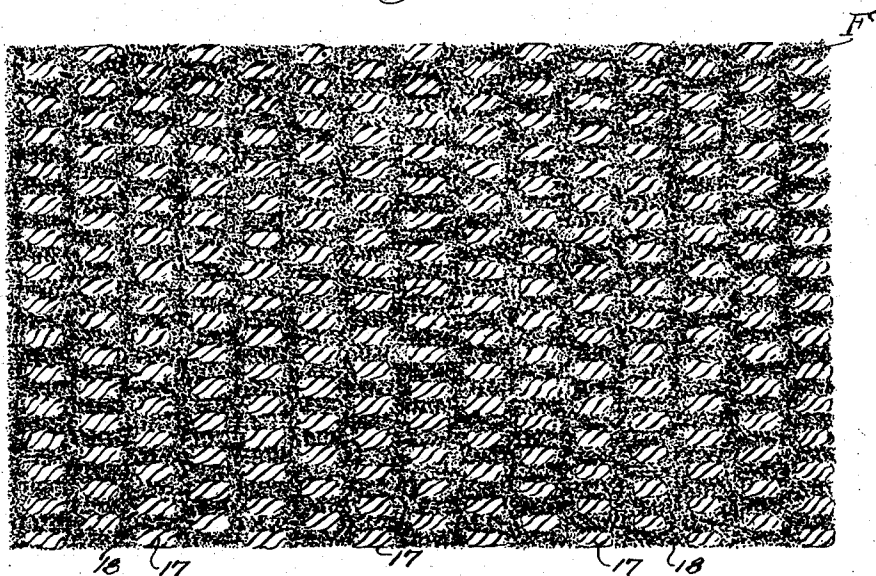


Fig. 11.

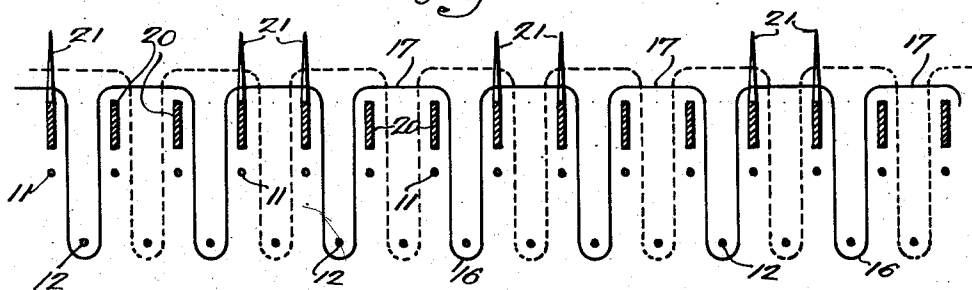
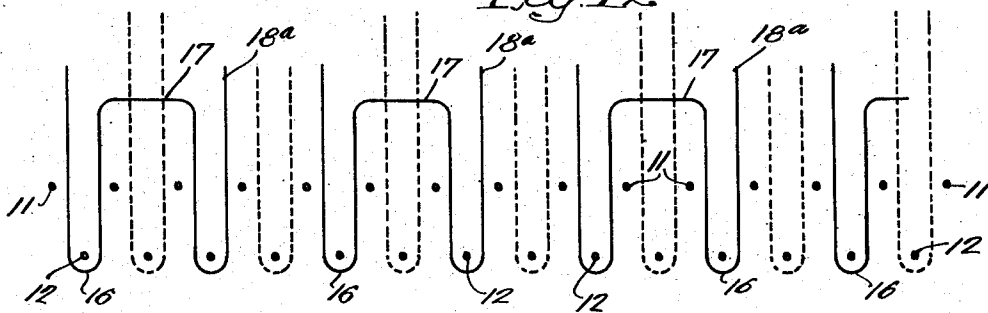


Fig. 12.



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UNITED STATES PATENT OFFICE

2,285,332

CARPET

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Application October 26, 1939, Serial No. 301,492

3 Claims. (Cl. 139-403)

This invention relates to carpet construction, regardless of whether the fabric be woven as a continuous strip of yard goods of predetermined width or in units of various dimensions, as seamless rugs. The invention particularly relates to carpets of the pile faced type, with the pile face formed solely of cut pile loops, or solely of uncut pile loops, or partly of one and partly of the other.

Primarily the invention relates to a novel form of weave for producing what may be termed "long-span" pile loops, i. e., pile loops which respectively extend across, span, or bridge, groups of two or more of the upper weft, filling or ground yarns of the ground or base fabric from which the pile loops normally project perpendicularly, and over which the pile yarns are arched between the successive binding points where the pile forming yarns are respectively anchored in the ground fabric; as distinguishing from carpets of the prior art where each pile loop extends over a single top weft solely, or where each loop is formed between two adjacent top wefts and projects upwardly therefrom without spanning any top wefts whatsoever.

The present invention is further directed to a novel arrangement of the binding spots for the respective pile warps, and to the manner of cutting the pile loops, whereby none, all, or only some of the loops may be cut, to produce various novel effects on the pile face of the carpet. For example, the tie spots for laterally adjacent pile yarns may be aligned transversely or weft-wise of the fabric and all of the loops may remain uncut, thereby forming broad transversely extending bars or ribs on the face of the fabric. In other instances, the binding spots of adjacent pile yarns may be offset warp-wise of the fabric to cause the ends of laterally abutting loops to lie in warp-wise over-lapping relation to each other, whereby the resultant staggering of the uncut loops will produce an all-over nub effect. In other instances, some of the loops may be cut while others remain uncut, producing a nub effect interspersed in a stipple-like background, or vice versa. In other instances predetermined loops may be cut nearer to one binding spot than to the next succeeding one, whereby relatively high and low loop-legs may be produced, to provide a rough, uneven effect interspersed with nubs. In other instances, all of the pile loops may be cut in the manner noted to give an all-over rough appearance to the face of the fabric.

All of the above effects and others may be pro-

duced from the basic long-span loop arrangement embodied in the weave forming the subject of the present invention, which latter will be fully disclosed hereinafter, reference being had to the accompanying drawings, of which:

Fig. 1 is a face view of a swatch of fabric made in accordance with the present invention and illustrating the all-over nub effect;

Fig. 2 is an enlarged warp-wise sectional view taken on the line 2-2, Fig. 1;

Fig. 3 is a weft-wise sectional view taken on the line 3-3, Fig. 2;

Fig. 4 is a weave diagram illustrating the manner in which the pile wires are woven into the fabric to produce the structures of Figs. 1, 2 and 3;

Fig. 5 is a view similar to Fig. 4 but showing predetermined pile wires provided with cutting blades to produce an all-over rough cut effect;

Fig. 6 is a diagram illustrating the fabric of Fig. 5, after the pile wires have been withdrawn, and showing relatively high and low loop-legs;

Fig. 7 is a face view of a swatch of fabric made according to the diagrams of Figs. 5 and 6;

Fig. 8 is a view similar to Fig. 5 but showing a different arrangement of knives on the pile wires, whereby the face of the fabric is formed partly of cut loops and partly of uncut loops;

Fig. 9 shows the fabric of Fig. 8 after the pile wires have been withdrawn;

Fig. 10 is a face view of the fabric illustrated in the diagrams of Fig. 8 and Fig. 9 and showing the nubs interspersed in the stippled background;

Fig. 11 shows another modified arrangement of pile wire knives; and

Fig. 12 illustrates the fabric of Fig. 11 after the pile wires have been withdrawn, the effect produced being a modified arrangement of nubs and cut pile loops according to Fig. 10.

As shown in Figs. 2 and 3 particularly, the carpet structure F includes a base fabric B and a pile face P. The base fabric B is composed primarily of a series of stuffer warps 10 which extend longitudinally or warp-wise of the fabric, a series of ground yarns in the form of top wefts or filling threads 11 extending transversely or weft-wise of the fabric, substantially at right angles to the stuffers 10, disposed on or adjacent the upper sides of said stuffers. The base fabric B also includes a series of lower ground yarns in the form of weft or filling threads 12, which like the upper wefts or filling yarns 11, extend at right angles to the stuffers 10, adjacent the undersides of said stuffers.

Throughout the length of the fabric, the lower wefts 12 are arranged in staggered relation to the upper wefts 11, i. e., each lower weft 12 is arranged in a vertical plane x, x lying intermediate two of the upper wefts 11, 11.

The stuffers 10 and wefts 11 and 12 are bound together to form the base fabric B by binder or chain warps 13 which are arranged in pairs, in laterally spaced relation to each other across the fabric, with a group of stuffers 10 between each pair of chains 13, as illustrated in Fig. 3.

As shown in Fig. 2, the chain warps 13 pass over one upper weft 11 and under the next lower weft 12 and the next upper weft 11, and then over the third upper weft for a repeat of the cycle. The other chain of each pair passes over the intermediate upper weft 11, under the next lower weft 12 and upper weft 11, and so on in alternation with the first noted chain of the pair. In this manner, a solid substantial base fabric is provided for supporting the pile face P of the finished product.

As shown in Fig. 2, the pile face P is composed of two series of pile warps 15^a and 15^b respectively. Each pile warp passes downwardly and then upwardly through the base fabric, between a pair of the upper wefts 11, 11, and around a lower weft 12 lying intermediate said pair of upper wefts, thus providing a binding spot 16 for the pile yarn.

Each pile yarn, as clearly shown in Fig. 2, is arched over a group of upper pile yarns 11, 11, lying intermediate a pair of successive binding spots 16, 16. In the present instance, the group of upper wefts spanned in each instance is limited to two. In this manner, each of the pile forming yarns is normally formed into a series of long-span loops 17.

As shown in Figs. 1, 2 and 3, the binding spots 16^b for the pile yarns 15^b are formed in alternating staggered relation to and intermediate the binding spots 16^a for the pile yarns 15^a, i. e., the pile yarns 15^b pass down between the pairs of upper wefts 11, 11 over which the long-span loop 17^a of the pile yarns 15^a are arched, and the yarns 15^a extend down between the pairs of upper wefts 11, 11 over which the long-span loops 17^b of the pile yarns 15^b are arched, thus producing the warp-wise overlapping relationship of the ends of the long-span loops of adjacent pile yarns, as illustrated in Fig. 1.

As shown in Fig. 4 the long-span loops 17^a and 17^b are produced by inserting plain-end pile wires 20 above each of the upper wefts 11, during the weaving of the fabric, and by alternately carrying the pile yarns 15^a and 15^b respectively over a pair of pile wires 20 before weaving the pile yarns into the base fabric B to form the tie spots 16. In this instance, the pile wires 20 are of the noted plain type, when withdrawn, leave the pile loops in an uncut condition, with the loops in the staggered alternating relation shown in Fig. 1.

In some instances, as illustrated in Fig. 5, alternate pile wires 21 may be provided with cutting blades of any of the wellknown constructions at the free ends thereof, which, when the pile wires are withdrawn from the fabric, cut the pile yarns 15^a and 15^b in the manner illustrated in Fig. 6, producing long and short loop-legs 18^a and 18^b, as clearly shown in said figure, the long leg of each loop being formed by reason of its extending over a plain pile wire 20 on one side of the tie point 16 and over a knife edged pile wire 21 at the opposite side of the binding point, thus, 75

when the knife edged pile wires 21 are withdrawn, each loop is cut in such a manner that the portion extending over the plain wire 20 is substantially longer than the portion extending over the knife edged pile wire, thus producing the high and low legs 18^a and 18^b as shown in Fig. 6.

With the staggered alternating relation of plain and knife edged pile wires illustrated in Fig. 5, the fabric would assume an all-over rough pile face appearance, similar to that illustrated in Fig. 7, each of the pile loops being unevenly cut as in Fig. 6.

In Fig. 8 a different arrangement between the plain and knife edged pile wires 20 and 21 is illustrated. In this case groups of two plain pile wires alternate with groups of four knife edged pile wires. Thus, when the pile wires are withdrawn from the fabric, the pile forming yarns which extended solely over a pair of plain pile wires 20, between successive binding points 16, remain uncut while all of the pile yarns passing over the knife edged pile yarns 21 are unevenly cut, as previously described with respect to Fig. 5, whereby uncut loops 17 are interspersed among the long and short legs 18^a and 18^b of the unevenly cut pile loops, producing the nub effect with the stipple background illustrated in Fig. 10.

In Fig. 11 the plain pile wires 20 are illustrated as being arranged in pairs alternating with pairs of knife edged pile wires 21. Such an arrangement provides the same general effect shown in Fig. 10 with the uncut loops closer together, as will be apparent upon a comparison being made between Fig. 9 and Fig. 12, Fig. 9 showing the spacing of the loops resulting from the 2-4 relationship between the plain and the knife edged pile wires of Fig. 8, while Fig. 12 shows the spacing of the uncut loops resulting from the 2-2 relationship of the plain and knife edged pile wires illustrated in Fig. 11.

From the above it will be apparent that by using a basic weave such as that illustrated in Fig. 2 and by using all plain or all knife-edged pile wires or by using various combinations of plain and knife edged pile wires, various novel effects may be produced in the pile face of the fabric.

It will be understood that the arrangements disclosed in the present case are for the purpose of illustration only and are not intended to place any limitation on the various combinations that may be employed for getting results other than those illustrated in the present case.

It will be further understood that while Fig. 2 of the drawings illustrates the long-span loops as passing over but a pair of upper wefts in each instance, each loop may be elongated to any desired extent by passing over three or more upper wefts, between the binding points.

It will be further understood that the relative positioning of the tie points of adjacent pile yarns may also be varied to produce various effects in combination with the various arrangements of plain and knife edged pile wires, without departing from the spirit of the invention.

I claim:

1. A pile carpet comprising a solid ground fabric composed of an upper series of wefts in one horizontal plane, a lower series of wefts in warpwise staggered relation to said upper wefts in another relatively spaced parallel plane, co-operating pairs of opposed binder warps respectively passing over and under successive upper and lower wefts alternately, a group of superposed

stuffer warps between adjacent pairs of binder warps with the stuffer warps of each group in superposed relation between said upper and lower wefts to provide substantial thickness to the ground fabric, and a relatively heavy pile warp between each pair of binder warps and adjacent groups of stuffer warps, with each pile warp formed into a series of binder loops passing down between spaced pairs of upper wefts to and around single lower wefts intermediate said pairs of upper wefts within said ground fabric and formed into elongated pile loops projecting upwardly from said ground fabric and extending across a pair of said upper wefts intermediate successive binder loops warpwise of the carpet.

2. A pile carpet comprising a solid ground fabric composed of an upper series of wefts in one horizontal plane, a lower series of wefts in warpwise staggered relation to said upper wefts in another relatively spaced parallel plane, cooperating pairs of opposed binder warps respectively passing over and under successive upper and lower wefts alternately, a group of superposed stuffer warps between adjacent pairs of binder warps with the stuffer warps of each group in superposed relation between said upper and lower wefts to provide substantial thickness to the ground fabric, and a relatively heavy pile warp between each pair of binder warps and adjacent groups of stuffer warps, with each pile warp formed into a series of binder loops passing down between spaced pairs of upper wefts to and around single lower wefts intermediate said pairs of upper wefts within said ground fabric and formed into elongated pile loops projecting upwardly from said ground fabric and extending across a pair of said upper wefts intermediate successive binder loops warpwise of the carpet, and with the pile loops of one pile warp and

the binder loops thereof respectively staggered warpwise of the carpet with respect to the pile loops and binder loops of the next adjacent pile warp weftwise of the fabric.

3. A pile carpet comprising a solid ground fabric composed of an upper series of wefts in one horizontal plane, a lower series of wefts in warpwise staggered relation to said upper wefts in another relatively spaced parallel plane, cooperating pairs of opposed binder warps respectively passing over and under successive upper and lower wefts alternately, a group of superposed stuffer warps between adjacent pairs of binder warps with the stuffer warps of each group in superposed relation between said upper and lower wefts to provide substantial thickness to the ground fabric, and a relatively heavy pile warp between each pair of binder warps and adjacent groups of stuffer warps, with each pile warp formed into a series of binder loops passing down between spaced pairs of upper wefts to and around single lower wefts intermediate said pairs of upper wefts within said ground fabric and formed into elongated pile loops projecting upwardly from said ground fabric and extending across a pair of said upper wefts intermediate successive binder loops warpwise of the carpet, and with the pile loops of one pile warp and the binder loops thereof respectively staggered warpwise of the carpet with respect to the pile loops and binder loops of the next adjacent pile warp weftwise of the fabric, predetermined pile loops being cut in vertical alignment with but one of the upper wefts of the pair over which such predetermined pile loops respectively extend, to produce uneven pile tufts having long and short legs respectively projecting upwardly from said ground fabric.

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