Oct. 2, 1956 F. W. E. HOESELBARTH 2,765,001

WEAVING PILE CARPET HAVING TEXTURED EFFECT

Filed March 3, 1952 4 Sheets-Sheet 1

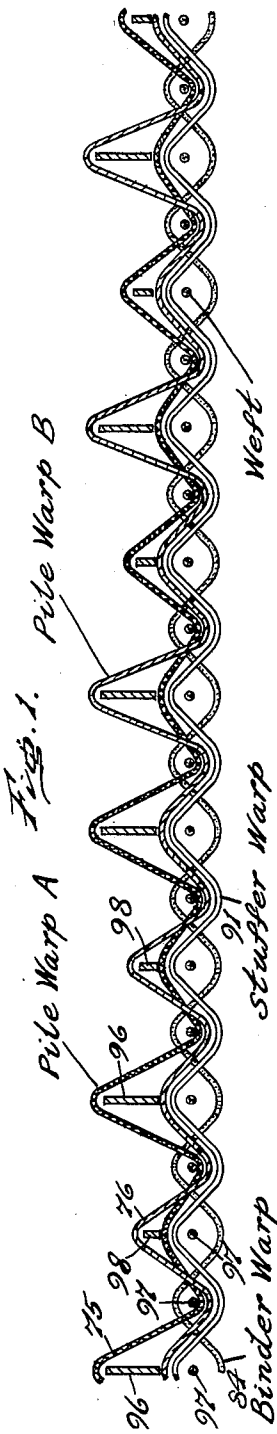



Fig. 1.

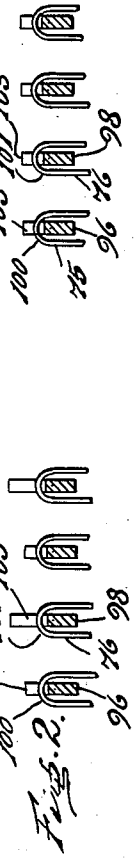



Fig. 2.




Fig. 3.

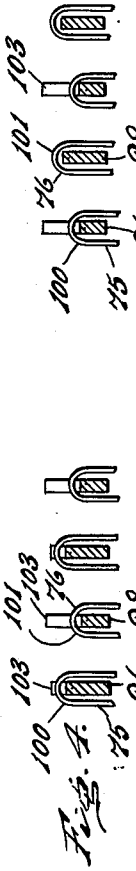



Fig. 4.




Fig. 5.




Fig. 6.




Fig. 7.




Fig. 8.




Fig. 9.

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WEAVING PILE CARPET HAVING TEXTURED EFFECT

Filed March 3, 1952

4 Sheets-Sheet 2

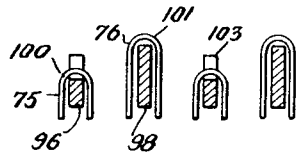



Fig. 10.

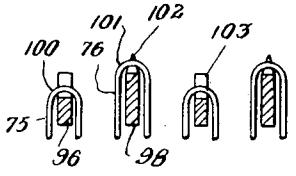



Fig. 11.

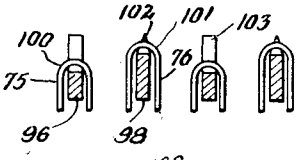



Fig. 12.

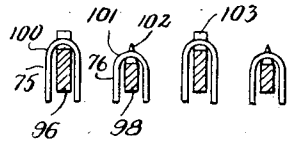



Fig. 13.

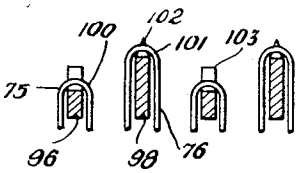



Fig. 14.

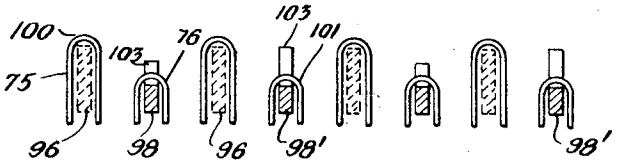



Fig. 15.

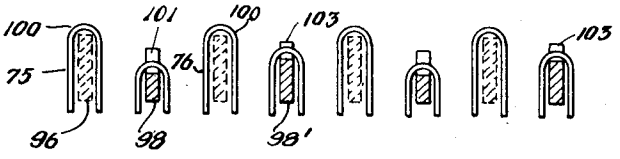



Fig. 16.

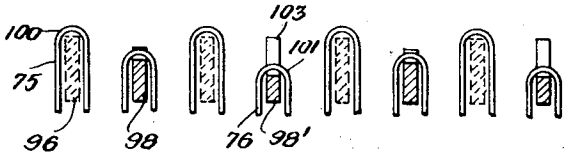



Fig. 17.

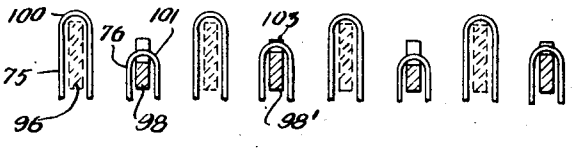



Fig. 18.

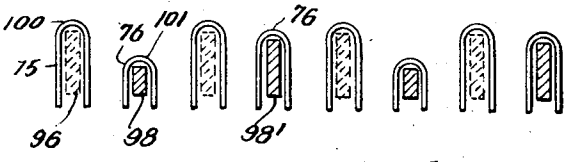



Fig. 19.

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WEAVING PILE CARPET HAVING TEXTURED EFFECT

Filed March 3, 1952 4 Sheets-Sheet 3

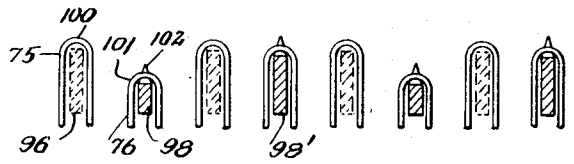



Fig. 20.

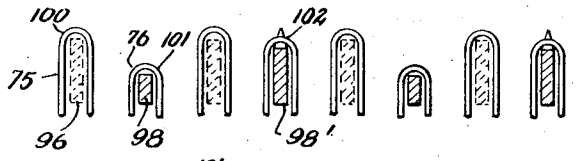



Fig. 21.

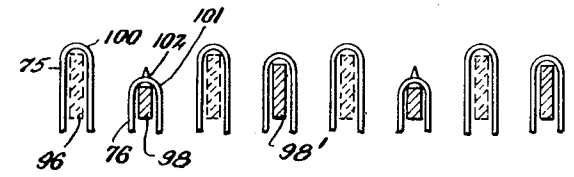



Fig. 22.

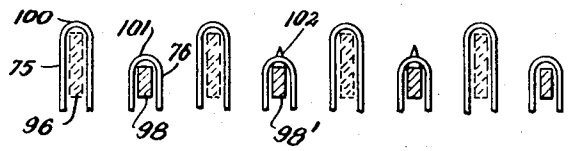



Fig. 23.

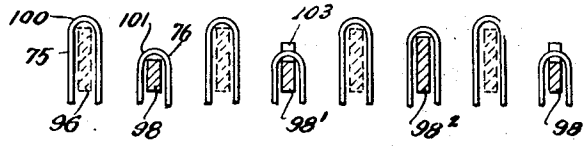



Fig. 24.

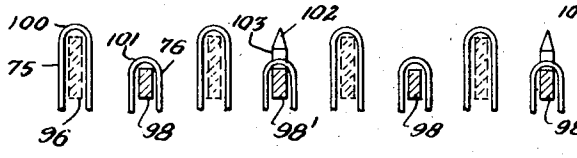



Fig. 25.

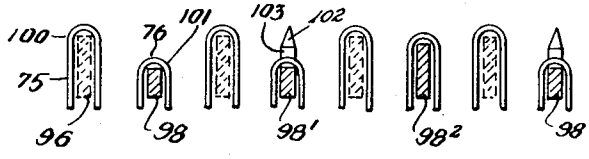



Fig. 26.

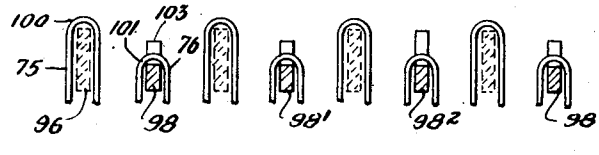



Fig. 27.

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WEAVING PILE CARPET HAVING TEXTURED EFFECT

Filed March 3, 1952 4 Sheets-Sheet 4

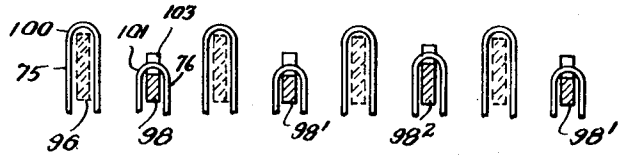



Fig. 28.

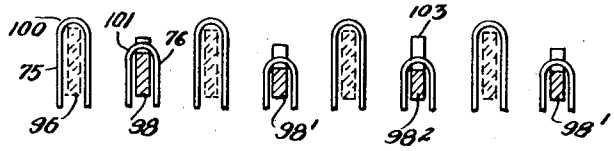



Fig. 29.

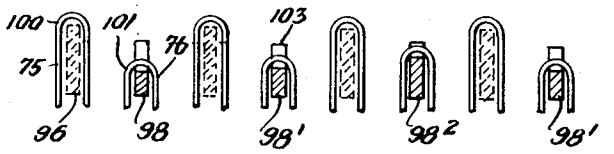



Fig. 30.

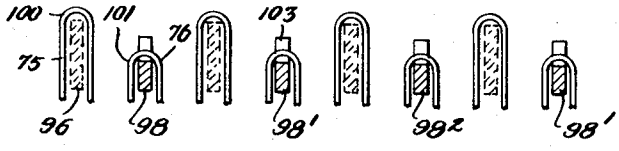



Fig. 31.

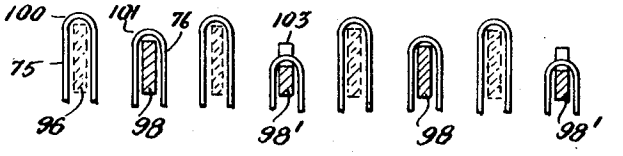



Fig. 32.

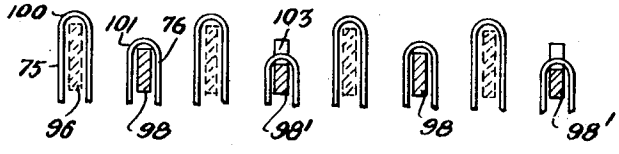



Fig. 33.

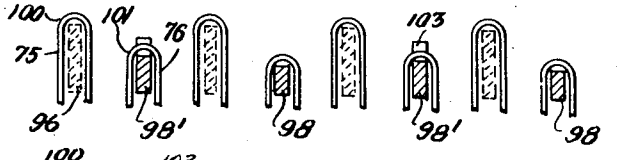



Fig. 34.

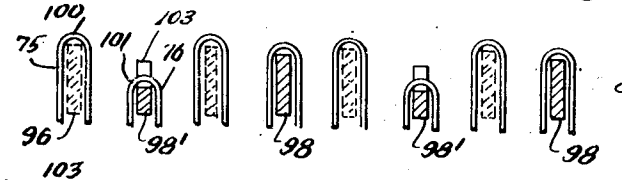



Fig. 35.

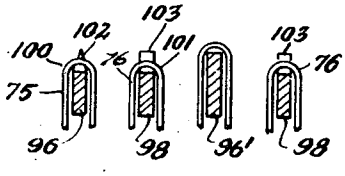



Fig. 36.

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United States Patent Office 2,765,001 Patented Oct. 2, 1956



2,765,001

# WEAVING PILE CARPET HAVING TEXTURED EFFECT

Frank W. E. Hoeselbarth, Carlisle, Pa., assignor to C. H. Masland and Sons, Carlisle, Pa., a corporation of Pennsylvania

Application March 3, 1952, Serial No. 274,565

1 Claim. (Cl. 139—39)

The present invention relates to pile fabrics, especially carpet and rugs, particularly of the type in which textured effects are achieved in the pile.

The present invention is a continuation in part of my copending applications Serial No. 167,534, filed June 12, 1950, for Velvet or Tapestry Weave, Loom and Velvet or Tapestry Carpet Fabric, now Patent No. 2,754,850, Serial No. 191,830, filed October 24, 1950 for Weaving Pile Fabric Having High and Low Loops, now Patent No. 2,709,460, and Serial No. 190,280 filed October 16, 1950, for Multiple Pile Staggered W-Weaving, now Patent No. 2,714,902, which prior applications are incorporated herein by reference.

The present application has been divided, and the subject matter relating to the fabric is embodied in application Serial No. 351,582, filed April 28, 1953, for Weaving Pile Carpet Having Textured Effect.

A purpose of the present invention is to interweave two or more pile warps, weaving preferably on the velvet system, although permissibly according to the wilton or brussels system, to raise the respective pile warps over different wires and to employ a succession of different wires producing a succession of different pile configurations varying in the difference between high and low pile, wavy and straight pile, cut and uncut pile, and the like, for raising a particular pile warp in a given pattern area. Thus one pile warp may be raised successively over high and low wires, cutting and non-cutting wires, wavy and straight wires and variations and combinations thereof while another pile warp is raised intermediately to form transverse pile rows of a different character.

A further purpose is to intermingle pile warps of different colors or characters and desirably to make up each pile warp of numerous ends, each having a different color or character or made up of groups of different colors or characters.

Further purposes appear in the specification and in the claim.

In the drawings I have chosen to illustrate several only of the numerous embodiments in which my invention may appear, selecting the forms shown from the standpoints of convenience in illustration, satisfactory operation and clear demonstration of the principles involved.

Figure 1 is a conventional warpwise diagram of a weave according to the invention with conventional showing of the wires.

Figures 2 to 36 inclusive are conventional cross sections showing portions of the wire sets which will be employed in different embodiments of the invention, these figures indicating the sequences of different wires of different characters. Where the wires are wavy wires it is assumed that the sections happen to be taken through the lowest points in the shed and show the highest points in the background.

In the drawings like numerals refer to like parts throughout.

In accordance with the present invention I increase the variants available to the designer in creating textured



effects on warp pile fabrics, especially carpet and rugs, by permitting variations in the pile configurations of one pile warp which is interwoven with another pile warp, creating pile warps of different character. Thus, in accordance with one aspect of the invention, one pile warp creates successive different characters of pile, for example high and low pile, wavy and straight pile, cut and uncut pile or combinations thereof.

I also find that novel effects can be obtained by securing contrasts between the rows of pile projections of the different pile warps or permissibly of the same pile warp interwoven with a different pile warp by weaving both of the contrasting rows of pile projections over wavy wires, but distinguishing the effects from the wavy pile projections in the different rows either of the different warps or of the same warp interwoven with the different warps. The contrast may, according to one plan, be obtained by using highest pile projections of different heights in the different rows of wavy pile projections. The lowest pile projections in the different rows will in one embodiment be of the same heights. In another embodiment the lowest pile projections are of different heights. In some cases the rows having the higher highest pile projections will have the higher lowest pile projections while in other embodiments the rows having the higher highest pile projections will have the lower lowest pile projections.

This feature can also be employed by making the highest pile projections in the different rows of the same height and accomplishing contrast by varying the heights of the lowest pile projections in the different rows.

Contrasting effects will also be obtained in some instances by using combinations of straight and wavy wires, suitably with differences in heights and cutting and non-cutting character.

Special wire sets will be employed to achieve these results and due allowance will be made for the extent of pulldown of adjacent pile projections in withdrawing the wavy wires.

The invention will find application in many cases to a plurality of pile warps which are interwoven and each of which has warpwise pile warp ends of different characters, suitably differing in color, twist, weight, density or construction, either as to individual ends or as to bands of ends of the same character, arranged side by side.

The effects obtained by texturing may also be accented by shearing only the highest of the wavy pile projections and leaving the other pile projections unsheared.

While the invention may be employed in wilton and brussels carpet weaving it is believed to find its greatest application in velvet carpet, by which I mean to include tapestry carpet. In other words, in the preferred embodiment all of the ends of a particular pile warp will be raised over a particular wire to form one transverse row and all of the ends of another pile warp will be raised over another wire to form the next transverse row. The relation of the wires which form the pile for the different warps in a given pattern area is important in the invention.

While it is permissible to use 3, 4, 5 or more pile warps, the principle of the invention will readily be understood by considering weaves employing two pile warps.

Where wavy wires are used, the shape may be a sine or other wave, but it will preferably be a series of plateaus or flats of different heights, suitably three or more heights, with intermediate merging surfaces, suitably at gradual enough angles so that those facing toward the head of the wire can be pulled without tearing the loops (the angle should preferably be of ten to fifteen degrees to the major axis of the wire).

Figure 1 shows a weave according to the invention. While this employs a single binder warp, it will be under-

stood that two binder warps can be used if desired. The weave illustrates two pile warps **75** and **76** alternately raised over wires, and serving to illustrate that any desired plurality of pile warps can be used. Binder warp **84** is woven in opposition to stuffer warp **91**.

In the first step illustrated pile warp **75** is fully raised, pile warp **76** and stuffer warp **91** are raised halfway, forming an upper shed and binder warp **84** is lowered forming a lower shed. A wire **96** is inserted in the upper shed and a shot of weft **97** is inserted in the lower shed.

In the next step, binder warp **84** is raised halfway and all other warps are lowered, forming a lower shed. A shot of weft **97** is inserted in the lower shed.

In the next step, pile warp **76** is fully raised, pile warp **75** is raised halfway and stuffer warp **91** is raised halfway, forming an upper shed, and binder warp **84** is lowered forming a lower shed. A wire **98** is inserted in the upper shed and a shot of weft **97** is inserted in the lower shed.

The next step is a repetition of the second step. The weave then repeats.

It is important to note that wire **98** is different from wire **96**, as later explained, so that pile projections of different characters are formed over the two wires of the wire set.

Figure 1 shows a velvet carpet using a staggered W-weave, as illustrative of the invention.

In Figures 2 to 36, in order to simplify the showing, I illustrate merely the diagrammatic form of the wires and the pile projections omitting the backing of the fabric. These are warpwise sections of the pile portions of the fabrics, the backings being as shown in Figure 1.

In some cases it is preferable to use wavy wires applied to both pile warps, thus producing high and low loops in the same transverse row and preferably on both warps in a given pattern area. Novel effects may thus be produced by relations of the heights of the high portions of the wires and the heights of the low portions of the wires on the alternating wires, thus varying the relations of the highest and lowest pile projections to one another in the particular row and in reference to the alternate row. Where the adjoining wires on the same pile warp are wavy wires, the wavy wires will desirably be non-cutting.

Figure 2 shows wavy wire portions **103** on the tops of the wires **96** in the shed over which pile loops **100** are formed by pile warp **75** in a given pattern area and also on wires **98** over which pile loops **101** are formed by pile warp **76** in the same pattern area.

In wires **96** and **98** of Figure 2 the highest wavy portions within the shed are of different heights while the lowest wavy portions are of the same height. In the particular pattern area pile warp **75** is raising loops over wires having the lower highest portions and the same height of lowest portions, while pile warp **76** is raising loops over wires having the higher highest pile portions and the same height of lowest portions on the transverse wires.

In some cases as shown in Figure 3, the wavy wires **96** having the lower highest portions, over which in the particular pattern area pile warp **75** is raised to create loops **100**, have the lower lowest portions, while pile wires **98** over which pile warp **76** is raised to form pile loops **101** in the particular pattern area have higher highest portions and lowest portions which are higher than the lowest portions of pile wires **96** and will in some cases be higher than the highest portions of pile wires **96**.

In some cases both the heights of the lowest and highest portions of the wires raising one pile warp will be between the heights of the highest and lowest portions of the wires raising the other pile warp. Thus in Figure 4 the heights of the highest and lowest portions within the shed of pile wires **96** over which pile warp **75** is raised in the pattern area to form pile loops **100** lie between the heights of the lowest and highest portions within the shed of pile wires **98**, over which pile warp **76** is raised to form pile loops **101**.

In some cases the heights of the respective highest portions of the wavy wires are the same and the heights of the lowest portions within the shed are different as shown in Figure 5. As here observed, wires **96**, over which pile warp **75** is raised to form pile loops and wires **98** over which pile warp **76** is raised to form pile loops **101** have highest portions of the same height, but the lowest portions as shown are of different heights, being higher on wires **98** than on wires **96**.

In some cases the heights of both highest and lowest portions on wires **96** and **98** are the same as shown in Figure 6.

In some cases one pile warp will be raised over straight non-cutting wires and the other pile warp will be raised over wavy non-cutting wires, as shown in Figures 7 to 10, inclusive.

In Figure 7, wavy non-cutting wires **96** which form wavy pile loops **100** by raising pile warps **75** in the particular pattern area have highest portions of the same height as straight non-cutting wires **98** over which pile warp **76** is raised to form pile loops **101**. As shown in Figure 8, in some cases the heights of the straight wires are between the heights of the highest and lowest portions in the shed of the wavy wires. Here wavy wires **96** raise pile warp **75** to form pile loops **100** and straight wires **98** in the same pattern area raise pile warp **76** to form pile loops **101**, the height of the straight wires **98** being intermediate between the heights of the highest and lowest portions of wavy non-cutting wires **96**.

In some cases, the straight wires are lower than the lowest portions in the shed on the wavy wires as shown in Figure 9 where wavy wires **96** raising pile warp **75** to form pile loops **100** have highest and lowest portions within the shed which are higher than the heights of straight non-cutting wires **98** which raise pile warp **76** to form pile loops **101**.

Likewise in some cases the heights of the high and low portions of wavy pile wires **96** which raise pile warp **75** to form pile loops **100** in the particular pattern area are both lower than the heights of straight non-cutting wires **98** which raise pile warp **76** to form pile loops **101**, as shown in Figure 10.

In some cases the straight wires interposed among the wavy wires may be cutting wires as shown in Figures 11 to 14, inclusive. In Figure 11, the wires **96** which raise pile warp **75** to form pile loops **100** are wavy wires whose highest portions within the shed are of the same height as straight cutting wires **98** having cutters **102** at the far end which raise pile warp **76** to form pile tufts **101**. In Figure 12, the heights of the straight wires **98** are intermediate between the heights of the lowest and highest portions in the shed of the wavy non-cutting wires **96**. In Figure 13, the heights of the highest and lowest portions of the wavy non-cutting wires **96** are greater than the heights of the straight cutting wires **98**.

In Figure 14 the straight cutting wires **98** are higher than both the highest and lowest portions of the wavy non-cutting wires **96**.

In accordance with the invention, the principles which have just been outlined will desirably be applied to vary the sequence of wires over which a particular pile warp is raised in a particular pattern area, and this will preferably be done to the wires over which both pile warps are raised in that pattern area. To simplify the showing, I illustrate in Figures 15 to 35 inclusive, wires **96** shown generally in dot-and-dash lines to indicate that they are wires of any of the characters of Figures 2 to 35 inclusive, alternating with wires **98** which show the special features of the invention and are in some cases designated **98** and **98'** to indicate that variations exist. In describing these

figures, pile projections **100** of pile warp **75** raised over wires **96** are not being separately described, it being understood that these will be of any of the characters herein referred to and conforming to the wires over which pile warp **75** is raised.

In Figure 15, pile warp **76** is raised to form pile loops **101** over non-cutting wavy wires **98** and **98'** alternating with the wires **96**, the wavy wires **98** and **98'** having highest portions within the shed which are of different heights (higher on wires **98'**) and lowest portions within the shed which are of the same height.

As shown in Figure 16, wavy non-cutting wires **98** have highest portions within the shed which are intermediate in height between the highest and lowest portions within the shed of wavy non-cutting wires **98'**, while the lowest portions of wires **98** are lower than the lowest portions of wires **98'**.

Figure 17 is the same except that wavy non-cutting wires **98** have highest and lowest portions within the shed which are intermediate between the heights of the highest and lowest portions within the shed of wavy non-cutting wires **98'**.

In Figure 18, wavy non-cutting wires **98** and **98'** over which pile warp **76** is raised to form pile loops **101** have highest portions within the shed of the same height but the lowest portions of wires **98'** are higher than those on wires **98**.

As shown in Figure 19, wires **98** are low straight round or non-cutting wires and wires **98'** over which pile warp **76** is also raised are high straight round or non-cutting wires.

Similarly as shown in Figure 20, wires **98** over which pile warp **76** is raised to form pile tufts **101** are in this case low straight wires having cutters at the far ends (opposite the head) while pile warps **98'** are high straight wires having cutters **102** at the ends remote from the heads. Either the low or the high wire may be non-cutting as shown in Figures 21 and 22. In Figure 21 wires **98** are low straight non-cutting wires and wires **98'** are high straight wires having cutters at the ends remote from the heads. In Figure 22 the low straight cutting wires are **98** and the high straight non-cutting wires are **98'**.

The wires **98** and **98'** may be straight cutting and non-cutting wires of the same heights as shown in Figure 23.

Where desired, the wires **98** will include, alternating with straight wires, any of the characters of wavy wires described. In Figure 24, wires **98** are low straight round or non-cutting wires raising pile warp **76**, wires **98'** are non-cutting wavy wires of any suitable character which alternate throughout the wires raising pile warp **76** in any pattern area and wires **98²** are high straight round or non-cutting wires. Thus pile warp **76** is raised first over a low straight round wire, then over a wavy wire bearing any of the relations herein specified to the straight wires, then over a high straight round wire bearing any of the relations herein specified to the wavy wire and then again over a wavy wire of any of the types herein referred to.

In the case as shown in Figure 25, the wavy wire **98'** will where desired be provided with a cutter at the far end and the wires **98** between each pair of wavy wires will suitably have the same height, which is the same as the lowest portions on the wavy wires. In Figure 26, the straight non-cutting wires over which pile warp **76** is raised in a particular pattern area suitably consists of a low straight non-cutting wire **98** and a high straight non-cutting wire **98²** with a wavy wire **98'** having a cutter at the far end interposed between the two straight wires **98** and **98²**. The low straight wire has the same height as the lowest portions on the wavy wire.

In some cases the wires over which pile warp **76** is raised will all be wavy wires bearing a special relation between certain wires. As shown in Figures 27 to 31, wires **96** over which pile warp **75** is raised constitute any of the wire combinations herein described. The wires over which pile warp **76** is raised to form pile loops **101** in the particular pattern area comprise wires **98**, wires **98'** and wires **98²**, there being one wire **98'** between the wires **98** and **98²**. All of these wires are wavy, non-cutting wires. Wires **98'** are wavy wires having any of the relations of heights of highest portions and lowest portions to wires **98** and **98²** herein referred to, but wires **98** and **98²** bear a special relation in Figures 27 to 31.



In Figure 27 the highest portions within the shed of non-cutting wavy wires **98** and **98²** have different heights whereas the lowest portions have the same height. In Figure 28 the highest portions within the shed of wavy non-cutting wires **98** have a height between that of the highest and lowest portions within the shed of wavy non-cutting pile wires **98²**, while the lowest portions within the shed of pile wires **98** have a height lower than the lowest portions within the shed of wavy pile wires **98²**.

In Figure 29 pile wires **98** have highest and lowest portions within the shed whose height is intermediate between the heights of the highest and lowest portions within the shed of pile wires **98²**.

Figure 30 shows pile wires **98** and **98²** whose highest portions within the shed are of the same height and in which the pile wires **98²** have higher lowest portions than the pile wires **98**.

In Figure 31 wavy pile wires **98** and **98²** have the same heights for both the highest and the lowest portions within the shed.

It will be evident that in some cases straight and wavy wires will desirably alternate as applied to the same warp as shown in Figures 32 to 35. In Figure 32 pile warp **76** is raised alternately over straight non-cutting pile wire **98** and wavy non-cutting pile wire **98'** having the highest portions within the shed of the same height as straight wire **98**.

In Figure 33 pile warp **76** is raised alternately over straight non-cutting pile wire **98** and wavy non-cutting pile wire **98'** having its highest portions within the shed higher than straight wire **98** and its lowest portions within the shed lower than straight wire **98**.

In Figure 34 wavy non-cutting pile wires **98'** alternate in raising pile warp **76** with straight non-cutting pile wires **98**, straight wires **98** being lower than the lowest portions within the shed of wavy wires **98'**. On the other hand in Figure 35 straight non-cutting pile wires **98** are higher than the highest portions within the shed of wavy pile wire **98'**.

Figure 36 shows a specific example in which pile warp **76** is always raised over wavy pile wire **98**, while pile warp **75** is raised alternately over low straight cutting pile wire **96** and high straight non-cutting pile wire **96'** which is suitably of the same height as the highest portions on the wavy wires **98**, while pile wire **96** is suitably of a height intermediate between the highest and lowest portions on the wavy wires.

The wavy wires may have any of the characters well known in the art as suggested by Rodier French Patent 451,065 or Jackson U. S. Patent No. 2,516,465. The high and low points on successive wavy wires will, of course, be displaced at different positions laterally to achieve a pattern effect as shown in Deperchin Belgian Patent 250,673.

Where two wavy wires are to be used in association, the heights of the high and low portions of the pile loops produced in accordance with the invention may bear any of the wide variety of relationships to one another as shown in the table.

| Wire A | | | Wire B | Example | | | | Pile | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Wire A | | Wire B | | Pile formed over wire A | | Pile formed over wire B | |
| Height of high portion compared to high portion of wire B | Height of low portion compared to low portion of wire B | Difference between high and low portions on wire A as compared to wire B | Height of high portion compared to low portion of wire A | Height of high portion | Height of low portion | Height of high portion | Height of low portion | Height of high portion | Height of low portion | Height of high portion | Height of low portion |
| same | same | same | higher | 225 | 150 | 225 | 150 | 225 | 188 | 225 | 188 |
| higher | higher | do | do | 225 | 175 | 200 | 150 | 225 | 200 | 200 | 175 |
| Do | do | more | do | 225 | 150 | 160 | 125 | 225 | 208 | 160 | 123 |
| Do | do | less | do | 225 | 190 | 200 | 150 | 225 | 200 | 200 | 183 |
| Do | do | do | do | 225 | 175 | 200 | 125 | 225 | 188 | 200 | 175 |
| Do | do | do | do | 225 | 190 | 200 | 160 | 225 | 205 | 200 | 183 |
| Do | lower | more | do | 225 | 130 | 200 | 150 | 225 | 200 | 200 | 153 |
| Do | do | do | do | 225 | 100 | 175 | 150 | 225 | 213 | 175 | 113 |
| Do | higher | do | lower | 225 | 150 | 125 | 100 | 225 | 213 | 125 | 88 |
| Do | do | less | do | 225 | 200 | 150 | 100 | 225 | 200 | 150 | 138 |
| Do | same | more | higher | 225 | 175 | 200 | 175 | 225 | 213 | 200 | 175 |
| Do | higher | less | do | 225 | 200 | 210 | 100 | 225 | 170 | 210 | 198 |
| Do | do | do | do | 225 | 185 | 205 | 125 | 225 | 185 | 205 | 185 |
| same | do | do | do | 225 | 175 | 225 | 150 | 225 | 188 | 225 | 200 |

There the left hand three columns describe the relative heights of the high portion of pile wire A compared to the high portion of pile wire B, of the low portion of pile wire A compared to the low portion of pile wire B, and of the difference between the high and low portions of pile wire A compared to pile wire B, and the fourth column gives the height of the high portion of pile wire B compared to the low portion of pile wire A. The next four columns give the actual heights of pile wire A and pile wire B in thousandths of an inch and the last four columns give the heights of the final pile projections in two adjoining rows produced by the wires of the particular examples. Thus it will be seen that for any particular height of the high pile projections in the row having the higher highest pile projection, the highest pile projections in the next row will be the same height or lower. The lowest pile projections in the first row will be lower than, the same height as, or higher than the highest pile projections in the next row and may be lower than, the same height as, or higher than the lowest pile projections in the next row.

Thus the highest pile projections in the two rows may be of the same height or different heights and the lowest pile projections in the row having the higher highest pile projections may be lower, the same height or higher than the highest pile projections and also the lowest pile projections in the row having the lower highest pile projections. This combination of heights of wavy pile projections in adjacent rows gives many novel effects. Likewise with the highest pile projections of the same height, novel effects may be obtained by using lowest pile projections of different heights in the different rows.

These features may be applied in adjacent rows of wavy pile projections of different warps or in adjacent rows of pile projections of the same warp alternating with pile projections of a different warp as already explained.

It will be understood that the principles of the invention may be applied with pile warps which are of the same color throughout an individual pile warp, or with pile warps in which the individual ends or groups of ends are of different colors. Likewise the principles of the invention may be applied with pile warps whose ends are of different characters other than color, such as different twists, different materials, different weights, or different constructions.

It will be evident that for best results the slope of the inclined portion of the wavy wire on the side toward the head should not exceed approximately 15° to the major axis of the wire. The details of this form no part of the present invention and are disclosed in my copending application Serial No. 191,830.

The principles of the invention may be applied with variations in thread-in in accordance with the disclosure of my copending application Serial No. 190,280.

It will be understood that in designing a pattern, where the pile warps are to be taken from beams, the pattern may where desired be compensating, that is, the total height of pile on any one pile warp end in the pile repeat should equal the total height of the pile on any other pile warp end and at any other dent. Of course it will be understood that in case the pile warp ends are distributed from spools or otherwise individually fed, it is not desirable to employ a compensating pattern.

By the invention it is possible to secure a wide variety of interesting and attractive effects and to design carpets and other fabrics to blend effectively with other furniture and decorating plans.

In the invention a standard carpet loom such as the Crompton and Knowles or Dobcross will desirably be used, employing a standard wire motion which need only differ in the character of the wires making up the wire set.

It will be evident that in accordance with one aspect of the invention the sequence of wires in the wire set will be a non-cutting wavy wire, a relatively high non-cutting straight wire, a non-cutting wavy wire and a relatively low non-cutting straight wire.

It will be also evident that according to another aspect of the invention the sequence of wires in the wire set will be a non-cutting wavy wire, a relatively low cutting straight wire, a non-cutting wavy wire and a relatively high non-cutting straight wire.

It will further be evident that where it is desired to employ the same character of wire to raise the same pile warp throughout the fabric, I will preferably use a wire repeat throughout the wire set which is an odd number where the number of different pile warps is odd and an even number where the number of pile warps is even, whereby wire of a given kind will operate on the same pile warp throughout.

In view of my invention and disclosure variations and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of my invention without copying the process, structure and fabric shown, and I, therefore, claim all such insofar as they fall within the reasonable spirit and scope of my claim.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

The process of weaving a pile fabric to produce colored effects without using a jacquard, using a pile warp set A of one color, a pile warp set B of another color, stuffer warp ends, binder warp ends and wefts, which comprises fully raising all of the ends of pile warp set A over a first pile wire of a first wire set, raising all of the ends of pile warp set B half way, raising the stuffer warp ends half way and lowering the binder warp ends, thus forming an upper shed and a lower shed, inserting a wire of the first pile wire set in the upper shed, inserting a shot of weft in the lower shed, next raising the binder warp ends half way and lowering all other ends, thus

forming a lower shed, inserting a shot of weft in the lower shed, next fully raising all of the ends of pile warp set B, raising all of the ends of pile warp set A half way, raising the stuffer warp ends half way and lowering the binder warp ends, thus forming an upper shed and a lower shed, inserting a wire of the second pile wire set in the upper shed, inserting a shot of weft in the lower shed, next raising the binder warp ends half way, lowering all other ends, thus forming a lower shed, inserting a shot of weft in the lower shed, next fully raising all of the ends of pile warp set A, raising all of the ends of pile warp set B half way, raising the stuffer warp ends half way, lowering the binder warp ends, thus forming an upper shed and a lower shed, inserting a wire of the first pile wire set in the upper shed, inserting a shot of weft in the lower shed, next raising the binder warp ends half way, lowering all other ends, thus forming a lower shed, inserting a shot of weft in the lower shed, next fully raising all ends of pile warp set B, raising all ends of pile warp set A half way, raising stuffer warp ends half way, lowering the binder warp ends, thus forming an upper shed and a lower shed, inserting a wire of the second pile wire set in the upper shed, inserting a shot of weft in the lower shed, next raising the binder warp ends half way, lowering all other ends, thus forming a



lower shed, inserting a shot of weft in the lower shed, and successively changing the character of the wires of the second pile wire set to create pattern areas in which pile warp A is raised to the higher level in the face of the pile, and areas in which pile warp B is raised to the higher level in the face of the pile, the particular character of wire raising pile warp B being different in different pattern areas.

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