Nov. 30, 1965 J. T. SHORT ETAL 3,220,371

METHOD OF MAKING TEXTILES

Original Filed Aug. 17, 1962 3 Sheets-Sheet 1

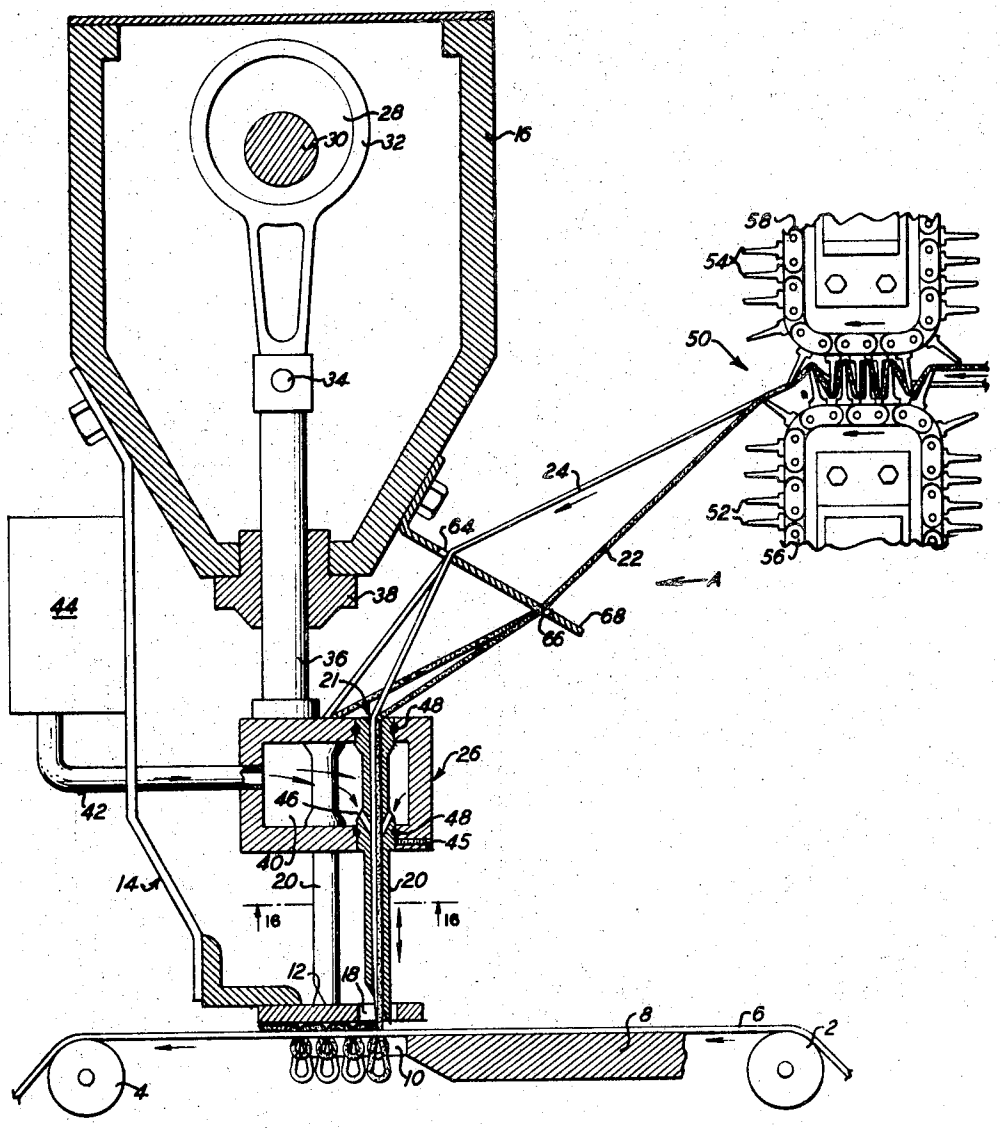

Fig. 1

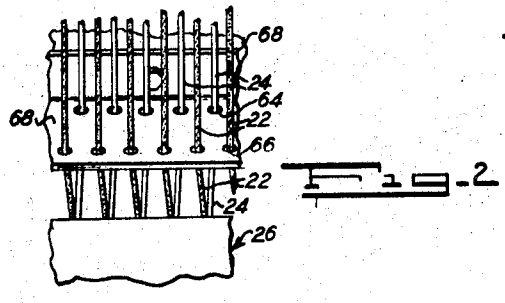

Fig. 2

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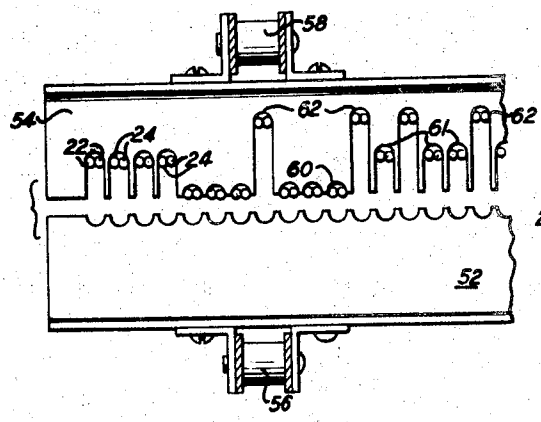


Fig. 4

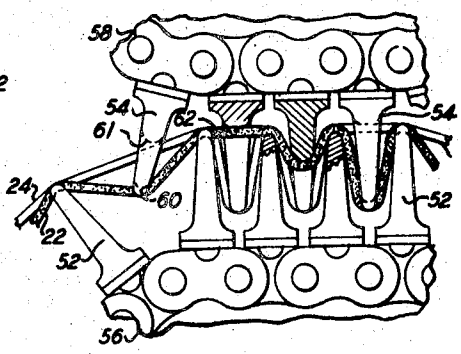


Fig. 5

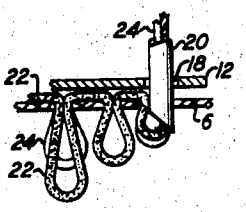


Fig. 6

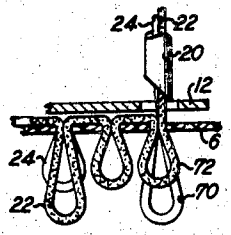


Fig. 7

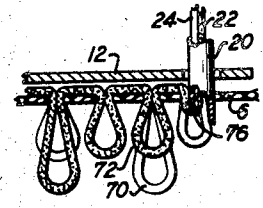


Fig. 8

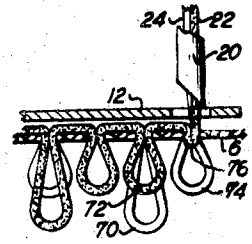


Fig. 9

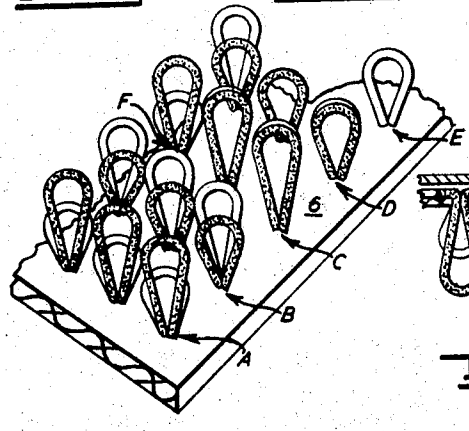


Fig. 10

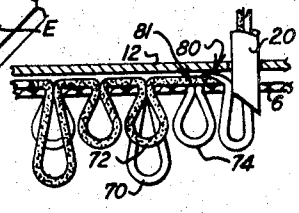
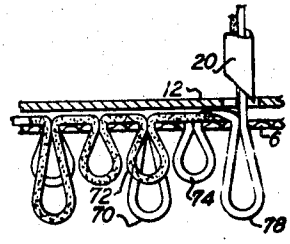


Fig. 11



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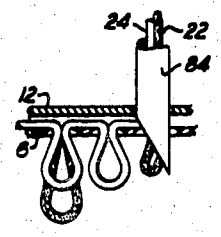

Fig. 13

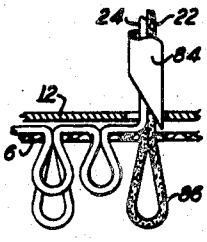

Fig. 14

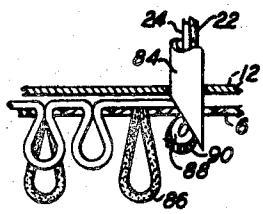

Fig. 15

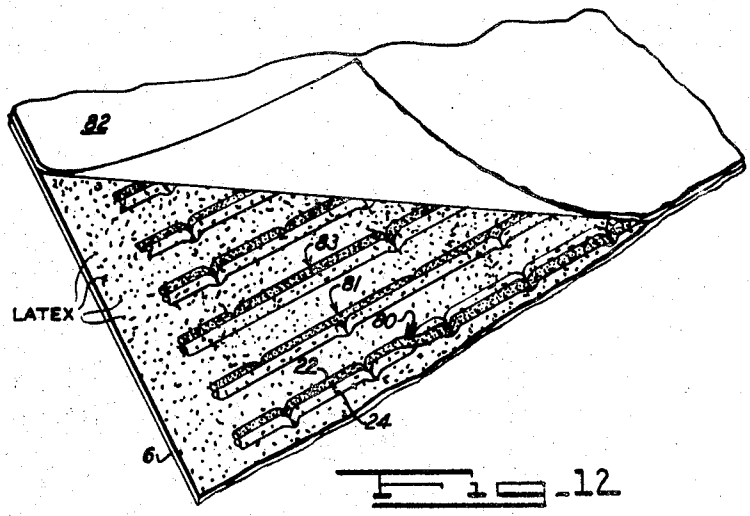

Fig. 12

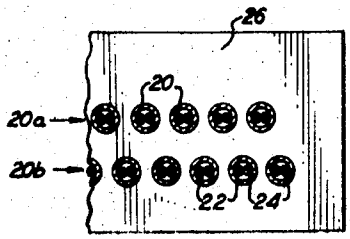

Fig. 16

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United States Patent Office

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3,220,371

METHOD OF MAKING TEXTILES

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Original application Aug. 17, 1962, Ser. No. 217,712. Divided and this application May 31, 1963, Ser. No. 284,396

13 Claims. (Cl. 112—266)

This application is a division of our co-pending application, Serial No. 217,712 filed on August 17, 1962 which is a continuation-in-part of the sole application of Joe T. Short, Serial No. 192,242, filed May 3, 1962, now Patent No. 3,089,442.

This invention relates to tufted pile fabrics and to methods of making such fabrics. More particularly, the invention is concerned with the production of novel multicolor pattern effects in tufted fabrics containing loop pile.

In recent years extensive use has been made of tufting techniques for the production of pile fabrics such as floor covering materials. In a typical process of the type used commercially prior to the present invention, the formation of pile loops or tufts is accomplished through the interaction of needle and looper elements disposed on opposite sides of a backing. Both the needles and the loopers are arranged in long rows extending transversely of the backing and the backing is advanced longitudinally. Each of the needles has an eye in its free end through which a pile yarn is threaded. All of the needles move together toward and away from the backing. As a needle moves toward the backing it carries with it a pile yarn and projects or inserts a loop of this pile yarn through the backing, and then the looper element moves into the pile loop to hold the loop as the needle is withdrawn from the backing.

Various attempts were made using this general process to produce multicolor effects. However, the success achieved was limited, particularly in loop pile fabrics.

It is an object of this invention to produce a tufted pile fabric having a longitudinal row of pile tufts in which different pile yarns predominate at the face of the fabric at different points along the row. By using differently colored pile yarns in such a row and selectively controlling the heights of the loops formed from these yarns, one can obtain novel pattern effects.

In a preferred embodiment of the invention, a backing is moved along a path and controlled lengths of a plurality of pile yarns having different appearance characteristics are released to a hollow needle which is reciprocated back and forth to insert the tip thereof through a backing. Air is moved through the needle in a stream that tends to project the pile yarns from the tip of the needle as these yarns are supplied to the needle. At each point where the tip of the needle enters the backing, it is possible to form a pile loop of any desired height from any one or all of the pile yarns passing through that needle. If it is desired that a given pile yarn extend along the backing without forming a pile loop at a given penetration point of the needle, the amount of that yarn made available to the needle can be made to correspond to the length of the backstitch. During the same time period, a greater amount of another yarn may be supplied to the needle to form a pile loop extending through the backing. A plurality of pile loops of the same or different heights also may extend through the backing at any given point of penetration of the needle. The selectivity necessary for producing figured patterns and the like may be obtained by selectively controlling the relative amount of different yarns that are supplied to a given needle during the loop-forming cycles.

A more complete understanding of the invention will be gained from consideration of the accompanying drawings, in which:

FIGURE 1 is a somewhat diagrammatic cross-sectional view of a multiple needle tufting machine for carrying out a method of the invention;

FIGURE 2 is a diagrammatic view illustrating generally the paths of the pile yarns supplied to the needles of the tufting machine, the view being taken generally in the direction of the arrow A in FIGURE 1;

FIGURE 3 is an enlarged view, partly in elevation and partly in cross section, of a portion of the pile yarn supplying mechanism in the machine of FIGURE 1;

FIGURE 4 is an exploded view illustrating in elevation portions of a pair of intermeshing pattern bars of the type used in the yarn supplying mechanism of FIGURE 3;

FIGURES 5, 6, 7, 8, 9 and 10 are diagrammatic views illustrating pile loop-forming operations carried out in accordance with the invention;

FIGURE 11 is a diagrammatic perspective view of a face portion of a fabric embodying the invention;

FIGURE 12 is a diagrammatic perspective view of the bottom of a floor covering embodying the invention, with a portion of a cover fabric being lifted to reveal the disposition of the pile yarns along the backing;

FIGURES 13, 14 and 15 are diagrammatic views illustrating loop forming operations in accordance with the invention performed by passing the needle tip a shorter distance through the backing than is illustrated in FIGURES 5, 7 and 9; and

FIGURE 16 is a partial cross-sectional view taken along the line 16—16 in FIGURE 1.

The tufting machine of FIGURE 1 is provided with suitable fabric feeding and guiding means, including rollers 2 and 4, for advancing a backing 6 across the bed 8 of the machine in a conventional manner. The backing 6 ordinarily is a woven fabric of jute or cotton, but any suitable material may be used.

As the backing 6 is advanced, it moves through a tufting zone where pile loops are inserted therethrough. In this zone, the backing sheet 6 is supported from below by a plurality of tine or finger elements 10 secured to the bed 8 and it is held against substantial upward movement by a presser member 12 carried by bracket means 14 secured to an upper housing unit 16 of the machine. The presser member 12 is provided with openings 18 in vertical alignment with the spaces between adjacent ones of the tines 10 and also in vertical alignment with the needles 20 of the machine.

Each of the needles 20 is provided with an axial passageway 21 of sufficient size to accommodate a plurality of pile yarns such as those designated by the numerals 22 and 24 in the drawings. The needles 20 are mounted on a needle carrier 26 which is moved down and up cyclically to insert the lower tip end portions of the needles 20 into the backing 6 and to withdraw the needes 20 from the backing 6. As illustrated, the motion of the needle carrier 26 is a simple reciprocating motion. With this type of needle motion, it is desirable that the advance of the backing 6 be intermittent so that it need not move during the portion of the machine cycle when the tips of the needles 20 are inserted into the backing. It is preferred that the needles 20 be disposed in a plurality of rows extending across the path of the backing 6 and that the needles 20 of one row be staggered with respect to the needles 20 of the other rows. Two transverse rows 20*a* and 20*b* of the needles 20 are shown in FIGURE 16.

The drive for the needle carrier 26 may include an eccentric 28 rotatable with a driven shaft 30 within a bearing member 32. The bearing member 32 is pivotally connected at 34 to the upper end of a push rod 36 mounted for vertical sliding movement in a bearing member 38

carried by the upper housing unit **16** of the machine. The lower end of the push rod **36** is connected rigidly to the needle carrier **26** so that the needle carrier **26** will move up and down as the eccentric **28** rotates about the axis of the driven shaft **30**.

The pile yarns **22** and **24** are fed through the axial passageways **21** in the needles **20** by fluid streams. As illustrated, the needle carrier **26** includes a large air chamber **40** to which air under pressure may be supplied through one or more flexible tubes **42** leading from a suitable pressurized air source **44** such as the discharge chamber of a compressor. Each of the needles **20** is mounted on the needle carrier **26** by set screws **45** or other suitable means, and each passes through the air chamber **40**. The wall of each needle has orifice means **46** in communication with the air chamber **40**. Air is prevented from escaping around the exterior wall of each needle by suitable O-rings **48** or other sealing means.

The orifices **46** are inclined downwardly and inwardly to cause air from the chamber **40** to flow into the axial passageway **21** of the needle in the form of a high velocity downwardly directed stream. It is desirable that the orifice means **46** be such as to reduce the pressure of the air below atmospheric pressure at the outlet of the orifice means. With this arrangement an additional draft of air downwardly through the open upper end of the axial passageway **21** in the needle **20** is induced, and threading of the needle may be accomplished by delivering a yarn end to the upper end of the passageway **21**.

The high velocity air stream flowing downwardly through a needle **20** exerts drag forces on the pile yarns **22** and **24** tending to project these yarns from the lower end of the needle. The air stream will pull through a needle **20** whatever length of yarn is released to the needle. It is important to note also that the forces are applied to the yarns in such a way that the individual yarns may be fed at different rates. For example, during a given time interval there may be fed through the axial passageway **21** of a given needle **20** a small length of pile yarn **22** and a greater length of another pile yarn **24**.

When a plurality of pile yarns pass together through a single yarn passageway **21** in a needle **20** their surfaces contact, and under some conditions it would be possible for one yarn to interfere with the feeding of another. For this reason it is desirable to use synthetic filament pile yarns, such as multifilament nylon yarns, in practicing the invention. Such yarns are relatively smooth, and since they are held under tension by the air stream flowing downwardly through the passageway **21**, there is no danger of one interfering with the delivery of the other. When other types of yarns are used, it may be advisable to provide additional assurance that interference will not occur. For example, the yarns may be given a temporary treatment, such as a coating of starch, to improve their surface characteristics during the tufting process, or the passageway through the needle may be subdivided or partitioned so as to minimize contact between the yarns.

The supplying of pile yarns to the needles **20** is accomplished in the machine illustrated in the drawings by a feed mechanism **50** of the notched bar type. However, other suitable feed mechanisms capable of selectively varying the rate of delivery of individual ones or groups of the pile yarns may be used if desired. The mechanism **50** is well known, and it need not be described in detail here. It will suffice to point out that the pile yarns from some suitable source such as a creel are engaged by intermeshing pattern bars **52** and **54** mounted on endless carriers or chains **56** and **58** that are guided through a yarn feeding zone. As shown in FIGURES 3 and 4, the pattern bars **54** on the upper chain assembly **58** have shallow notches **60**, intermediate depth notches **61**, and deep notches **62** in their edges for receiving pairs of the pile yarns. Hence, in the yarn feeding zone where the pattern bars **52** and **54** are disposed in intermeshing relationship, the pile yarns are carried along undulating paths of different lengths. When the endless chains **56** and **58** move a pair of pattern bars **52** and **54** out of the zone of intermeshing, the amount of a given yarn released depends upon whether that yarn passed through a shallow notch **60**, an intermediate depth notch **61**, or a deep notch **62** in that bar **54**. Less yarn is released from a deep notch **62** than from a shallow notch **60**.

In order that the width of the feed mechanism **50** may be minimized, it is preferred that a plurality of pile yarns be disposed in each of the notches **60**, **61** and **62**. As shown, pairs of the yarns **22** of one color pass through alternate ones of the notches and pairs of the yarns **24** of another color pass through intermediate ones of the notches. This arrangement is not essential however, and other feed systems may be used.

From the feed mechanism **50** the yarns pass to the needles **20** of the tufting machine through guides such as openings **64** and **66** in a plate member **68** attached to the housing unit **16**. In the illustrated machine there are two of the guide openings **64** and **66** for each of the needles **20**. However, if more than two yarns are to be supplied to each of the needles **20**, the guide means would include more guide openings per needle.

Where multicolor effects are to be produced, the pile yarns **22** and **24** passing to a given needle **20** have different appearance characteristics. They may differ in color or texture or both. This is suggested in the drawings by the stippling applied to the yarn **22**.

FIGURES 5 through 10 illustrate a sequence of three needle penetrations during which three distinctly different appearance effects are produced on the surface of the fabric by a single needle **20**. Only two pile yarns are shown in their views, but it will be understood that a greater number of yarns may be supplied to a single needle if desired.

FIGURES 5 and 6 illustrate the needle **20** in a position it assumes after it has been inserted through the backing **6** and in a position it assumes after being withdrawn from the backing **6** in a cycle during which a long loop **70** from the yarn **24** and a short loop **72** from the yarn **22** project together through a single opening in the backing **6**. The different loop lengths are achieved by feeding through the yarn supply mechanism during that cycle an amount of the yarn **24** greater than the amount of the yarn **22**. Referring again to FIGURES 3 and 4 and visualizing the passage of a single pair of the bars **52** and **54** out of the yarn feeding zone, it will be understood that the different loop lengths suggested in FIGURE 6 would result if the yarn **24** were in a shallow notch **60** and the yarn **22** were in an intermediate depth notch **61** in the bar **54**.

FIGURES 7 and 8 are similar to FIGURES 5 and 6 with respect to the illustrated positions of the needle **20**. However, these views illustrate the conditions that exist during the next cycle. During this cycle, the amount of the yarn **24** that is supplied to the needle **20** is sufficient to permit the formation of a short loop **74**. The amount of the yarn **22** that is relased to the needle **20** is sufficient to permit this yarn to extend around the edge of the opening in the tip of the needle. Such a short yarn feed takes place for example when a yarn is released from a deep notch **62** in a pattern bar **54**. When the needle tip is projected far enough to expose the entire opening beneath the backing **6** as illustrated in FIGURES 5, 7 and 9, a very short loop **76** may extend temporarily from the face of the backing **6**. However, this loop may be withdrawn from the backing during the advance of the backing **6** or during the next downstroke of the needle **20** by limiting the additional amount of yarn **22** released to the needle during this period to a value less than that required for the yarn **22** to extend freely along the backing and around the edge of the

opening in the needle tip. This condition is suggested in FIGURE 9, where the seed loop **76** has been completely withdrawn so that the pile yarn **22** extends along the backing from the point at which loops **70** and **72** were formed, over the point where loop **74** was formed and on to the point where the needle next penetrates the backing **6**.

FIGURES 9 and 10 illustrates a third cycle, in which equal amounts of the yarns **22** and **24** are released to the needle **20** to form long loops from both of the pile yarns. Only one such loop **78** is visible in these views because the other is directly behind it.

It will be observed also in FIGURES 9 and 10 that the two yarns **22** and **24** have shifted laterally with respect to each other at **80**. Since the pile yarns **22** and **24** pass freely through the central passageway **21** in the needle **20**, they may be shifted relative to each other without difficulty. At one point in a longitudinal row of loops the pile yarn **22** may be disposed to the left of the pile yarn **24** and at another point the pile yarn **22** may be disposed to the right of the pile yarn **24**. The crossing of the yarns may be allowed to occur in a random manner or it may be controlled where desired.

Various pattern effects obtainable in accordance with the invention are incorporated in the fabric shown diagrammatically in FIGURE 11 where the points A, B, C, D and E represent successive penetrations of a needle that forms a longitudinal row of loops. Let it be assumed that the stippled yarns in this view are brown in color and that the other yarns are white. The two loops that protrude through the same opening in the backing **6** at the point A are of unequal heights with the brown loop being longer than the white loop. At this point the color of the brown yarn will predominate on the face of the fabric, and the brown yarn will overlie and partially conceal the white yarn. At point B the two loops projecting from the backing **6** are again of unequal heights, but the white loop is higher than the brown loop so that the white yarn will partially overlie and conceal the brown yarn. At point C the two loops are of equal height, both being high or long loops. At this point both yarns will contribute equally to the color effect produced at the surface of the fabric. A similar color effect is achieved at point D where both of the loops projecting from the fabric are low loops. At point E only the white yarn extends through the backing to form a pile loop, it being understood that at this point the brown yarn passes along the rear face of the backing as indicated at **81** in FIGURE 9.

Variations in color effects within any given transverse row of loop pile also are contemplated. The point F is in transverse alignment with the point C. At point C the brown and white loops are of equal heights and contribute equally to the appearance of the face of the fabric, but at point F the brown loop is higher than the white loop so that the white loop is at least partially concealed.

Hence, it will be apparent that by using two differently colored yarns, a number of different visual effects may be produced in a single longitudinal row of loop pile. Blends of the two colors may be obtained in either high or low loops, or one color may be caused to predominate over the other. Additionally, it should be observed that variations in mechanical characteristics, such as the deformability of the pile surface of the fabric, result from the practice of the invention. For example, at a point where there are loops of different heights, the higher loop is supported to some extent by the underlying low loop. These effects can be produced selectively in accordance with any desired pattern.

In fabricating floor coverings, it is preferred that a binder and a cover sheet be applied to the rear face of the fabric formed on the tufting machine. A latex coating over the backing **6** and the pile yarns **22** and **24** securely locks the pile yarns in place and serves as a means for securing a cover sheet **82** to the backing **6** as suggested in FIGURE 12. The cover sheet preferably is a loosely

woven fabric of jute or cotton. It gives the floor covering enhanced dimensional stability and abrasion resistance characteristics.

FIGURE 12 also serves to clarify the relationship of the pile yarns **22** and **24** of a set to each other as they extend along the backing **6**. They run generally in side-by-side relation, but one may cross laterally over the other as indicated at **80** or one may pass through the backing to form a loop at a point where the other remains on the rear of the backing as indicated at **81**. If it is desired that no loops at all be formed at some particular point where a needle penetrates the backing **6**, both of the yarns of a set may be caused to extend along the backing at that point as suggested by the numeral **83**.

It is not essential that the tips of the needles pass through the backing **6** to expose the entire area of their yarn outlet openings beneath the fabric. Under some conditions it may be preferable to pass only a part of the tapered portion of the tip through the backing as shown diagrammatically in FIGURES 13–15. The taper of the tip of the needle **84** in these views is greater than that of the needles **20** and the vertical stroke is shorter. With such an arrangement it is not necessary that a seed loop be formed at a point in the fabric where a yarn is not to appear on the face of the final product. For example, FIGURES 13 and 14 illustrate the formation of a high loop **86** from the yarn **22** at a point where the yarn **24** never enters the opening in backing **6**. Yet, a plurality of loops **88** and **90** may be formed, as indicated in FIGURE 15, at any needle penetration point where they may be desired.

Still other modifications and variations will suggest themselves to persons skilled in the art. It is intended, therefore, that the foregoing description be considered as exemplary only and that the scope of the invention be ascertained from the following claims.

We claim:

1. A method of making tufted fabric comprising carrying out a first cycle including inserting a hollow needle through a backing and feeding through said needle a length of a first pile yarn and a different length of a second pile yarn having an appearance different from said first pile yarn, and then subsequently carrying out another cycle including inserting said needle through the backing and feeding through said needle a length of said first pile yarn and a length of said second pile yarn different from the length of said second pile yarn fed through said needle during said first cycle.

2. A method of making tufted fabric comprising carrying out a first cycle including inserting a plurality of hollow needles simultaneously through a backing and feeding through each of said needles a set of pile yarns, controlling the length fed of a first pile yarn of each set so as to be different from the length fed of a second pile yarn of such set, and then repeating said cycle while feeding in at least some of said sets different lengths of said pile yarns than were fed during said first cycle.

3. A method of making tufted fabric comprising carrying out a first cycle including supplying to a hollow needle a length of a first pile yarn and a longer length of a second pile yarn, creating relative movement between said hollow needle and a backing by moving said hollow needle with respect to said backing back and forth through said backing and flowing fluid through said needle to feed said lengths of yarn through said needle and to form pile loops of different length; and then subsequently carrying out a second cycle including supplying to said needle a length of said first pile yarn longer than the length of said first pile yarn supplied during said first cycle and a length of said second pile yarn shorter than the length of said second pile yarn supplied during said first cycle, continuing the relative movement between said needle and said backing by moving said needle with respect to said backing back and forth through the backing and flowing fluid through said needle to feed the lengths of yarn supplied

thereto through said needle to form pile loops of lengths different from those formed during said first cycle.

4. A method of making patterned tufted fabric comprising carrying out a first cycle including supplying to a single passageway in a hollow needle a length of a first synthetic filament pile yarn and a longer length of a second synthetic filament pile yarn having an appearance different from that of said first pile yarn, inserting said hollow needle through a backing and flowing air through said passageway to feed said lengths of yarn through said needle and form pile loops of different lengths; and then subsequently carrying out a second cycle including supplying to said passageway a length of said first pile yarn longer than the length of said first pile yarn supplied during said first cycle and a length of said second pile yarn shorter than the length of said second pile yarn supplied during said first cycle, inserting said needle through the backing and flowing air through said needle to feed the lengths of yarn supplied thereto through said needle to form pile loops of lengths different from those formed during said first cycle.

5. A method of making patterned multicolor tufted fabric comprising carrying out a first cycle including supplying to a hollow needle a length of a first pile yarn and a longer length of a second pile yarn of a color different from that of said first, inserting said hollow needle through a backing and flowing fluid through said needle to feed said lengths of yarn through said needle and form pile loops of different lengths with the loop of said second pile yarn extending beyond the loop of said first pile yarn so as to at least partially conceal said loop of said first pile yarn; and then subsequently carrying out a second cycle including supplying to said needle a length of said first pile yarn and a shorter length of said second pile yarn, inserting said needle through the backing and flowing fluid through said needle to feed the lengths of yarn supplied thereto through said needle to form pile loops of different lengths with the loop of said first pile yarn extending beyond the loop of said second pile yarn so as to at least partially conceal said loop of said second pile yarn.

6. A method of making tufted fabric comprising carrying out a first cycle including supplying to each of a plurality of hollow needles a length of a first pile yarn and a longer length of a second pile yarn, inserting said hollow needles through a backing and flowing fluid through said needles to feed said lengths of yarn through said needles and form pile loops of different lengths; and then subsequently carrying out a second cycle including supplying lengths of said pile yarns to said needles with the lengths of said first pile yarn supplied to at least some of said needles during the second cycle being longer than the lengths of said first pile yarn supplied to such needles during said first cycle and with the lengths of said second pile yarn supplied to such needles during the second cycle being shorter than the length of said second pile yarn supplied to such needles during said first cycle, inserting said needles through the backing and flowing fluid through said needles to feed the lengths of yarn supplied thereto through said needles to form pile loops of lengths different from those formed during said first cycle.

7. A method of making patterned tufted fabric having pile loops of different lengths and colors in longitudinal and transverse rows comprising carrying out a first cycle including supplying to each of a plurality of transversely aligned hollow needles a length of a pile yarn having a first color and a longer length of a pile yarn having a second color, inserting said hollow needles simultaneously through a backing and flowing fluid through said needles to feed said lengths of yarn through said needles and form a transverse row of pile loops of different lengths and colors; and then subsequently carrying out a second cycle including advancing the backing longitudinally, supplying to at least some of said needles a length of a pile yarn of said first color longer than the length of pile yarn of said first color supplied during said first cycle and a length of a pile yarn of said second color shorter than the length of pile yarn of said second color supplied during said first cycle, inserting said needles simultaneously through the backing and flowing fluid through said needles to feed the lengths of yarn supplied thereto through said needles to form another transverse row of pile loops of different lengths and colors with the individual loops of said transverse rows being disposed in longitudinal alignment to form longitudinal rows of loops of different lengths and colors.

8. A method of making a tufted fabric comprising carrying out a first cycle including inserting the tip of a hollow needle through a backing and withdrawing the tip of the needle from the backing, feeding through said needle lengths of at least two pile yarns, and advancing said backing realtive to said needle; and then carrying out immediately thereafter a second cycle including inserting the tip of a hollow needle through a backing and withdrawing the tip of the needle from the backing, feeding through said needle lengths of at least two pile yarns, and advancing said backing relative to said needle; the length of one of said pile yarns fed during said second cycle being sufficient to form a pile loop and the total length of said one of said pile yarns fed during said successive cycles being substantially equal to the sum of the length of yarn contained in said loop and twice the distance between the penetration points of said needle.

9. In a method of making tufted fabric, the steps of passing a plurality of yarns simultaneously through the same hole in a backing to the same extent for creating a pile having loops formed from said yarns, and selectively elongating either one of said loops beyond the length of the other loop which other loop remains at said same extent according to a prescribed pattern.

10. In a method of making tufted fabric, the steps of holding the material of a backing open for creating a hole therein, simultaneously inserting a pair of yarns through said hole in said backing as said hole is held open for creating a tuft, and selectively manipulating the length of either one of said yarns by moving a portion thereof while continuing to hold said hole open and without the moving portion engaging said material for creating loops of different lengths in a single tuft.

11. In a method of making tufted fabric, the steps of creating a hole in a backing by positively holding away from each other portions of said backing, simultaneously passing strands of a pair of yarns through said hole in said backing as said portions of said backing are held away from each other for creating a pair of loops with an increment of each of said strands extending through and being shielded from said portions of said backing, and manipulating said increment of at least one of said yarns for elongating the length of the loop thereof while continuing to hold said portions away from each other.

12. In a method of tufting of the type wherein a backing is passed along a path of travel and a plurality of hollow needles disposed transversely to said path of travel on one side of the backing with their ends adjacent said backing are upon relative movement of said backing and said needles caused to be inserted during successive cycles through successive transverse portions of said backing so that said ends of said needles are disposed during a portion of each cycle on the other side of said backing and wherein individual first yarns are respectively passed through hollow portions of said needles and protrude from the ends of said needles for being inserted with said ends of said needles through said backing for forming loops of first yarns and wherein a fluid pressure differential is applied to said hollow portions of said needles for urging said yarns out of said ends to increase the lengths of said loops during that portion of the cycle in which such loops are formed and the feed of said yarns to said needles is controlled for regulating according to a prescribed pattern the amounts of yarns respectively urged from said ends of said needles when said ends of said

needles are disposed on said other side of said backing so that longitudinal parallel rows of tufts of first yarns are produced on said other side of said backing respectively by said first yarns, the steps of passing second yarns respectively through said needles and out of said ends of said needles along corresponding paths with said first yarns and respectively through the same ends of said needles with said first yarns so that the second yarns are also inserted to approximately the same extent with said first yarns through said backing and simultaneously with the insertion of said first yarns therethrough for forming second loops in the same pile and said fluid pressure differential applied to said hollow portions of said needles also urges said second yarns from said ends of said needles, and regulating the feed of said second yarns to said needles according to a prescribed pattern in such manner that the respective loop heights formed by first and second yarns passed through the same needle for creating a pile are varied with respect to each other along said longitudinal rows of piles to an extent sufficient for the longer loop essentially to hide from view the shorter loop.

13. In a method of making tufted fabric, the steps of simultaneously inserting a pair of yarns through the same hole in a backing and selectively arresting the penetration of one of said pair of yarns while continuing the penetration of the other of said pair of yarns through said backing.

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