

May 4, 1954

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CHENILLE YARNS

2,677,632

Filed Dec. 1, 1951

2 Sheets-Sheet 1

FIG. 1.

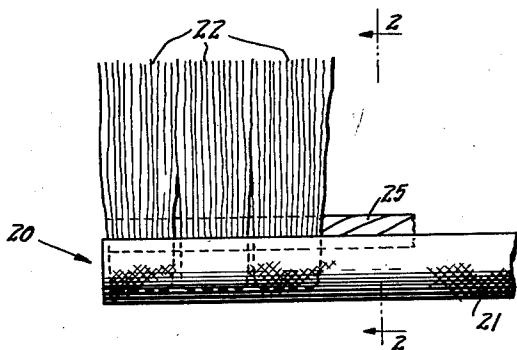


FIG. 2.

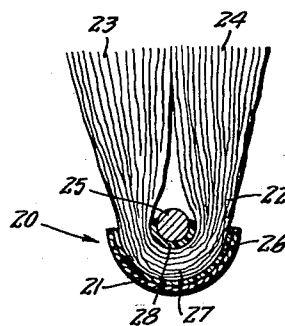


FIG. 3.

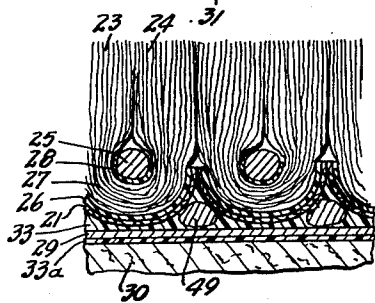
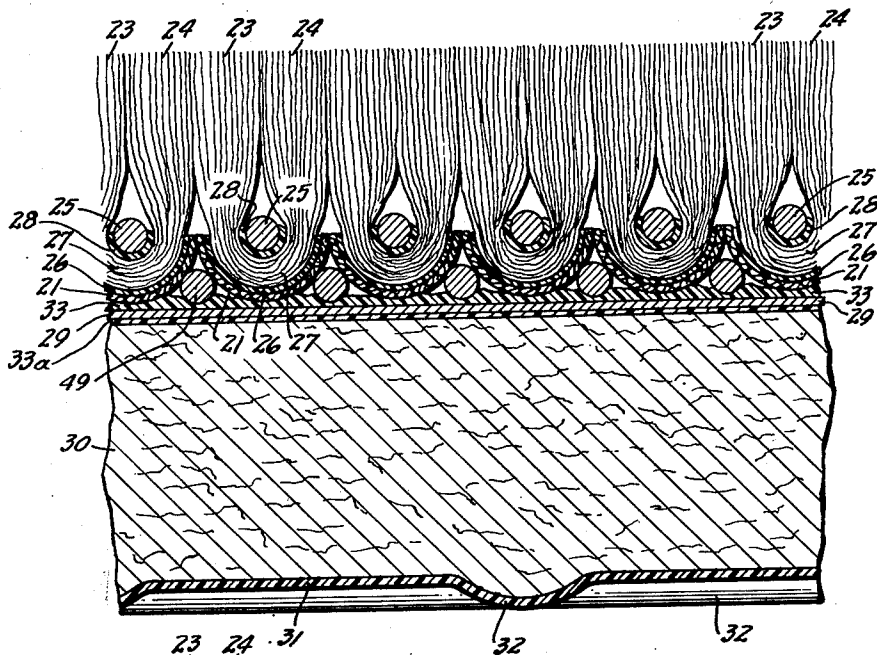


FIG. 3a.

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FIG. 4.

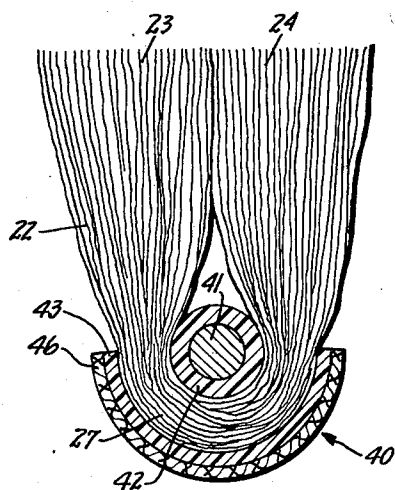


FIG. 5.

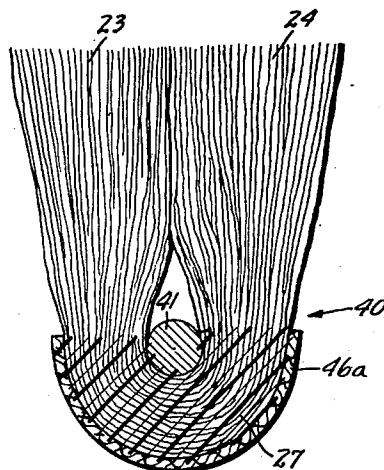


FIG. 6.

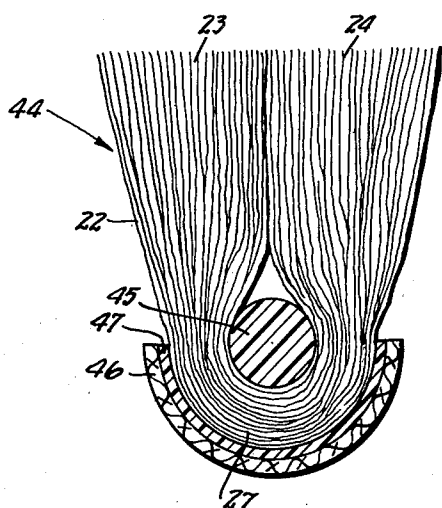


FIG. 7.

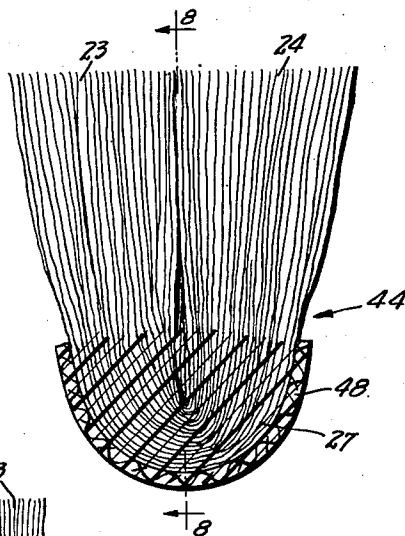
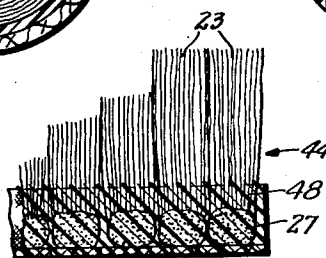


FIG. 8.



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2,677,632

CHENILLE YARNS

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Application December 1, 1951, Serial No. 259,437

10 Claims. (Cl. 154-49)

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This invention relates to a chenille yarn, pile yarn, or the like, and more particularly to a chenille yarn or pile yarn construction wherein the chenille or the pile is formed in loops and is held in an upstanding position in a casing or holder made of coarsely woven or perforated textile material, or an adhesive tape of plastic material or the like, suitably stiffened in the operation of making the yarn, without rendering the ultimate yarn inflexible.

One object of this invention is an inexpensive pliable chenille yarn, or pile yarn, construction.

Another object is a pliable chenille yarn or pile yarn construction which is durable and which will retain its shape and structure when incorporated in a floor covering.

Another object is a pliable chenille yarn or pile yarn construction, which can be quickly and readily manipulated to form a floor covering material, carpet, rug, or the like.

Another object is a pliable chenille yarn or pile yarn which can be quickly and readily bonded to a cheap base fabric by means of a cementitious composition in the operation of forming a floor covering material.

Other objects will appear from the detailed description which follows.

A more complete understanding of the invention will follow from a detailed description of the illustrative embodiments contained in the accompanying drawings wherein,

Fig. 1 is an elevation of a fragment of one form of my improved chenille yarn or pile yarn construction.

Fig. 2 is a cross sectional view taken along the line 2-2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a cross sectional view of a fragment of a floor covering material made by combining my improved yarns together.

Fig. 3a is a fragmentary view of the pile portion of the floor covering material in its completed form.

Figs. 4 and 5 are cross sectional views of a modified form of my invention.

Figs. 6 and 7 are cross sectional views of another modified form of my invention; and

Fig. 8 is a cross sectional view of a fragment taken along the line 8-8 of Fig. 7 looking in the direction of the arrows.

Like reference characters designate corresponding parts throughout the several figures of the drawings.

The chenille yarn or pile yarn 20 includes the casing or holder 21 which preferably consists

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of a flat ribbon or tape made of either a perforated or a coarsely woven or gauze like textile material, or an adhesive tape made of a plastic or thermo-plastic composition. The tape is folded along its longitudinal axis to form a casing or trough shaped channel, and if a textile material is used it may be suitably stiffened to retain its channeled form. The channel in the casing 21 may be either semi-elliptical (U-shaped), or V-shaped in cross section.

A series of pile elements 22-22, each element containing one or more yarns or threads which are looped at the middle at 27, to form tufts having their opposite ends 23 and 24 free, are arranged one behind the other in edge to edge abutment to form a row of looped pile yarns or pile tufts whose loops 27 are pressed against the bottom wall of the channel of the casing 21 and are bonded to the bottom wall of the channel of the casing 21 by an elastic bonding agent 25 which may comprise any suitable elastic cementitious material. The cementitious material 25 may be an elastic water-repellent glue or a curable latex or a vulcanizable rubber cement or a plasticizable composition such as cellulose acetate or a thermo-plastic composition such as vinyl plastic, e. g., vinyl chloride, or any such other suitable adhesive which is elastic when hardened and set or when cured or vulcanized and will not soften or become tacky when subjected to changes in climatic conditions or to the action of water or moisture or to the conditions as normally occur in using a floor covering.

A stuffer or spacer 25 may be inserted between the free ends 23 and 24 of the pile elements 22, and the stuffer or spacer 25 is drawn or pressed downwardly between the free ends 23 and 24 of the pile elements 22 and against the bights or loops 27, so as to compress and compact the loops 27 of the pile elements 22 against the bottom of the trough-shaped holder 21 and so as to position the spacer 25 below the upper edges of the casing.

The lower half of the face of the stuffer 25 is coated with a layer of an elastic bonding agent 25 identical with, or having the same characteristics as, the cementitious material 25. It may be a plastic composition such as cellulose acetate, or a thermo-plastic of the vinyl group such as vinyl chloride, or a curable latex, or a vulcanizable rubber composition, or an elastic glue, or a cement or other adhesive, which is elastic when hardened and set and which is thereafter substantially impervious to the action of water or moisture, and will not soften or become tacky under changes in climatic conditions, so that the stiffened casing

21, stuffer or spacer 25, and the elastic bonding agents 26 and 28 in conjunction, support and retain the free ends 23 and 24 of the pile elements 22—22 compacted and upstanding in an erect position (see Fig. 1). The bonding agents 26 and/or 28 fill the perforations in the tape or the interstices in the coarsely woven textile material of which the casing or holder 21 is composed and penetrate the loops 27 of the pile elements 22 and fill the spaces between adjoining loops, thus stiffening the textile material so as to enable the casing 21 to retain its channelled form and to maintain said stiffened casing 21 erect and in an upstanding position, and causing the stuffer or spacer 25 which is coated upon its under face with the bonding agent 28 to co-act with the loops 27 in the pile elements 22 and with the stiffened casing or holder 21 to bond the loops 27 of the pile elements 22 to the bottom of the channel of the casing or holder 21, after the bonding agents 26 and 28 have hardened and set. The bonding agents 26 and 28 also bond adjoining loops or bights 27 together to produce a laminated yarn.

Fig. 3 illustrates how a series of the yarns 20 of Fig. 1 may be arranged side by side in the form of warp threads supplied in any suitable manner as by a creel or by a warp beam (not shown), and superimposed upon a suitable base or backing 30 composed of any inexpensive material which is sufficiently flexible to permit it to be rolled up, such as felt, burlap, compressed fiber, or the like, to which the yarns 20 are bonded by means of a suitable elastic bonding agent or cementitious composition 33 which is either interposed between the casings or holders 21 and the surface of the base material 30, or which may be applied to the bottom of the casings 21 and then allowed to harden and set as by curing, to form a molded base or backing. The bonding agent 33 may be a curable latex or a vulcanizable rubber cement, a plastic composition such as cellulose acetate, a thermo-plastic such as vinyl chloride, or a glue or any other suitable adhesive which is elastic when hardened and set and will not soften or become tacky when exposed to the action of water or moisture or to changes in climatic conditions.

In some instances it may be desirable to introduce filler yarns 49 in the spaces between the yarns 20 so as to insure a compact construction, and to introduce a bonding agent 33 around the said filler yarns and between the chenille yarns 20 and said filler yarns 49 (see Fig. 3), so that when the chenille yarns 20, filler yarns 49, backing 30 and the bonding agent 33 are pressed together in any suitable manner while the bonding agent is in a plastic condition, the cementitious material 33 will flow into and fill the spaces between the surfaces of the abutting edges of the yarns 20—20 and/or between the yarns 20 and their abutting filler yarns 49, and the bonding agent will be distributed evenly over the surface of the backing 30, so that when the cementitious material 33 hardens and sets the several components will form a compact unitary structure with the free ends 23, 24 of the pile elements 22 forming an upstanding pile, substantially as shown in Fig. 3a. When the floor covering material is compressed the spacers 25 and the filler yarns 49 tend to become distorted and flattened, and assume an elliptical cross section substantially as shown in Fig. 3a.

In some instances it may be advantageous to interpose a sheet 29 of an inexpensive adhesive receptive material between the cement coated

yarns 20—20, or 20—49—20, and the base 30. When so constructed a second layer 33a of an elastic bonding agent or cementitious material 33, is interposed between the sheet 29 and the base material 30, or the cementitious material 33 may be applied to both faces of the sheet 29 and the yarns 20—20, or 29—49—20, as the case may be, and the base 30, pressed against the coated sheet 29 while the cementitious material 33 is in a plastic condition, and the various elements may be retained under pressure until the cementitious material has hardened and set, when the pile portion of the floor covering material will assume a form substantially as shown in Fig. 3a, wherein the yarns 20 and 49 are thoroughly bonded to the base 30.

The undersurface of the base 30 may be provided with a flexible coating 31 comprising a suitable water impervious composition such as a curable latex, or a vulcanized rubber cement, or a plastic, or a thermo-plastic, to protect the underface of the base 30, prolong its useful life and prevent the floor covering material from skidding when in use. Skidding may likewise be reduced by forming webs or cross-ribs 32 at suitable intervals in the underface of the base 30, substantially as shown in Fig. 3.

When a vinyl plastic such as vinyl chloride is selected as the cementitious composition 33, it may be applied thickly enough to omit the fibrous backing and the intermediate sheet 29, and the filler yarns 49 may also be omitted, so that when the vinyl plastic is cured the cementitious material 28, 27 and 33 are fused together and become homogeneous.

Fig. 4 shows a cross section of a chenille yarn 40 wherein the stuffer yarn or spacer cord 41 is normally encased in a suitable adhesive coating 42 which will be plasticized when heated or when subjected to the action of the appropriate plasticizer. Coating 42 may be composed of a flexible plastic composition such as cellulose acetate, or it may be a thermo-plastic such as vinyl chloride, which will not crack, flake or peel when the cord 41 is flexed or bent. The adhesive 43 which is interposed between the loops 27 and the textile material 46 may be a coating of the same plastic or thermo-plastic composition which is employed for the coating 42. Both coatings when set are impervious to the action of water or moisture. When the coatings 42 and 43 are plasticized and the yarn 22 is suitably compressed the adhesives 42 and 43 impregnate the spacer yarn 41, the loops 27, and the ribbon or tape of loosely woven textile material 46 (Fig. 4) to a depth sufficient to produce, when allowed to harden and set, a yarn having a stiffened self-supporting channelled casing or holder 46a which holds and supports the pile elements 22 in an upstanding position substantially as shown in cross section in Fig. 5. Other materials such as a composition containing rubber, which can be cured or vulcanized may be utilized for the adhesive coatings 42 and 43.

In the modification shown in cross section in Figs. 6 and 7, the chenille yarn 44 may be provided with a spacer yarn or stuffer consisting of a mono-filament 45 of a plastic composition, and the casing 46 may consist of a ribbon or tape of coarsely woven textile material which is covered upon one side with a coating 47 containing the same plastic composition as the filament 45, so that when the yarn is subjected to suitable pressure or heat, or is subjected to the action of the appropriate plasticizer, the spacer 45 and the

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plastic coating 47 are plasticized and penetrate the loops 27 of the pile elements 22 and flow into the spaces between the loops 27 and into the openings in the textile material 46 so that when the plastic compositions are allowed to harden and set a compact unitary structure 48 (Fig. 7) results, wherein both the loops 27 of the pile elements 22, and the fibers of the textile material 46, are sufficiently impregnated to form a unitary structure which is sufficiently flexible to permit winding as on a beam, but wherein the loops 27 and the textile material 46 are stiff enough to support the free ends 23 and 24 of the pile elements 22 erect and in an upstanding position, substantially as shown in Figs. 7 and 8.

Each of the yarns 20 (Figs. 1 and 2), 40 (Fig. 5), and 44 (Figs. 7 and 8), is sufficiently flexible so that it may be readily wound up with other similar yarns to form a warp beam (not shown), which warp beam may subsequently be used in the operation of constructing a laminated rug similar in general to the laminated rug structure illustrated in Fig. 3.

The chenille yarns may also be made by replacing the casing 46 (Fig. 4) with two narrow strips of adhesive tape and attaching said tapes to the pile elements equidistant from, and on opposite sides of, the transverse median line of each pile element 22, then folding the adjoined pile elements 22, 22 to form U-shaped loops, and inserting the adhesive coated stuffer 41 in the bends of the loops midway between the strips of adhesive tape, to retain the loop formations 27, 27 in the pile elements 22, 22, then plasticizing the coating 42 to impregnate the threads of the pile elements 22, 22 and fill up the spaces between adjacent pile elements, and then allowing the coating 42 to harden and set and thus permanently retain the loop formations 27, 27 in the tufted pile elements 22, 22 and secure the tufted pile elements together to form a continuous pliable yarn.

The surface of the backing 30 may be fluted lengthwise to form a series of U-shaped or V-shaped channels deep enough and wide enough to receive the casings or holders 21 of the chenille yarns 20, said channels being arranged in spaced relation and extending parallel to the running edge of the backing 30 to contain the chenille yarns 20, 40 or 44, and present the free ends 23, 24 of the pile elements 22 as a continuous pile surface. Any suitable cementitious composition may be applied to the channels of the fluted surface and to the outer face of the holders 21 of the chenille yarns 20, 40 and 44, provided said cementitious composition is tacky enough when in a plastic condition to secure the outer face of each of the casings 21 in the channels of the fluted base, so that when the cementitious composition is allowed to harden and set, or is cured, or vulcanized, as the nature of the particular cementitious composition employed may require, the chenille yarns 20, 40 or 44 will be permanently bonded in the channels in the backing 30, and the bond will not be deleteriously affected by the action of water or moisture.

The sheeting 29 (Figs. 3 and 3a) may consist of any cheap pliable adhesive-receptive material such as paper, or it may be a coarsely or loosely woven textile material, such as cheese cloth, tobacco cloth, burlap, sacking, or the like. In better grade floor coverings, the base or backing 30 may be of canvas or duck. While the casing 46 (Figs. 4 and 6) is shown as a tape made of a

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coarsely woven textile material, it should be understood that a plastic tape may be substituted for the textile tape 46, and that when plasticized said plastic tape penetrates the loops or bights 27 and stiffens the said loops 27 to render the pile elements 22 upstanding and self-supporting.

Each chenille yarn 20 (Figs. 2) 40 (Fig. 5), and 44 (Fig. 7) is flexible so that it may be folded over or wound as on a spool, but is also upstanding and self-supporting, and the free ends 23 and 24 of the pile elements 22 will normally assume an erect position.

Other modifications of my invention will, in the light of the disclosure of this specification, suggest themselves to those skilled in the art.

What is claimed is:

1. In a chenille yarn and in combination a tape folded double along its lengthwise median line to form a casing having a substantially U shaped channel, a cementitious composition covering the wall of said channel, a series of looped threads defining pile elements, the loops of said pile elements being positioned in said casing with their front and back edges in end to end abutment and with the loops of the pile elements embedded in said cementitious composition, the free ends of the pile elements projecting beyond the upper edge of the casing to partially form a tufted pile yarn, a stuffer overlying the looped pile elements, a cementitious composition disposed between said stuffer and said pile elements and adhering to the stuffer and to the inner looped portions of the pile, said stuffer coacting with said casing to compress and hold the loops of the pile elements against the bottom of said U-shaped channel and said cementitious compositions filling the spaces between the loops of abutting pile elements and the interstices between the threads of the pile and permanently adhering to said pile elements and the threads thereof to complete a continuous pliable tufted pile yarn.

2. In a chenille yarn and in combination a tape folded lengthwise along its median line to form a channelled casing, a cementitious composition covering the wall of the channel of said casing, a series of looped threads defining pile elements, the bights of the loops of said pile elements being positioned in said casing with the front edge of each bight abutting the back edge of the adjacent bight, the bights of the loops of the said pile elements adhering to said cementitious composition, the free ends of the pile elements projecting above the channelled casing to partially form a tufted pile yarn, a stuffer overlying the bights of the looped pile elements, a cementitious composition disposed between said stuffer and said bights and adhering to the stuffer and to the inner faces of the bights of the looped portions of the pile, said stuffer co-acting with said casing to compress and hold the bights of the loops of the pile elements against the wall of the channel of the casing, and said cementitious compositions occupying the spaces between the bights of the abutting loops and the interstices between the threads of the loops and permanently adhering to said loops and to the threads thereof to form a pliable tufted pile yarn.

3. In a chenille yarn and in combination a tape folded lengthwise along its median line to form a two-ply channelled casing, a cementitious composition covering the wall of the channel of said casing, a series of looped threads positioned in said casing with the bights of the loops abutting each other and adhering to the wall of the chan-

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nel of said casing, the free ends of the loops projecting beyond the channel of the casing to form the pile elements of a tufted pile yarn, a stuffer overlying the bights of the loops of the pile elements, said stuffer comprising a cementitious composition overlying the bights of the loops of said pile elements and adhering to the inner face of the bight of the loops of the pile elements, said stuffer co-acting with said casing to compress and hold the bights of the loops of the pile elements against the bottom of the channel of the casing and said cementitious compositions occupying the spaces between the bights of the abutting loops and the interstices between the threads of the loops and permanently adhering to said loops and to the threads thereof to form a pliable tufted pile yarn.

4. In a chenille yarn and in combination a tape made of a coarsely woven textile material, said tape being folded lengthwise along its median line to form a two-ply casing with a channel therebetween, a cementitious composition covering the casing and stiffening the walls of the channel, a series of looped threads positioned in said casing with the bights of the loops abutting each other and attached to the wall of the casing by said cementitious composition, said cementitious composition serving to stiffen the bights of the loops so that the free ends of the loops project in an upstanding self-supporting position above the channel of the casing and form the pile elements of a tufted pile yarn, a stuffer extending through the bights of the loops of the pile elements, said stuffer including a cementitious composition overlying and adhering to the inner face of the bights of the loops of the pile elements, said stuffer and said casing coacting to hold the bights of the loops of the pile elements against the bottom of the channel of the casing, and said cementitious compositions filling the spaces between the bights of abutting loops and the interstices between the threads of the loops and permanently adhering to said loops and to the threads thereof to form an upstanding self-supporting pliable tufted chenille yarn.

5. In a chenille yarn and in combination a tape composed of a plasticizable cementitious composition, said tape being folded lengthwise along its median line to form a two-ply casing with a U-shaped channel positioned between said plies, a series of looped threads positioned in the U-shaped channel of said casing with the bights of the loops abutting each other and adhering to the plastic tape to stiffen the bights of the loops so that the free ends of the looped threads project in an upstanding self-supporting position above the U-shaped channel to form the tuft elements of a yarn, a stuffer running through the bights of the looped threads, said stuffer including a plasticizable cementitious composition overlying and adhering to the inner faces of the loops of the pile elements, said stuffer and said casing coacting to hold the bights of the loops of the pile elements against the bottom of the U-shaped channel, and said plasticizable cementitious compositions filling the spaces between the bights of the abutting loops and the interstices between the threads of the loops and permanently adhering to said loops and to the threads thereof to form an upstanding self-supporting pliable tufted chenille yarn.

6. In a floor covering and in combination, a series of chenille yarns arranged in parallel and side by side to constitute the warp threads of the floor covering, each of said yarns comprising, a

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length of tape folded lengthwise along its median line to form a channelled casing, a series of looped threads positioned in said casings with the bights of the loops in each channel in edge to edge abutment, the free ends of the looped threads projecting above the wall of the casing, a cementitious composition interposed in the spaces between the edge faces of the abutting looped threads and between the looped threads and the casing wall and penetrating the interstices between the threads in the region of the bights of the loops to reinforce the projecting free ends of the threads and render them upstanding and self-supporting, a coating of a cementitious composition applied to the exposed underside of said parallel disposed yarns and a sheet of pliable adhesive receptive material embedded in said cementitious coating.

7. In a chenille yarn and in combination a tape made of a coarsely woven textile material, said tape being folded lengthwise along its median line to form a two-ply casing with a channel therebetween, a rubber composition covering the casing and stiffening the walls of the channel, a series of looped threads positioned in said casing with the bights of the loops abutting each other and attached to the wall of the casing by said rubber composition, said rubber composition also serving to stiffen the bights of the loops so that the free ends of the loops project in an upstanding self-supporting position above the channel of the casing and form the pile elements of a chenille yarn, a stuffer extending through the bights of the loops of the pile elements, said stuffer including a rubber composition overlying and adhering to the inner face of the bights of the loops of the pile elements, said stuffer and said casing coacting to hold the bights of the loops of the pile elements against the bottom of the channel of the casing, and said rubber compositions filling the spaces between the bights of abutting loops and the interstices between the threads of the loops and permanently adhering to said loops and to the threads thereof to form a succession of upstanding self-supporting tufts and a pliable chenille yarn.

8. In a floor covering and in combination, a series of chenille yarns arranged lengthwise in parallel and side by side to constitute the warp-like threads of the floor covering, each of said yarns comprising, a length of tape folded lengthwise along its median line to form a channelled casing, a series of looped threads positioned in said casings with the bights of the loops in each channel in edge to edge abutment, the free ends of the looped threads projecting above the wall of the casing, a cementitious composition interposed in the spaces between the edge faces of the abutting looped threads and between the looped threads and the casing wall and penetrating the interstices between the threads in the region of the bights of the loops to reinforce the projecting free ends of the threads and render them upstanding and self-supporting, a coating of a cementitious composition applied to the exposed underside of said warp-like threads, and a sheet of pliable adhesive receptive material embedded in said cementitious coating.

9. In a floor covering and in combination, a series of chenille yarns arranged lengthwise in parallel and side by side to constitute the warp-like threads of the floor covering, each of said yarns comprising, a length of tape folded lengthwise along its median line to form a channelled casing, a series of looped threads positioned in

said casings with the bights of the loops in each channel in edge to edge abutment, the free ends of the looped threads projecting above the wall of the casing, a cured latex composition interposed in the spaces between the edge faces of the abutting looped threads and between the looped threads and the casing wall and penetrating the interstices between the threads in the region of the bights of the loops to reinforce the projecting free ends of the threads and render them upstanding and self-supporting, a coating of a cured latex composition applied to the exposed underside of said warp-like threads, and a sheet of pliable adhesive receptive material embedded in said latex coating.

10. In a floor covering and in combination, a series of chenille yarns arranged lengthwise in parallel and side by side to constitute the warp-like threads of the floor covering, each of said yarns comprising, a length of tape folded lengthwise along its median line to form a channelled casing, a series of looped threads positioned in said casings with the bights of the loops in each channel in edge to edge abutment, the free ends of the looped threads projecting above the wall

of the casing, a rubber composition interposed between the edge faces of the abutting looped threads and between the looped threads and the casing wall and penetrating the interstices between the threads in the region of the bights of the loops to reinforce the projecting free ends of the threads and render them upstanding and self-supporting, a coating of a rubber composition applied to the exposed underside of said parallel disposed yarns, and a sheet of pliable adhesive receptive material embedded in said rubber coating.

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