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DEVICE FOR AND METHOD OF SECURING CARPET ENDS

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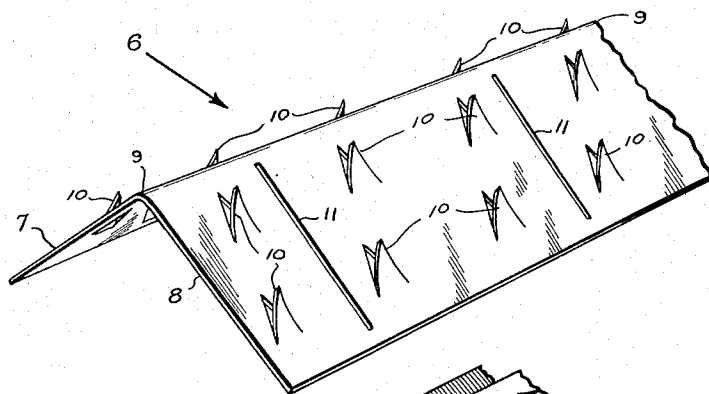


Fig. 1.

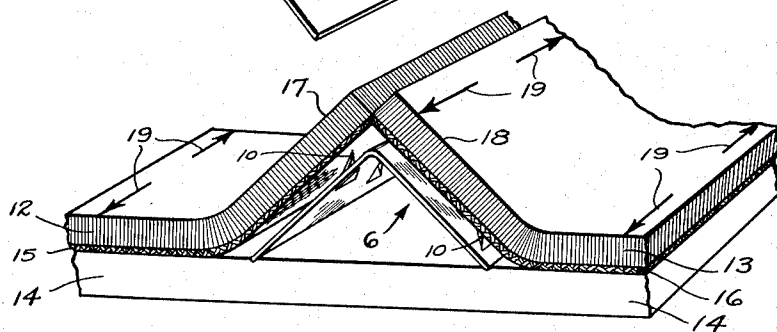


Fig. 2.

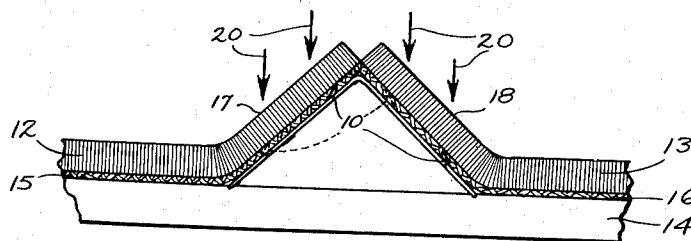


Fig. 3.

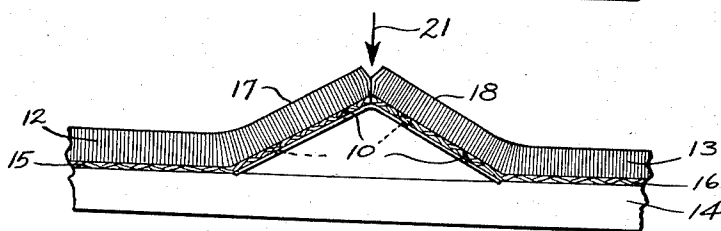


Fig. 4.

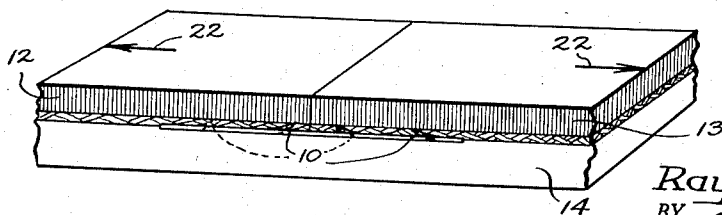


Fig. 5.

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DEVICE FOR AND METHOD OF SECURING
CARPET ENDS

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11 Claims. (Cl. 154—49)

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This invention relates to a method for joining sections of carpeting or other floor covering material without resorting to the use of adhesives, nailing, or sewing such as hitherto have been considered necessary. The scope of the inventive concept also includes a companion joining device which may be used either per se or in conjunction with the method to join such sections securely and in a concealed manner. More particularly, the novel joining device is a unitary collapsible arch having angularly disposed gripping elements which are caused to penetrate the abutting sections of floor covering prior to collapse of the arch. Accordingly, after collapse, the close abutment of the section edges prevents relative displacement or movement in one direction whereas the angular grip elements prevent any opposite or parting movement, the resultant article being an apparently seamless, integral carpeting, or floor covering capable of withstanding long and hard usage.

One object of my invention is to provide a collapsible or deformable arch for joining sections of floor covering, such an arch to have divergent flat wings carrying correlated pointed grip elements arranged at an acute angle to the planes of the respective wings so as to lie convergent, toward one another, after the arch is collapsed or deformed. Thus, the advantages of a secure and substantially seam free joiner, such as flow from the use of a hammered or turned down grip element, are attained without requiring those working, turning, and hammering operations which must take place, conventionally, from the exposed side of the floor covering. In summary, this deformable arch allows the floor covering to be laid out in a room for matching and room fitting. Thereafter it is joined in accordance with my invention. Thereafter, said joined carpeting may be stretched in a lateral direction, and even to be fitted about pillars, radiators and other obstructions.

Referring now to strip carpeting, by which term I mean to include any sectional fabric floor covering and to which material the method of this invention most particularly is directed, several different joining techniques are in common use. The best known of these is a factory or work shop operation which includes an assembly followed by a hand or machine sewing operation in a work room. Another may be described as an "on the job" sewing operation or a one man carpet layer operation. With the latter, sequentially, the sections of carpeting are laid, the pat-

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tern if any is matched, the carpet layer stretches the sections laterally with a "butt" tool, the abutting edges then are lifted and marked by hand with chalk on the under side to identify the pattern or lateral position, the sections are turned and sewed in accord with the marks, and the unitary carpeting then is re-turned and laid. Both of these techniques or methods, in comparison with my new method, are high in labor cost, slow in execution, inaccurate in pattern matching and demanding of an excessive handling of the heavy carpeting. Further, a carpet layer is a skilled artisan whose services not always are available in remote areas and whose wage scale, when available, is high.

Two other techniques, however, also are common. These are illustrated, respectively, by the United States Patents to Chance No. 1,842,746 and Reinhard No. 2,552,114. With the former, an adhesive joining tape is utilized and, with the latter, joining tape, a latex adhesive, and a plurality of metallic gripper elements all are utilized, concurrently. Both of these techniques, however, possess the dual disadvantages which flow from the use of an adhesive which must set or dry before the carpet is used and from the use of a gripping means which requires a precise, delicate application and a careful handling with no excessive longitudinal stretching or tensioning until the seams are set. Further, many of these prior methods tend to "hump" the carpet or to produce a ridge or raised portion, integral with the carpet, under the seam. This, of course, causes uneven wear and a bulky appearance both of which are avoided in the practice of my method and in the use of my device.

Having in mind the above disadvantages, one object of my invention is to provide an improved method for joined sections of carpet, which method will eliminate or alleviate the disadvantages above noted and will allow a semi-skilled workman or even a householder efficiently to join and lay sectional carpeting. In outline, this method calls for the provision of a thin deformable arch having a plurality of grip elements which lie at an acute angle to the legs of the arch. Thereafter, two adjoining sections of carpeting are tensioned or stretched laterally to secure a good fit, the carpet sections are raised and positioned over the arch and the margins are abutted over the apex of the arch, the sections are pressed down so the grip elements penetrate the backing and the arch is collapsed or flattened while secured to the carpet sections. The latter step, in result, overturns or tilts the

grip elements toward one another to resist parting and pulls the carpet sections into compressive abutment over the entire height of the margins. Thus, because the exactness of a pattern matching and marking operation has been eliminated and because the precise niceness of a hand sewing or whip stitching operation has been deleted, the services of a skilled carpet layer are not essential to practice my novel method. This advantage alone is of considerable importance cost-wise.

In combination with two abutting elongated lengths of carpeting, it is another object of my invention to provide a thin flat piece which will underlie the joint or seam and will carry a plurality of sharp grip elements which penetrate the carpeting and which point generally toward the joint at an acute angle. Additionally, this flat piece may be pierced by a plurality of lateral tension slits which prevent humping or buckling of the piece and, in any event, no adhesive or sewing need be employed to supplement the flat joinder piece. Here again, the cost of the thin flat piece is competitive in comparison to those devices previously employed.

Yet another object of my invention is to provide a device for joining sections of floor covering wherein a number of spaced rows of pointed grip elements are provided with the elements in one row staggered with respect to those in the next row so the largest possible area is gripped, yet the least possible hump or bulge is created across the joined sections in the finished product. In fact, said device reinforces the floor covering joint, protects it, and holds the abutting sections straight and aligned with each other.

These and other desirable objects and advantages inherent in and encompassed by my invention will become apparent from the ensuing description, taken in conjunction with the accompanying drawing, wherein:

Fig. 1 is a perspective view of the collapsible arch for joining adjacent lengths of floor covering, this view more particularly indicating the disposition of the lateral tension slits which pierce each wing of the arch intermediate the rows of grip elements;

Fig. 2 also is a perspective view showing two adjacent sections of carpeting or fabric floor covering as they appear when lifted over the apex of the arch, the arrows in this figure indicating the stretch or lateral tension which may be imparted to the sections prior to the time they are lifted;

Figs. 3 and 4 are related sequential cross section views, the small arrows in Fig. 3 indicating the light pressing force used to press the carpeting sections down over the grip elements and the large arrow in Fig. 4 indicating the greater force which flattens the deformable arch, Fig. 4 showing the arch partially deformed; and

Fig. 5 is a perspective view of the carpet sections after they are joined, the dashed line indicating the approximate location of the seam which, in reality, is invisible to the eye and the small arrows indicating the longitudinal tension which immediately may be applied to the joined carpeting in order to cover a floor or the like in conventional manner.

As best disclosed in Fig. 1, I provide a deformable or collapsible arch 6 having divergent legs or wings 7 and 8 which intersect along an apex line 9. This arch preferably is formed from a unitary sheet of material such as galvanized iron or steel or from aluminum and the wings 7 and

8 more readily will collapse if the angle subtended thereby, at the apex, is an obtuse angle. Materials of the type mentioned are preferable since they do not oxidize, discolor the engaged portions of the rug, or otherwise chemically react with the backing of a pile carpeting or with other fabric floor covering material.

Preferably, each of the wings 7 and 8 is a substantially plane surface from which is punched and above which protrude a plurality of sharp pointed grip elements 10. These grip elements 10 may be triangular and slightly curved as shown, but, in any event, it is an important feature of my invention that these elements do not protrude at a right angle to the plane of the respective wings but, rather, protrude at an acute angle to the respective wings. The reason for this acute angle disposition will be made clear, hereinafter, with respect to Fig. 5.

Returning to Fig. 1, the grip elements 10 are arranged in parallel longitudinal rows along the length of the wings 7 and 8. The grip elements in one row, however, are staggered with respect to these in the adjacent row. Accordingly, the elements in the lower row along the wing 8 are staggered with respect to those in the upper row along the wing 8 and these latter, in turn, are staggered with respect to those along the upper row of the wing 7. This staggered disposition and the plurality of grip elements thereby provided gives a coverage of the largest possible area with the most uniform possible disposition. Further, each of the wings 7 and 8 is pierced by a plurality of lateral tension slits 11 which also are staggered on the respective wings. In function, these slits serve to break the longitudinal dimension of the arch into segments or pieces of smaller effective length so that collapse or deformation of the arch more readily is accomplished. Similarly, once the arch has been collapsed, the tension slits 11 aid in resisting any tendency of the arch to return to its initial humped or arched shape.

In my inventive method for joining sections of carpeting or other floor covering material without resorting to the use of adhesives, hammering or sewing, Figs. 2 to 5 inclusive are pertinent. In these figures, I have shown two sections, 12 and 13, of fabric floor covering such as three quarter or broadloom carpeting. While the material of these sections is of particular relevance to the method now to be disclosed, it is to be noted that the use of the joining device of Fig. 1 is not limited to use with such material, the selected width of material being merely illustrative. Further, while I have shown no figured, flowered, or other pattern design on the carpeting sections of Figs. 2 to 5, this method, with similar sequential steps, is efficient in joining such figured or patterned sections. Thus, the conventional "on the job" carpet layer first stretches the sections of rugs laterally and matches the pattern. Thereafter, he lifts the abutting edges and carefully marks, with chalk, the abutting under sides or backs to retain a reference point when sewing the abutting sections together. With my method, this marking and the subsequent turning, sewing, and re-turning are not required.

To this end, I have shown an underlay or flooring 14 upon which the carpet sections 12 and 13 rest with the respective backs 15 and 16 in contact therewith. As a first step and as is conventional in the carpet laying art, the sections 12 and 13 are positioned in a room or hall with the

margins thereof in abutment. Thereafter, the sections are stretched in a longitudinal direction, parallel the abutting edges, to tension and smooth the carpeting. I have indicated this stretching and tensioning diagrammatically by the arrows 19 in Fig. 2.

After the carpet sections are tensioned, an elongated deformable arch, such as the previously described arch 6, is inserted under the abutting edges 17 and 18 of the carpet section. This most conveniently may be done by lifting the abutting edges and inserting one or more of the arches so the apex of each arch is parallel and exactly underlies the abutting margins. At this time, the arch and carpet sections assume the position shown in Fig. 2 wherein it will be noted that only the lower margins of the abutting sections are in actual contact. As a second step, the section edges 17 and 18 are attached to the arch by pressing down with enough force to cause the grip elements 10 to pierce and penetrate the backs 15 and 16. This operation is illustrated in Fig. 3 wherein the small arrows 20 diagrammatically indicate a rolling, pressing, or other force sufficient to cause penetration. At this point, it should be noted that the obtuse disposition of the wings 7 and 8 coacts with the acute angle disposition of the grip elements 10 to allow a more or less vertical rolling or pressing force to achieve the required penetration. That is to say, were the grip elements 10 to stand perpendicular to the plane of the wings 7 and 8 or were they to lie turned back at an opposite angle thereto, some difficulty would be experienced in causing the carpet section edges 17 and 18 to penetrate the sharp points since the sections already have been positioned and arranged within the room so that little if any longitudinal movement can or should be allowed.

In Fig. 4, the next sequential step is illustrated. In this figure, the large arrow 21 represents a substantial vertical crushing, pressing, or collapsing force which is sufficient to flatten the arch 6. Thus, the arch may be flattened with any of numerous techniques such as rolling a heavy roller along the abutting sections or stepping down, with the feet, on the two edges 17 and 18. In any event, the flattening of the arch draws the adjacent edges 17 and 18 into full and tight abutment with the respective grip elements 10 pointed generally at the same acute angle to the plane of the wings as previously was mentioned. This grip element disposition and the full marginal abutment is shown in Fig. 5. Further, if the lateral tension slits 11 of Fig. 1 have been provided, the arch will not tend to spring back or resume its former bowed position even though a rather heavy gauge metal may have been employed. Thus, there preferably is provided a relatively thin and a substantially flat metallic piece which underlies the joint between the carpet sections 12 and 13 with the wings 7 and 8 extending back and under the edges of the sections.

The final form of the floor covering, as illustrated in Fig. 5, also is believed to be of importance since the grip elements 10 now are pointed generally toward one another and toward the seam or joint of the carpet rather than straight up. This acute angle disposition of the grip elements, of course, could not be accomplished with a metallic piece which initially was flat unless the elements were bent over after they penetrated the carpeting. Further, in its final position, the grip elements 10 resist parting movement of the sections and the abutment of the carpet section edges resists movement in the opposite direction.

A parting force, for example, may be generated when the carpet layer stretches the sections as represented by the arrows 22 in Fig. 5. This often is done further to smooth the unitary carpet or rug. With grip elements which are not at an acute angle, however, the final stretch must wait until an adhesive dries. In conclusion, it will be understood that my novel joining device, method, and floor covering will adapt themselves to variations apparent to skilled carpet layers. For example, if the sections 12 and 13 of Fig. 2 are being laid upon a thick cushioned underlay or pad 14, it may be found to be desirable to insert a flat piece of plywood or a long board under the wings of the collapsible arch 6 in order that these wings will have a smooth flat surface over which to slide while they are being collapsed. Such as expedient requires that some provision be made for withdrawing the plywood or board after the carpet is laid but the carpet layer, of course, will make such provision where it is required. In any event, it now will be apparent that the cooperating elements of my invention substantially will lessen the expense of carpet laying and will permit semi-skilled workmen or householders to lay sectional carpet quickly, artfully, and securely. Further, such a workman or householder need not handle or turn the carpet sections repeatedly as with the prior art methods and no hammering or other working operations need take place through the exposed sides of the floor covering. In combination with these advantages, the complete elimination of the use of an adhesive or a sewing operation are believed to be of substantial commercial importance to the carpet laying art.

I claim:

1. The method of joining sections of carpeting, comprising; providing a deformable arch having grip elements which lie at an oblique angle to the legs of the arch, abutting the adjacent edges of the respective sections above the apex of the arch, uniting the respective section edges with the grip elements so the latter hold the respective carpeting edges, and, thereafter, flattening the deformable arch to draw the adjacent edges of the carpeting sections into tight abutment.

2. The method of joining companion sections of floor covering material without sewing or utilizing adhesives, comprising; providing an elongated deformable arch having pointed grip elements which protrude above the plane of the legs of the arch and which lie at an acute angle thereto, abutting only the lower margins of the adjacent edges of the respective sections above the apex of the arch, attaching the sections to the arch by pressing the respective edges down over the pointed grip elements so the latter penetrate the edges, and, thereafter, pressing down upon and collapsing the deformable arch to make the sections lie flat in abutment over the entire height of the margins.

3. In a method for joining elongated sections of backed pile carpeting, the steps comprising; providing an elongated deformable arch having pointed grip elements which protrude above the plane of the legs of the arch and which lie at an acute angle thereto, lifting and abutting the adjacent edges of the respective sections of carpeting above the apex of the arch, pressing the respective edges down over the pointed grip elements so the latter penetrate the backs of the respective carpeting edges, and, thereafter, flattening the deformable arch to draw the adjacent edges of the carpeting sections into tight and full abutment with the arch grip elements pointed gen-

erally up at an acute angle to the plane of the flattened arch.

4. The method of joining elongated sections of fabric floor covering, comprising; abutting the adjacent edges of the respective sections of covering, stretching the sections in a longitudinal direction to smooth the carpeting, providing an elongated deformable arch having two wings which meet at an apex, each of said wings carrying a plurality of protruding grip elements lying at an acute angle to the plane of the respective wing, lifting said abutting, tensioned edges and inserting said arch thereunder with the apex of the arch arranged under the edges of the carpeting, uniting the respective edges with the grip elements so the latter securely are joined to the respective edges, and, thereafter, flattening the deformable arch to draw the adjacent edges of the sections of covering into tight and full abutment.

5. The method of seaming elongated sections of fabric floor covering without sewing or utilizing adhesives, comprising; abutting adjacent edges of the respective sections of covering with the pattern, if any, matching across the line of abutment, stretching the sections in a longitudinal direction parallel said abutting edges to tension and smooth the carpeting, providing an elongated deformable arch having two wings which meet at an apex, each of said wings carrying a plurality of sharply pointed protruding grip elements lying at an acute angle to the plane of the respective wing, lifting said abutting, tensioned edges and inserting said arch thereunder with the apex of the arch arranged under and parallel the edges of the carpeting, pressing the respective edges down over the pointed grip elements so the latter penetrate the backs of the respective edges, and, thereafter, pressing down upon and collapsing the deformable arch to make the sections lie flat in complete marginal abutment with the seam line hidden.

6. The method of joining and attaching to a floor or the like elongated sections of fabric floor covering, comprising; abutting the adjacent edges of the respective sections of covering, stretching the sections in a longitudinal direction to smooth the carpeting, providing an elongated deformable arch having two wings which meet at an apex and bound an obtuse angle, each of said wings carrying a plurality of protruding grip elements lying at an acute angle to the plane of the respective wing, lifting said abutting, tensioned edges and inserting said arch thereunder with the apex of the arch arranged under the edges of the carpeting, attaching the sections to the arch by pressing the respective edges down over the grip elements so the latter penetrate the backs of the respective edges and the lower margins of the edges contact one another in abutment, flattening the deformable arch to draw the adjacent edges of the sections of covering into tight and full abutment with the respective groups of grip elements pointed generally at the same acute angle to the plane of the respective wings, and, thereafter, securing the joined covering to a floor or the like in the conventional manner of securing an integral one piece covering.

7. A device for joining adjacent sections of floor covering in substantially seamless abut-

ment, comprising a collapsible arch having spaced wings which diverge downwardly from an apex, and a plurality of grip elements carried by and protruding above each said wing.

8. A device for joining sections of carpeting, comprising a collapsible arch having spaced wings which diverge downwardly from an apex, and a plurality of sharp pointed grip elements formed integral with each wing and protruding above the plane surface thereof at an acute angle generally facing the opposite wing.

9. A device for locking adjacent sections of floor covering in substantially seamless abutment without employing adhesives or sewing, comprising an elongated deformable arch formed from a unitary thin sheet of material, said arch having two downwardly divergent wings which define substantially plane surfaces intersecting along an apex line, a plurality of grip elements carried by and protruding above each said wing to engage and hold the edge of the corresponding section against displacement, and a plurality of lateral tension slits piercing each wing intermediate the grip elements carried thereby.

10. A device for joining adjacent sections of fabric floor covering in substantially seamless abutment, comprising an elongated deformable arch formed from a unitary thin sheet of material, said arch having two divergent wings which bound an obtuse angle and meet along a longitudinal apex line, a plurality of sharp pointed grip elements formed integral with each wing and protruding above the plane surface thereof at an acute angle facing generally in the direction of the opposite wing, said grip elements being arranged in spaced longitudinal rows parallel said apex line with the elements in one given row staggered with respect to those in the next adjacent row, and a plurality of lateral tension slits piercing each wing intermediate the rows of grip elements carried thereby.

11. In combination with two elongated sections of backed carpeting arranged in edge to edge abutment, a thin and substantially flat metallic piece underlying the joint between said sections and having a plane wing portion extending back and under the edge of each section, a plurality of protruding sharp pointed grip elements formed integral with each wing and extending thereabove in penetration of the back only of the corresponding carpet section, each grip element lying at an acute angle to the plane of the corresponding wing and being arranged to point generally toward said joint, said grip elements being arranged in spaced parallel rows with the individual elements in a given row staggered with respect to those in the next adjacent row, said wings being pierced by a plurality of staggered lateral tension slits.

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