

May 8, 1923.

C. E. GENUNG  
UPHOLSTERY MATERIAL  
Filed Feb. 11, 1921

1,454,049

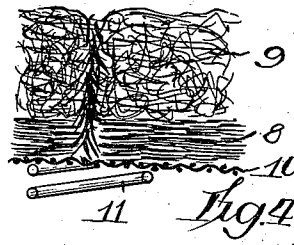
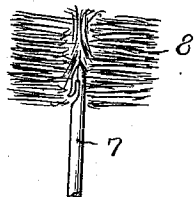
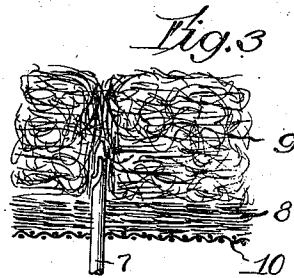
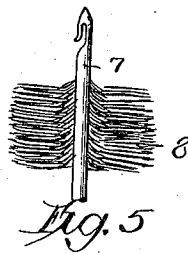
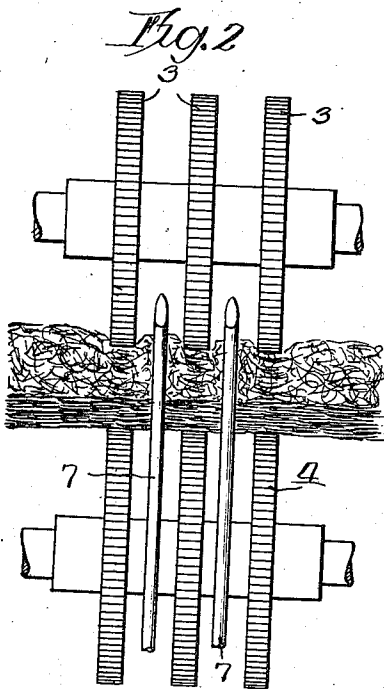
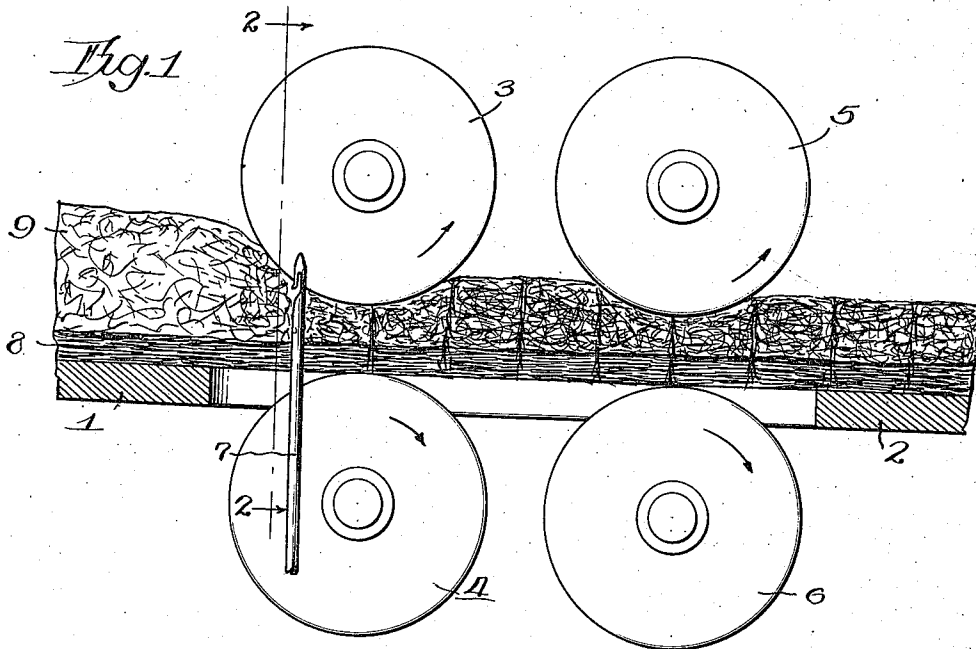


*Fig. 6* Inventor:  
Charles E. Genung  
by Albert Scheidt  
Attorney

Patented May 8, 1923.

1,454,049

# UNITED STATES PATENT OFFICE.

CHARLES E. GENUNG, OF CHICAGO, ILLINOIS, ASSIGNOR TO MORRIS & COMPANY, A CORPORATION OF MAINE.

## UPHOLSTERY MATERIAL.

Application filed February 11, 1921. Serial No. 444,255.

*To all whom it may concern:*

Be it known that I, CHARLES E. GENUNG, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Upholstery Materials; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to upholstery materials of the general class used for the upholstering of cushions, overstuffed furniture and the like, its general object being that of producing a laminated upholstery material which can be employed with unusual facility and economy and which will include curled hair as one of its layers. More particularly my invention aims to provide an underlay for the curled hair which will facilitate the handling of the same, and which will aid both in maintaining a substantially predetermined disposition of the curled hair and in effectively distributing the pressure to which the curled hair is subjected. Heretofore, curled hair has commonly been furnished to upholsterers in the form of so-called bats, in which the hair is interlaced while under pressure and hence is furnished in layers of approximately uniform thickness. Such bats, while facilitating the upholstering are not entirely satisfactory, partly because their lack of tensile strength permits such bats to be separated by undue pressure at any one point or along any line, thus often allowing such a bat to be torn apart during the upholstering or even while it is being handled prior to its use.

To avoid this shortcoming, it has been proposed to mount such bats on layers of textile material such as burlap, and for this purpose curled hair bats mounted on burlap have been employed with the hair secured to the burlap by an interlacing operation which forces portions of the curled hair through the burlap, the supposition being that these hair portions would anchor themselves upon the outer surface of the burlap. In practice, such an arrangement has not afforded either an effective anchoring or the increased tensile strength which had been expected, such shortcoming being due

partly to the large size of the meshes as opened up in the burlap by the interlacing operation, and partly to the tearing of the burlap during the interlacing operation, and partly to the smoothness of the burlap. That is to say, the tools used for forcing some of the curled hair through the burlap are apt to tear the burlap so as to rupture this at many points and when these breakage points are along the lines in which such needles would logically be used, the strength of the burlap is so weakened that the resultant laminated material is apt to tear when it is stretched over rounded surfaces during the upholstering of certain classes of furniture. Likewise, the lack of resilience in any textile material, such as burlap, prevents the adjacent threads from snapping back towards each other after a gap has once been formed between them by the passage of a needle, so that the finished material presents hair portions projecting loosely through these large openings and engaging the smooth threads of the burlap with so little friction as to offer no effective hold, so that lateral or diagonal strains, on the curled hair will readily separate the latter from the burlap.

Furthermore, neither burlap nor other textile materials are adequate for distributing a linear or otherwise localized pressure to the curled hair in a manner which will prevent a gouging into the hair bat, hence such curled hair bats even when used with a textile underlay afford a cushion of quite irregular thickness and effectiveness when used over spiral springs. To reduce this effect, it has been customary to manufacture the curled hair largely of long hair which is relatively high in cost and hence increases the cost of the resultant material to an undesirable extent, but even this custom only partly mitigates the gouging.

To overcome all of these objections, my invention aims to provide an underlay for curled hair which can be used either with or without a bottom layer of burlap or other textile material, which will afford the desired tensile strength so as to prevent the hair bat from being ruptured even when it is being used upon a convex surface, which will distribute the pressure effectively when used over springs or the like, and which will permit the use of a very large propor-

tion of short hairs in the curled hair bat without impairing the effectiveness of the resulting laminated cushion material.

Still further and more detailed objects of my invention will appear from the following specification and from the accompanying drawings, in which—

Fig. 1 is a fragmentary vertical section through an interlacing machine showing one method of manufacturing the material of my invention.

Fig. 2 is a vertical section taken at right angles to Fig. 1 along the correspondingly numbered line in that figure.

Fig. 3 is a vertical section taken during the manufacture of my material in a form which also includes a bottom layer of fabric and showing the disposition of various portions thereof while an interlacing needle is being retracted through the curled hair.

Fig. 4 is a similar section taken after the needle has been entirely retracted and also showing a part of a coiled spring under the material.

Fig. 5 is a more greatly enlarged section showing the disposition of the portions of the hair felt adjacent to the needle while the latter is being retracted, and

Fig. 6 is a similar section showing the hair felt and part of the interlacing hairs as they appear when the tip of the needle is approaching the bottom of the hair felt.

In the manufacturing upholstery materials embodying my invention, I may effectively employ the machine for interlacing curled hair as disclosed in United States Patent No. 1,243,133 to Arthur R. Billington, and I am, therefore, illustrating the manufacture of my material by the use of this machine, although I do not wish to be limited to any particular apparatus or method for its manufacture.

Referring first to Figs. 1 and 2 these show the constituent parts of the proposed material as being fed through a machine which includes a feeding table 1 laterally spaced from a delivery table 2 by a gap which permits the material to be fed between a series of slowly rotating discs. These discs are here shown as comprising an initial pair 3 and 4 respectively disposed for engaging the upper and lower surfaces of the material, and a second pair of discs or rather sets of discs 5 and 6 arranged for the further feeding of the finished material to the delivery table. All four sets of discs rotate intermittently in a direction which is counter-clockwise for the upper discs and clockwise for the lower discs in Fig. 1, and the discs of the sets 3 and 4 are spaced longitudinally of the shafts carrying the same so as to permit vertical needles 7 to move up and down between the consecutive discs.

In operation, the four sets of discs are intermittently rotated in the above men-

tioned directions (as also shown by the arrows in Fig. 1) and during their halting periods a series of needles 7 disposed as shown in Fig. 2 are forced upwardly entirely through the raw materials and then retracted below the bottom of the latter, all after the general manner described in the said patent to Billington. These raw materials are shown in Fig. 1 as comprising a layer of hair felt 8 and a mass of curled hair 9, which curled hair previously has had its constituent portions interlaced substantially uniformly with one another on a hair interlacing machine. This curled hair 9 is piled by the operator on the layer of hair felt to a height proportioned to the amount of curled hair which is to be used, and is compressed during the forward feeding of the material substantially as shown in Figure 1, or so that it approximates its proposed finished thickness by the time it reaches the needles 7. Then while the materials are all halted, during the stopping of the discs, the needles 7 are forced upwardly by the machine through the same to a point beyond the top of the curled hair.

During this movement of the needles, the tip of the latter forces itself through between the constituent particles of the hair felt, the latter being ordinarily composed of short hog hairs according to the usual practice. In thus making room for its passage, the tip of the needle acts as a wedge for slightly compressing the hair felt in all lateral directions adjacent to the bore which is thus temporarily formed by the needle and through which the latter is afterwards retracted, and whenever the needle encounters end portions of hair in the hair felt, it turns these upwards somewhat after the manner shown in Fig. 4. Then, when the needle is being retracted, the hook on it engages portions of the curled hair and draws these down with it to an extent varying with the lengths of these hair portions and with their respective positions in the mass of curled hair.

Ordinarily most of the curled hair portions engaged in this manner by the needle are so interlaced with the general mass of curled hair that the needle only draws a part of such hair with it, leaving the other ends of the hairs still interlaced with the general mass of curled hair. Then, when the needle reaches the free ends of the curled hair portions thus drawn down with it into the bore through which the needle is being retracted, the resiliency of these hairs due to their prior curling treatment, will make them tend to resume their forward curvatures. Consequently, the tips of some of these hairs will snap in between hairs of the hair felt. Likewise, the withdrawal of the needle will permit the above described lateral compression of the hair felt portions to force these back

towards the center of the said bore, so that these felt hair portions will not only grip the tips of the interlacing hairs between them, but also will laterally clamp or grip non-terminal portions of such hairs.

In practice, some of the interlacing hairs as drawn down by each needle may extend entirely through the hair felt and may hook under the bottom of the latter, being free to do this owing to the fact that the portions of the material through which the needles pass up and down are freely supported at that time. However, the major portion of the resultant anchoring will be effected by the engagement of the interlacing hairs with portions of hair felt disposed above the bottom of the latter or where they will not be moved by any friction which might later come on the hair tips projecting below the bottom of the hair felt. Owing to their curvature, such projecting hair tips may also be employed for simultaneously securing the hair felt and the curled hair to a bottom layer of fabric (as for example the burlap indicated in Figs. 3 and 4). If such a fabric bottoming is used, the apparently unavoidable tearing of portions of the fabric during the manufacture of the material can be neglected, since the felt supplies ample tensile strength for resisting any strains that might normally occur either in the preliminary handling of my cushioning material or while the latter is in use. Likewise, any loosening of the grip of interlacing hair ends on such a bottoming fabric will still leave the curled hair firmly interlocked with the felt so as to maintain the curled hair in its desired substantially uniform distribution.

For most purposes, the underlay of hair felt is desirably of a considerable thickness, it being customary for example to use a quarter-inch layer of hair felt with a one-inch layer of curled hair, or a half-inch layer of hair felt with one and one-half inches of curled hair, and so on. Hence the method as just described permits a considerable number of curled hairs to be anchored between the particles of such relatively thick hair felt layers in each of the bores, so that I can obtain an effective interlocking even while employing curled hair composed to a large extent of the short or hog hair. For example, I find it feasible to use up to 85% of the short hog hair interlaced with as little as 15% of cattle hair for such purposes, thus employing a much higher percentage of the cheap and short hair than has been practical heretofore. Moreover, the engagement of the downwardly drawn curled hairs with

portions of the hair felt is so effective that I secure a firm anchoring of the curled hair bat to the felt, thereby positively preventing the curled hair from being slid along the felt by pressure exerted either during the upholstering of articles with my laminated material or during the use of the latter, so that I continuously maintain the curled hair in the desired substantially uniform distribution. At the same time, the hair felt which enables me to secure this uniformity of cushioning action in the curled hair also distributes such localized pressure as might otherwise tend to indent the curled hair and spoil this cushioning effect. Thus it will be evident from Fig. 4 that the resistance of the coiled spring 11 will be distributed obliquely upward through the hair felt to the curled hair over a considerable portion of the latter.

However, while I have described materials embodying my invention as including cattle hair felt as one layer and as used for certain purposes, I do not wish to be limited to these or other details of the construction and arrangement here disclosed, it being obvious that the same might be varied in many ways without departing from the spirit of my invention or from the appended claims.

I claim as my invention:

1. An upholstery material including a base layer of hair felt embodying short hairs and a superimposed layer of curled hair, portions of the curled hair being disposed transversely of the layers and interlaced therewith throughout the thickness of both layers so as to provide a continuous hair connection of the same length as the combined thicknesses of both layers to prevent lateral shifting of the parts in the completed material and to form a hair to hair connection wherein the ends of the short hairs transversely engage the curled hair.

2. An upholstery material including a base layer of fibrous material embodying hairs and a superimposed layer of curled hair, portions of the curled hair being disposed transversely of the layers and interlaced therewith throughout the thickness of both layers so as to provide a continuous hair connection of the same length as the combined thicknesses of both layers to prevent lateral shifting of the parts in the completed material and to form a hair to hair connection extending throughout the combined thicknesses of the layers.

Signed at Chicago, Illinois, February 7th, 1921.

CHARLES E. GENUNG.