

[54] **COVER MATERIAL FEEDING AND FORMING APPARATUS FOR A QUILTING MACHINE**

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[58] Field of Search.....223/28-34; 156/585, 593, 219, 594, 595-599; 112/117-119; 5/358, 345

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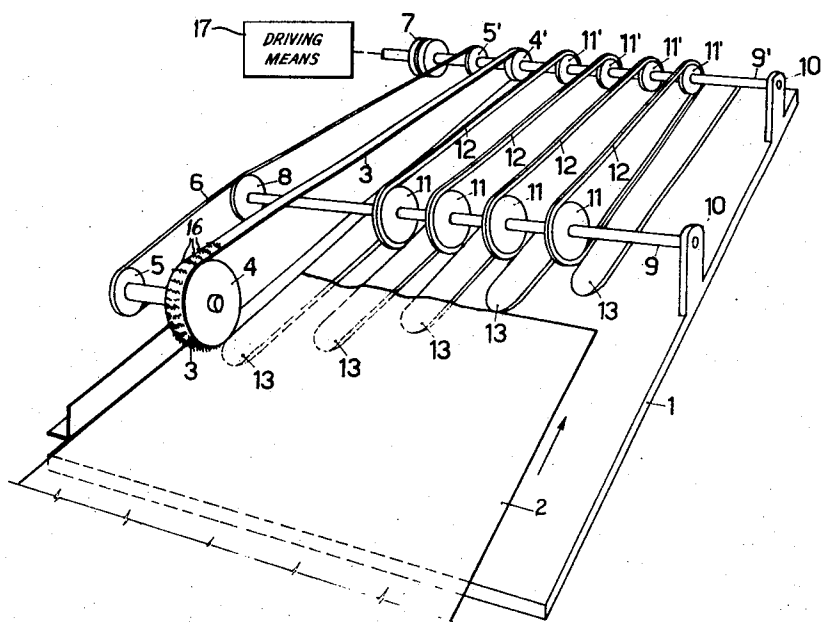
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[57] **ABSTRACT**

Apparatus for feeding cover material into a quilting machine and simultaneously forming the same for covering longitudinal strips of elastic padding supported on a lower base material in order to obtain padding materials in the form of attached tubes filled with said strips. The cover material is fed along a plane surface by a belt provided with nails. Such surface has projecting parts with the same cross-section and size as the padding tubes to be manufactured. The cover material is gradually forced to adapt itself to such projecting parts by means of chains running in the cavities therebetween and in the same direction as the cover material itself. These chains are driven by pairs of sprockets mounted on two parallel shafts and at the end of said projections, the cover material is contacted with the padding strips and directed to the needles of the quilting machine.

7 Claims, 3 Drawing Figures



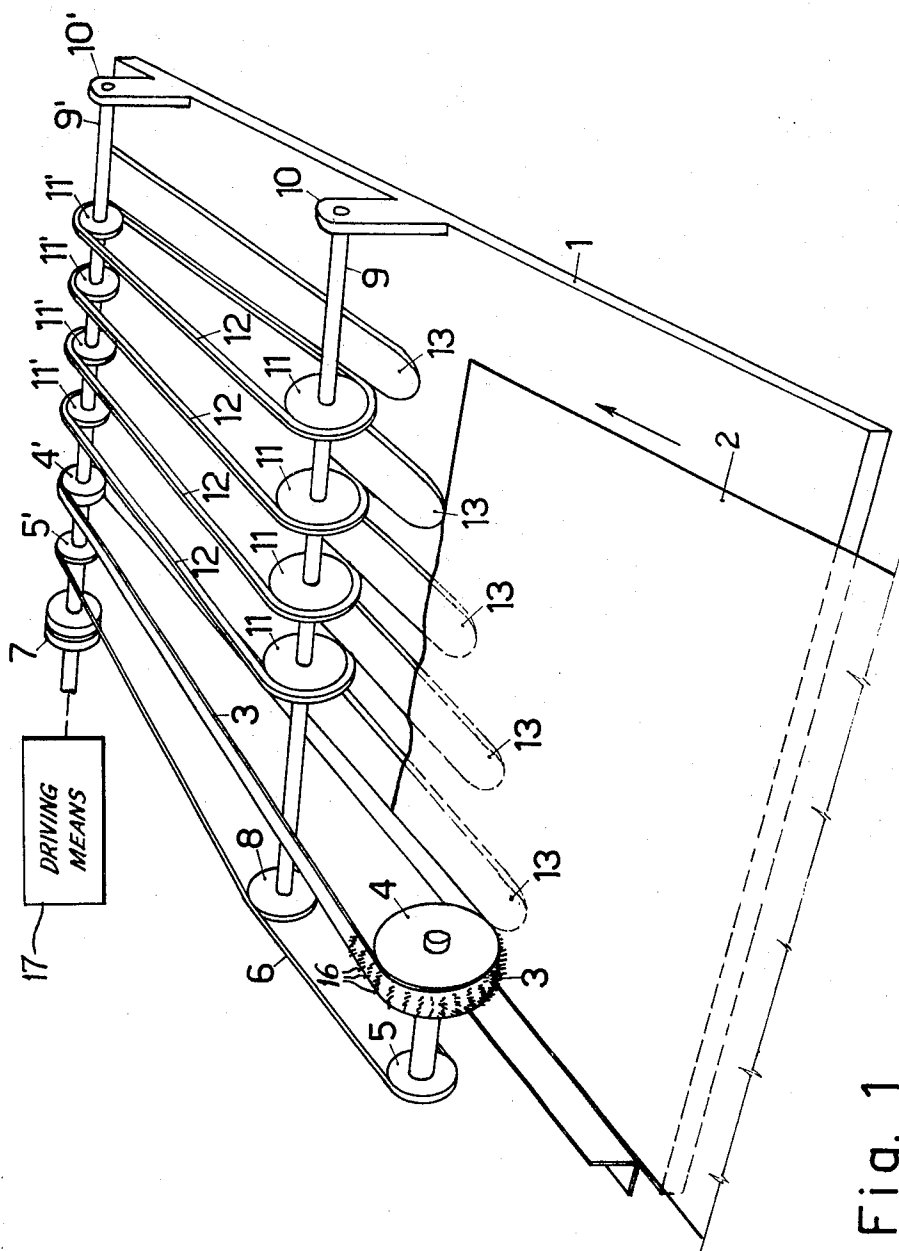


Fig. 1

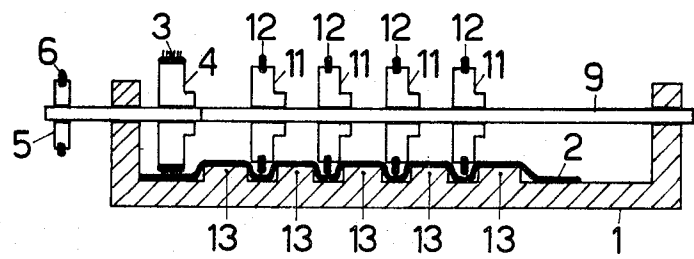


Fig. 2

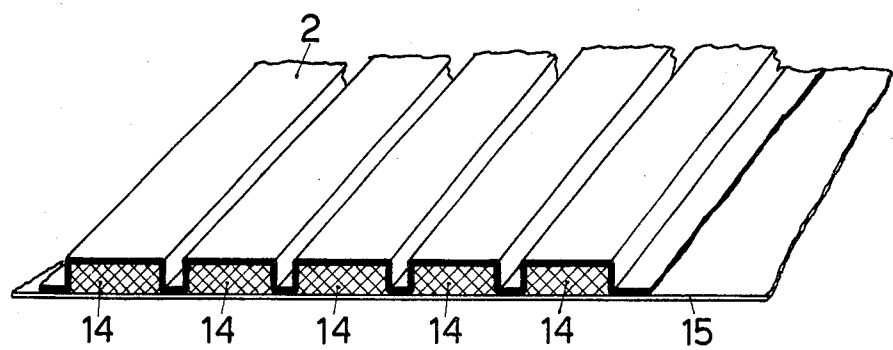


Fig. 3

COVER MATERIAL FEEDING AND FORMING APPARATUS FOR A QUILTING MACHINE

BACKGROUND OF THE INVENTION

This invention relates to apparatus adapted to prepare, by way of an appropriate shaping operation, a cover material (fabric, plastic material, artificial leather, etc.) to be subsequently applied on a padding cut into longitudinal strips (for example, expanded polyvinyl chloride, rubber foam, etc.) supported on a supporting material, and to convey the whole towards the needles of a multi-needle quilting machine.

At present, there are known, and such are meeting more and more success, quilted products having their padding material in the form of separate, but attached, longitudinal strips, which will be referred to hereinafter as "canes," having a marked height and an aesthetically more valuable appearance than the type of padding obtained by simple compression during and by means of the quilting operation, wherein the padding is in the form of single panels not cut into strips. In addition to the aesthetic factor, this type of padding with separate canes offers more comfort, especially for car seats. Actually, in the case of a single padding panel, the quilting operation includes the compression of the inner material, which thus loses part of its elasticity. On the contrary, with the type of padding having spaced out strips, which can be obtained using the device according to the present invention, the quilting is produced in the spaces between the canes, and hence, between the upper cover material and the lower supporting material, without any compression of the padding material, which thus keeps all its elasticity. This type of padding is known and is much in demand on the part of the automobile industries, furniture industries and the like for application to car seats and furniture coverings, but the processes employed at present for the production of said articles are slow, expensive and require an extensive use of labor and are still performed on a manual scale and not on an industrial scale. This means that the single padding strips have to be manually arranged in parallel on the supporting material, fixed thereto with the aid of glue or stitching and subsequently covered by an external cover material and stitched with single needle machines in the spaces between one strip and the next.

SUMMARY OF THE INVENTION

An object of the apparatus according to this invention is to make it possible to carry out the aforesaid process on an industrial scale, so as to permit a large increase in production per time unit, a reduced employment of labor and, accordingly, a reduction in costs. This is attained by using a particularly simple device, the function of which is that of shaping the out cover material, so that it may be easily coupled with the padding already cut into strips, the whole being then conveyed to the stitching stage of a multi-needle quilting machine, such as that shown in my copending application Ser. No. 55,381, filed July 16, 1970.

BRIEF DESCRIPTION OF THE DRAWINGS

This and other objects, advantages and characteristics of the apparatus of the present invention will be more readily apparent to those skilled in the art from the following detailed description of an embodiment which should be considered with reference to accompanying drawings, wherein:

FIG. 1 is a perspective and diagrammatic view of the apparatus of the invention;

FIG. 2 is an end elevation view, partly in cross-section taken at the forward end of the cover material, of the device shown in FIG. 1; and

FIG. 3 is a perspective view of the padded product at the outlet of the device shown in FIGS. 1 and 2 before being quilted.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIG. 1, there can be seen the table 1 on which there slides, being fed from a feeding roll (not shown in the figure), the material 2 (fabric, plastic material, artificial leather, etc.) which is to constitute the outer cover of the padded article to be produced. The material 2 slides over the table 1 pulled by a belt 3 provided with nails 16 which are adapted to grip the material 2.

The belt 3 is carried by two pulleys 4, 4', and pulley 4 is driven by means of two sprockets 5, 5' connected by a chain 6 and driven by the driving means 17 through the coupling 7 so as to advance the material 2 in synchronism with the needles of the quilting machine. Through the sprockets 5' and 8, the chain 6 drives two shafts 9 and 9' the ends of which are allowed to rotate in the supports 10, 10'. The shafts 9 and 9' are keyed to and drive the spaced sprockets 11, 11' connected together by the specially profiled chains 12.

The table 1 is provided with projecting parts 13 having a rectangular section and the same shape and dimensions as those of the padding canes which are required to be used. Considering the movement of the material 2, in its direction of advance there is a starting portion, wherein the projecting parts 13 begin to lift portions of the material 2 from the table 1, each part 13 having a width and a spacing from the adjacent projecting parts equal to the width and spacing of the canes which are required in the finished product. Over this starting portion, the projecting parts 13 have an increasing height which becomes that of the padding strips which will replace said projecting parts 13, when the material 2 has completed its run under the chains 12 and is located beneath the sprockets 11'.

In this way, the material 2, which is gradually forced to take the shape indicated in FIG. 2, by being pushed down on the table 1 between one projecting part 13 and the next by the belts 12, and is coupled with the padding strips sustained by a supporting material, in alignment with the sprockets 11'. At this point of its advance, the material 2 has thereunder, instead of the projecting parts 13, the padding strips 14 sustained by the foundation material 15 as shown in FIG. 3.

The assembled product is now ready to be conveyed to the quilting stage, since once the chains 12 have been left, the chains 12 are replaced by the pressure feet of the multi-needle quilting machine, so that every needle of the latter is situated above the spaces between one cane and the next.

As described in my aforesaid copending application, the previously cut padding strips 14 proceed in a known manner on a conveying belt moving in an inclined plane with respect to table 1 and in such a way that they meet the latter in alignment with the points where the chains 12 leave the material 2. At the end of their run on the conveying belt, the strips 14, sustained by the foundation material 15, meet with appropriate partitions (not shown) substantially in the form of wedges, to make sure that the distance between the strips be the desired one and that the latter align with the projecting parts 13 which have shaped the cover material 2. Of course, the upper cover material 2 may also not be unrolled from a feeding roll, but instead, it may be in the form of previously cut panels already shaped, if so desired, and already prepared for the purpose of assembly with the strips of padding material.

In this latter case, the process is similar to the described one, with the difference that the panels are fed one after the other, optionally by hand, onto the table 1 of the apparatus according to this invention, to be then advanced by the quilting needles by the belt 3 provided with nails 16, so as to be quilted and then cut to a desired size. Of course, the belt 3 provided with nails 16 and the chains 12 must be designed so as not to cause any damage to the material 2, and in particular said chains 12 must have a width which is not much narrower than the distance between two adjacent projecting parts 13 so as to cause the material 2 to adequately engage to the sides of said projecting parts first and then the sides of the padding strips

14. An important detail of the device according to this invention is the gradual and progressive arrangement of the projecting parts 13 on the table 1, which permits the material 2 to be gradually released and, consequently, enables said outer cover material to adapt itself to the projecting parts and form the required canes.

Possible modifications and/or additions may be contributed by those skilled in the art to the device according to this invention, without exceeding the scope of the invention defined by the appended claims.

Actually, the embodiment described hereinabove and illustrated in the accompanying drawings has been given only by way of a non-limiting example of the invention.

What I claim is:

1. Apparatus for continuously advancing and forming a cover material for multi-layer padded articles comprising said cover material, a base material and intermediate, longitudinally extending and transversely spaced strips of padding material with the cover material secured to the base material intermediate said strips, said apparatus comprising a table having a plurality of projecting, material forming parts having a cross-section corresponding to the cross-section of said strips, said parts extending lengthwise of said table and being spaced transversely thereof to define a plurality of parallel grooves therebetween corresponding in spacing to the spacing of said strips; means for advancing said cover material lengthwise of said table comprising a belt mounted at one side of said table and engageable with said cover material at one end of said parts and extending to the opposite end of said parts, a surface of said belt extending parallel to and lengthwise of said table, and means for driving said belt surface lengthwise of said table in the direction of advance of said cover material; means for pressing said material into said grooves as it is advanced by said belt comprising a plurality of endless chains, one for each said groove, each chain being mounted with a portion thereof travelling in a corresponding groove from adjacent said one end of the adjacent said parts to the other end thereof and being spaced from the bottom of the groove a distance substantially equal to the thickness of said cover material, and means for driving said portion of said chains lengthwise of said table in synchronism with the movement of said belt whereby said chains cause said cover material to conform to the shape of said parts as it is advanced.

2. Apparatus as set forth in claim 1 wherein said belt is driven by a pair of pulleys, one mounted on a first shaft at said one end of said parts and the other mounted on a second shaft at said other end of said parts, said first and second shafts having parallel axes of rotation which extend parallel to said table and transversely to the direction of advance of said cover material, and driving means interconnects said shafts and wherein said chains are driven by pairs of sprockets, one pair

for each chain, one sprocket of each pair being mounted on said second shaft and the other sprocket of each pair being mounted on a third shaft intermediate said first and second shafts and parallel thereto.

3. Apparatus as set forth in claim 1 wherein said parts have different lengths and the part nearest to said belt has the greatest length and is first to engage said cover material whereby said material successively engages said parts as it is advanced commencing with said part nearest said belt.

4. Apparatus as set forth in claim 1 wherein said one end of said parts commences at the surface of said table and gradually increases in height to substantially the thickness of said padding strips thereby providing ramps at said one end for engaging the leading portion of said cover material as it is advanced.

5. Apparatus as set forth in claim 1 wherein said belt has pins extending therefrom for gripping and advancing said cover material.

6. Apparatus as set forth in claim 2 wherein driving means interconnects said second and third shafts.

7. In apparatus for uniting a quilted cover material and a base material with longitudinally extending padding strips therebetween and spaced transversely of each other along lines between said strips and having a plurality of needles for stitching said cover material to said base material along said lines, the combination therewith of means for continuously advancing and forming said cover material comprising a table having a plurality of projecting, material forming parts having a cross-section corresponding to the cross-section of said strips, said parts extending lengthwise of said table and being spaced transversely thereof to define a plurality of parallel grooves therebetween corresponding in spacing to the spacing of said strips; means for advancing said cover material lengthwise of said table comprising a belt mounted at one side of said table and engageable with said cover material at one end of said parts and extending to the opposite end of said parts, a surface of said belt extending parallel to and lengthwise of said table, and means for driving said belt surface lengthwise of said table in the direction of advance of said cover material; means for pressing said material into said grooves as it is advanced by said belt comprising a plurality of endless chains, one for each said groove, each chain being mounted with a portion thereof travelling in a corresponding groove from adjacent said one end of the adjacent said parts to the other end thereof and being spaced from the bottom of the groove a distance substantially equal to the thickness of said cover material, and means for driving said portion of said chains lengthwise of said table in synchronism with the movement of said belt whereby said chains cause said cover material to conform to the shape of said parts as it is advanced.

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