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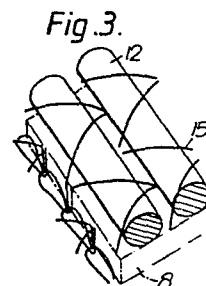
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54 **Stitch-bonding machine and method of manufacturing a decorative fabric in this machine, decorative stitch-bonded fabric produced by said method.**

57 A decorative fabric is produced in a stitch-bonding machine, the fabric comprising a fleece (8) stitch-bonded by a warp-knitted structure which also anchors on a surface of the fleece textured or effect yarns (12).



TITLE MODIFIED

see front page¹

"Decorative fabric"

DESCRIPTION

This invention is concerned with the manufacture of a decorative fabric which may be used for making curtains, drapes, wall covering or for covering articles of furniture.

5 Heretofore, a decorative fabric has been made having a plain or self-coloured background onto which textured yarns of same or different colours have been secured in various coloured or pattern arrangements lengthwise or transverse of the fabric. Due to the
10 yarns being individually secured, this decorative fabric is labour-intensive to make, and therefore costly relative to other decorative fabrics.

 It is also known to make a non-woven fabric on a stitch-bonding machine, the machine being used to produce
15 a stitch-bonded fabric formed from a fibre fleece being fed e.g. downwardly towards stitch-bonding elements arranged along an elongate stitching area arranged transversely to the direction of feed of the fleece, the threads for stitch-bonding the fleece being fed from one
20 side of the fleece towards said stitching area from a beaming stand, spools or the like. The stitch-bonding elements comprise a fleece retaining unit and a horizontally oriented unit having a row of needles adapted for reciprocatory movement from the other side of the fleece
25 and therethrough and a unit slightly upwardly inclined towards the area from the one side thereof, the unit having a row of thread guides for working in association, one needle having one thread guide, the thread guides carrying out lapping movements adjacent to the fullest extent of the reciprocatory movement of the needles through the fleece.
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 The object of the present invention is to manufacture a decorative fabric on a stitch-bonding machine of the type aforesaid.

 According to one aspect of the invention there is
35 provided a stitch-bonding machine comprising a stitch-

- 2 -

bonding zone wherein a row of needles is movable to and fro transversely of the length of the row relative to a parallel row of sinkers and to a parallel row of stitching thread guides confronting the needles and adapted to perform a lapping movement relative to the needles so as to wrap stitching threads about the needles and in cooperation with the needles and the sinkers to form stitches, means for feeding a fleece through the stitch-bonding zone whereby the fleece can be stitch-bonded at least by the stitching threads, means for feeding a plurality of textured or effect yarns together with the fleece through the stitch-bonding zone whereby the textured or effect yarns can be anchored on a surface of the fleece by the stitching threads and means for withdrawing from the stitch-bonding zone decorative fabric comprising the stitch-bonded fleece with the textured or effect yarns anchored on the surface of the fleece.

According to another aspect of the invention there is provided a method of manufacturing a decorative fabric in the above machine, wherein a fleece and a plurality of textured or effect yarns are fed through a stitch-bonding zone with the said yarns being laid on one surface of the fleece in the direction of feed, the fleece is stitch-bonded by the stitching threads and simultaneously the textured or effect yarns are anchored on the one surface of the fleece by means of the stitching threads.

According to a further aspect of the invention there is provided a decorative fabric produced by the above method.

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Fig. 1 is a diagrammatic fragmentary sectional view of a stitch-bonding machine;

Fig. 2 is a diagrammatic fragmentary sectional view of a modified stitch-bonding machine; and

Fig. 3 is a fragmentary view on an enlarged scale of a decorative fabric produced on the machine.

In Fig. 1 there is shown a sloping fleece feeding sheet 1 terminating at knocking-over sinkers 2. A vertical fleece retaining sheet 3 is bevelled at its lower edge where it forms a throat with the fleece feeding sheet 1 and the knocking over sinkers 2. Spaced below and on the same side of the throat as the fleece retaining sheet 1 is a guide bar 4. On the same side of the throat as the fleece retaining sheet 3 and the guide bar 4 are stitching-thread guides 5 mounted on a thread guide bar (not shown). Opposite the thread guides 5 are mounted compound needles comprising hooks 6 and hook-closing tongues 7, the hooks 6 and the tongues being mounted on corresponding bars. Between the fleece 8 and the fleece retaining sheet 3 is mounted a roller 9 with peripheral grooves therein. Above the roller 9 is a bar 10 having a longitudinal row of holes 11 through which individual textured or effect yarns 12 are threaded, the yarns 12 being fed from bobbins 13 via tensioning devices 14. Each tensioning device 14 basically comprises a cylindrically hollow housing with an opening in each end and a ball loosely mounted in the housing, the weight of the ball providing frictional resistance to the passage of yarn through the housing.

In operation, the fleece 8 is fed down the fleece feeding sheet 1 into the throat and is pulled through the throat by means (not shown). Simultaneously, the textured or effect yarns 12 are fed from the individual bobbins 13, through the individual tensioning devices 14 and the individual holes 11 in the bar 10 and between the fleece 8 and the roller in the individual grooves in the roller 9, the tension in the yarns 12 being derived from being anchored onto one surface of the fleece as will later be described.

In a modification, the roller 9 is replaced by a bar with pins the yarns 12 being fed individually between adjacent pins. In another modification as shown

in Fig. 2, the fleece retaining sheet 3 is disposed a little higher than in Fig. 1 and the roller 9 or bar is replaced by a member 16 in substantially the same position as the sheet 3 in Fig. 1 but serving
5 for guiding the yarns 12. In the top surface of the member 16 are two lines of openings serving for entry of the Yarns 12 and in the bottom surface of the member there is one line of openings serving for exit of the yarns 12. The yarn entry openings are
10 arranged so that alternate openings are in one line and the remaining openings are in the other line, the bores from the openings lying in two planes meeting above the single line of exit openings wherefrom the yarns 12 emerge just above the level where the yarns
15 12 are anchored onto the one surface of the fleece.

The fleece 8 is fed intermittently and during the time the fleece is stationary the open hooks 6 of the needles penetrate the fleece between the sinkers 2 and the stitching threads 15 are wrapped around the open hooks
20 by lapping movement of the guides 5. The tongues 7 are then extended to close the hooks 6 and thus trap the threads 15 therein. The closed hooks 6 are then retracted so as to pull the trapped thread 15 through old loops which are cast-off the needles at the sinkers 2. The
25 fleece 8 is then moved again and thereafter the open hooks 6 are extended through the fleece so that the thread 15 formerly trapped in the hook forms new loops on the shanks of the needles. When the open hooks 6 have again penetrated the fleece 8 the hooks are again wrapped
30 with threads 15. Thereafter the hooks 6 are closed again by the tongues 7 and the trapped threads 15 are pulled through the previously formed loops on the shanks of the needles.

By delaying the closing of the hooks 6 until after
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they have started to be retracted through the fleece 8 the fleece may be stitch-bonded not only by the threads 15 but also by its own fibres.

5 The lapping movement used in the stitch-bonding may be such that each guide 5 cooperates with only one needle so as to produce on the other surface of the fleece 8 parallel chains of stitches and on the one surface of the fleece 8 separate parallel lines of stitches which, due to the bulk of the yarns 12 anchor the yarns 12 to the fleece. Alternatively, however, 10 the lapping movement may be such that each guide 5 cooperates alternately with each of two adjacent needles so that on the one surface of the fleece 8 the stitches are in zig-zag formation between adjacent chains of stitches on the other surface of the fleece as shown 15 in Fig. 3. In this case the yarns 12 are overlaid by threads interconnecting the parallel chains of stitches.

The fleece retaining sheet 3 may be opaque; translucent or transparent in which latter case the operator can see 20 any imperfections in the fleece before these arrive at the stitch-bonding zone and take remedial action.

Alternatively the fleece retaining sheet may be provided with downward projections in line with the sinkers 2.

25 The textured or effect yarns 12 may be arranged individually or in groups of different colours and/or textures to achieve difficult decorative patterns on the one surface of the stitch-bonded fleece.

CLAIMS

1. A stitch-bonding machine comprising a stitch-bonding zone wherein a row of needles (6,7) is movable to and fro transversely of the length of the row relative to a parallel row of sinkers (2) and to a parallel row of stitching thread guides (5) confronting the needles and adapted to perform a lapping movement relative to the needles so as to wrap stitching threads (15) about the needles and in cooperation with the needles and the sinkers to form stitches, means for feeding a fleece (8) through the stitch-bonding zone whereby the fleece can be stitch-bonded at least by the stitching threads, means for feeding a plurality of textured or effect yarns (12) together with the fleece through the stitch-bonding zone whereby the textured or effect yarns can be anchored on a surface of the fleece by the stitching threads and means for withdrawals from the stitch-bonding zone decorative fabric comprising the stitch-bonded fleece with the textured or effect yarns anchored on the surface of the fleece.
2. A stitch-bonding machine according to claim 1, wherein the means for feeding a plurality of textured or effect yarns includes a member (16) having bores therethrough, the yarn exit openings thereof lying in a line just upstream of the stitch-bonding zone.
3. A method of manufacturing a decorative fabric in a machine according to claim 1 or 2, wherein a fleece (8) and a plurality of textured or effect yarns (12) are fed through a stitch-bonding zone with the said yarns being laid one surface of the fleece in the direction of feed, the fleece is stitch-bonded by the stitching threads (15) and simultaneously the textured or effect yarns are anchored on the one surface of the fleece by means of the stitching threads.
4. A method according to claim 3, wherein each

stitching thread guide (5) cooperates alternately with each of two adjacent needles (6, 7) to form stitches on the one surface of the fleece in zig-zag formation between adjacent chains of stitches on the other surface of the fleece, the zig-zag stitches overlying the textured or effect yarns.

5. A decorative fabric produced by the method a according to claim 3 or 4.

Fig. 1.

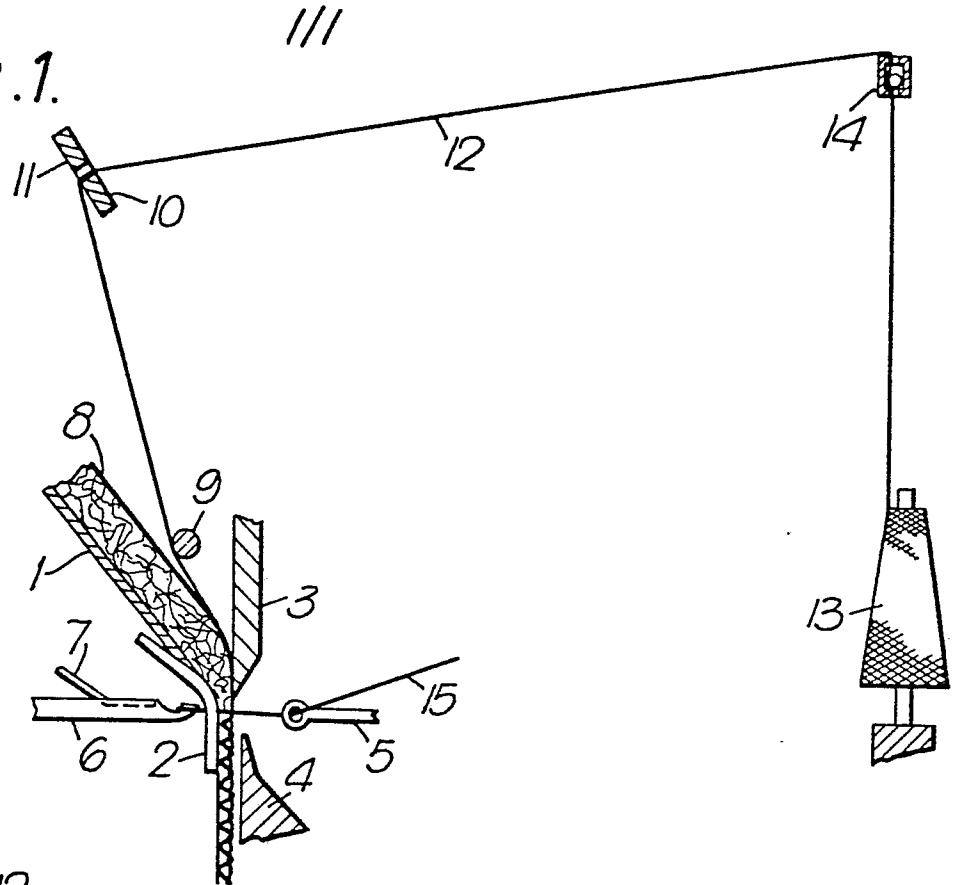


Fig. 3.

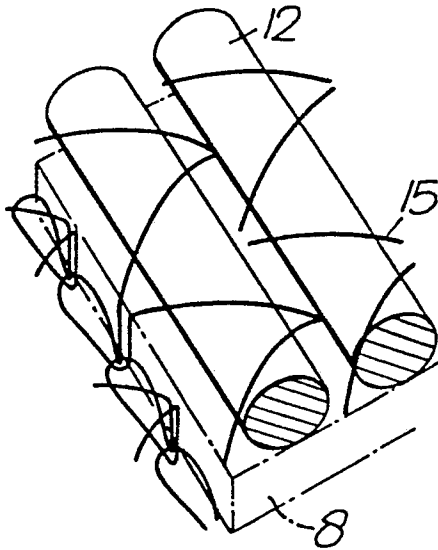
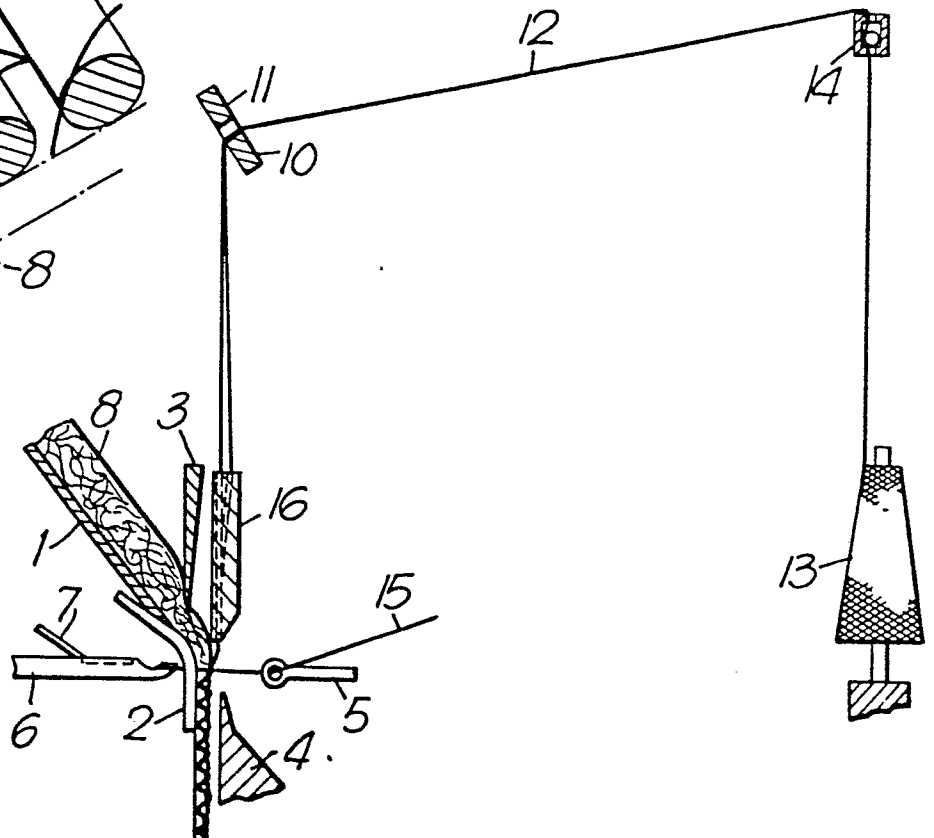


Fig. 2.





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EUROPEAN SEARCH REPORT

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Application number

EP 80 30 1296

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	FR - A - 1 467 783 (VEB NAHWIRK-MASCHINENBAU MALIMO) * Page 2, left-hand column, lines 12-61, right-hand column, lines 1-61; page 3, left-hand column lines 1-15; figure 1 * --	1,3-5	D 04 H 1/52 D 04 B 23/10
X	FR - A - 1 407 643 (VEB NAHWIRK-MASCHINENBAU MALIMO) * Page 1, left-hand column, lines 15-21; page 2, left-hand column, lines 29-61, right-hand column, lines 1-26, abstract and figures * --	1,3-5	TECHNICAL FIELDS SEARCHED (Int.Cl. 3) D 04 H 1/52 13/00 D 04 B 23/10 23/12 1/10 21/14
A	FR - A - 2 048 071 (DE VLAM) * Claims 1-4 * ----	3	CATEGORY OF CITED DOCUMENTS X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons &: member of the same patent family, corresponding document
☒ The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	30-07-1980	ELSEN-DROUOT	