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3,568,474

METHOD OF WARP KNITTING A PILE FABRIC

Filed Aug. 19, 1968

4 Sheets-Sheet 1

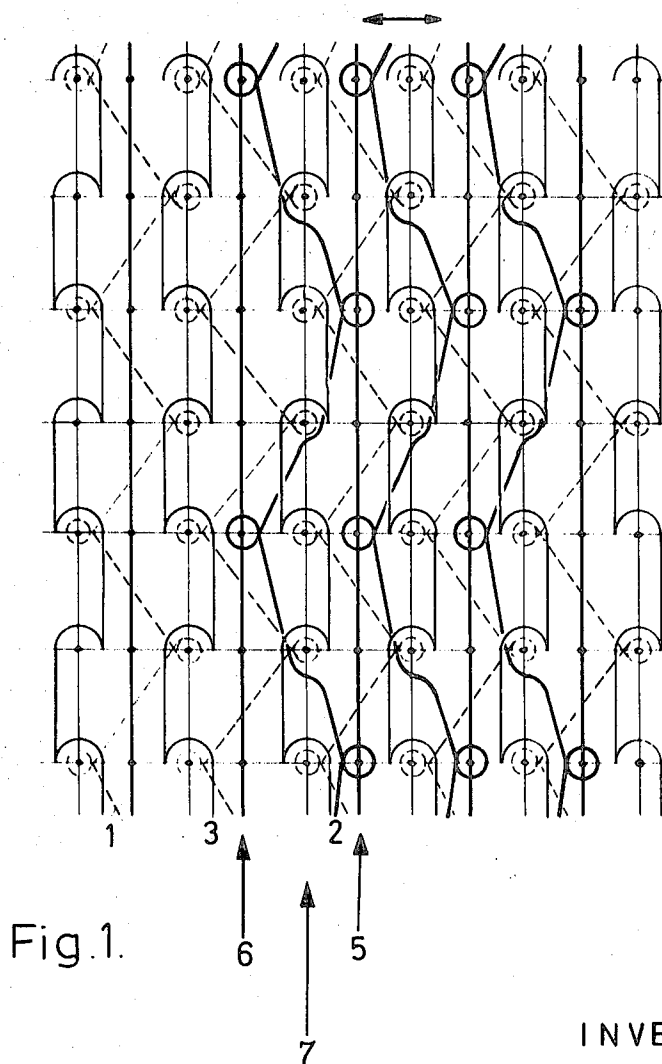


Fig.1.

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4 Sheets-Sheet 2

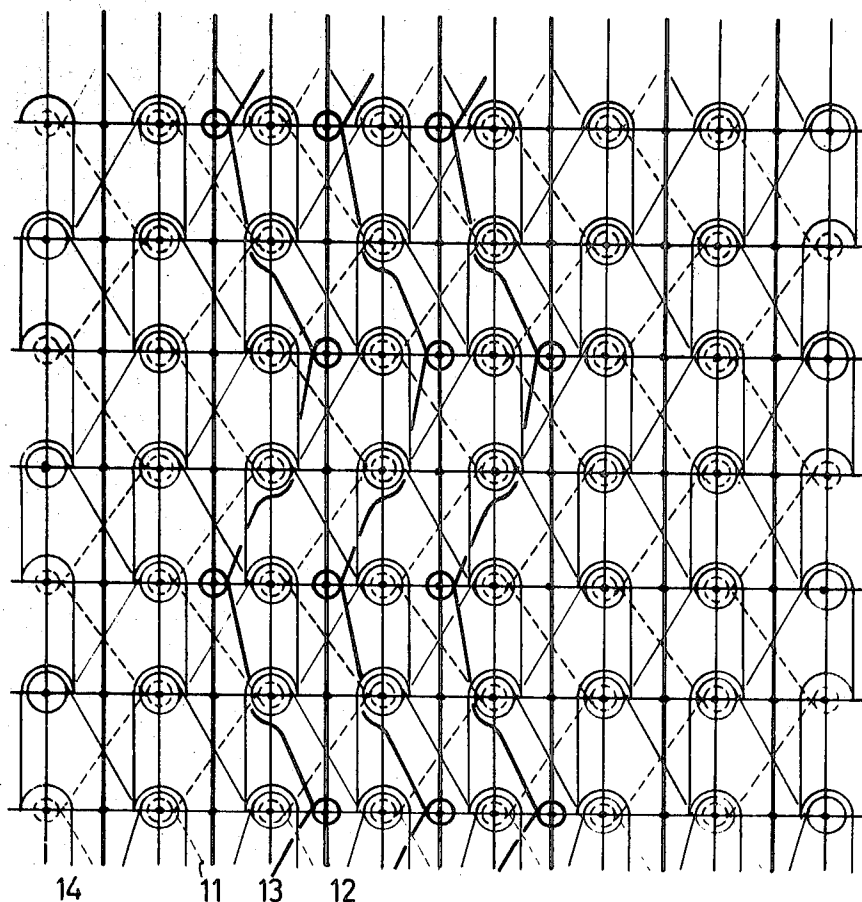


Fig.2.

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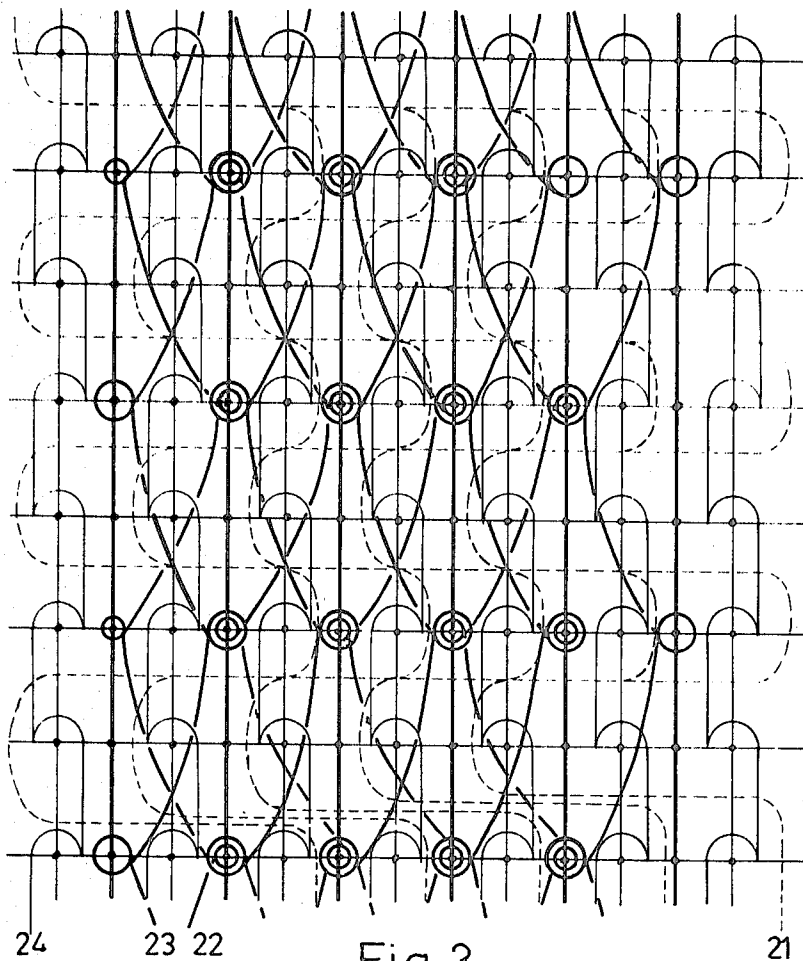


Fig. 3.

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4 Sheets-Sheet 4

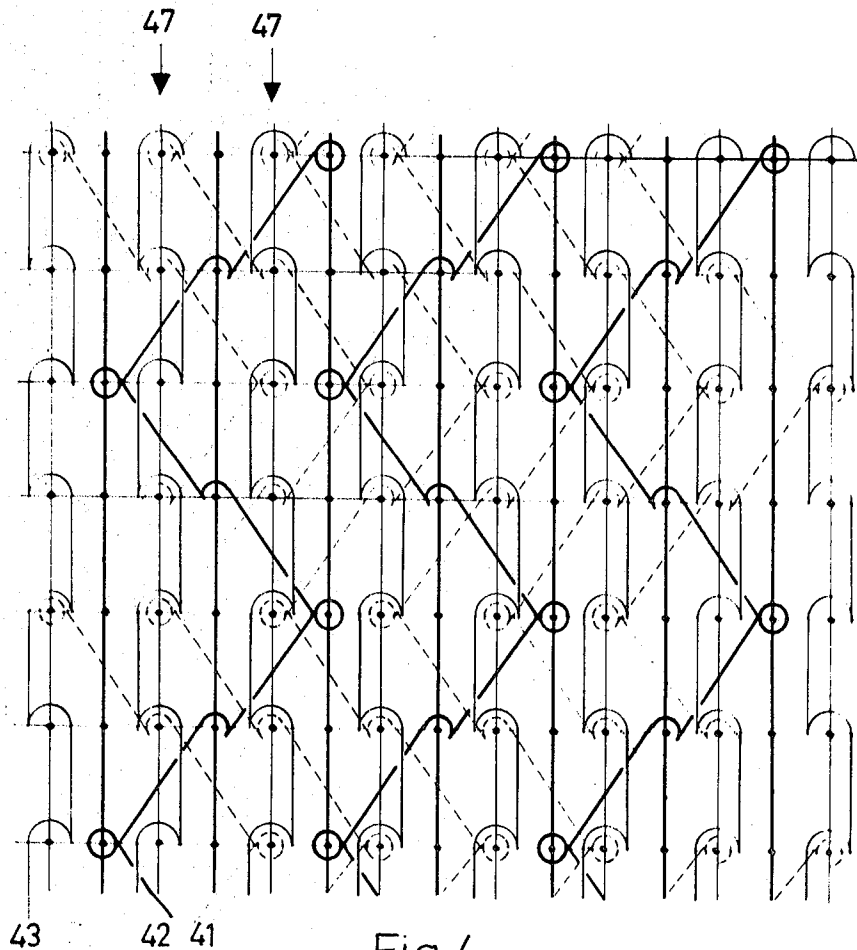


Fig. 4.

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METHOD OF WARP KNITTING A PILE FABRIC

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U.S. Cl. 66—193

5 Claims

ABSTRACT OF THE DISCLOSURE

A warp knitted pile fabric is formed on a single set of spring or bearded needles with two or more yarn guides by leaving some of the needles empty and using them for forming loops, but not stitches of the pile yarn. The pile yarn crosses one or more wales of ground fabric stitches between loops and is bound to at least one of the crossed wales by being laid into the stitches of the same without itself forming any stitches.

BACKGROUND OF THE INVENTION

This invention relates to a method of preparing a warp knitted fabric having pile or plush yarns which form loose loops.

It is known to anchor pile loops in a warp-knitted base fabric by forming stitches with the pile yarn. Because of the formation of stitches jointly from the base yarn and the pile yarn, the fabric becomes quite heavy since the pile yarn must be heavier or bulkier than the yarn for the base fabric. The known method therefore is limited to the use of relatively thin pile yarn, contrary to the normally desired effect. The known method also is limited normally to the production of a fabric which has pile loops on only one face thereof. If special measures are taken to produce pile loops also on the other face, the last-mentioned loops are substantially shorter.

The object of the invention is the provision of a warp knitted fabric having equally long loops of pile yarn on both faces, not limited to pile yarns of low bulk, yet having a basic stitch structure which need not be unusually heavy.

SUMMARY OF THE INVENTION

It has been found that a pile fabric can be knitted on a warp knitting machine having a single needle bar, spring needles, and at least two yarn guides if loops of pile yarn are formed on empty knitting needles without the formation of stitches, and the pile yarn intersects one or more chain stitches of the base fabric between successive loops so as to be laid in the stitches and bound to the same without the formation of stitches in the pile yarn. The stitches of the base fabric are thus entirely unaffected by the pile yarn loops, and the pile yarn may be of any bulk desired within the limits set by the dimensions of the knitting needles which must engage the pile yarn.

The pile yarn loops may be made the same on both faces of the fabric, and the loops may be combined with any pattern of the base fabric.

Other features, additional objects, and many of the attendant advantages of this invention will readily become apparent from the following detailed descriptions of preferred embodiments when considered in conjunction with the attached drawing.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 diagrammatically illustrates a fabric prepared by the method of the invention on a bearded needle machine having three guide bars;

FIG. 2 similarly shows a fabric prepared on a machine having four guide bars; and

FIGS. 3 and 4 respectively illustrate modifications of the fabrics of FIGS. 2 and 1.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The drawing shows only as much of fabrics of the invention as is needed for an understanding of the knitting method.

The fabric pattern illustrated in FIG. 1 was produced by lapping movements of three guide bars as follows:

Guide Bar III: 0-1/1-0/0-1/1-0
Guide Bar II: 1-0/2-2/2-3/1-1
Guide Bar I: 2-3/1-0/2-3/1-0

and repeat

One set of yarns 3 makes plain chain stitches while another set 1 makes tricot stitches. The pile yarn 2 makes loops on the empty needles 5, 6, and crosses a wale 7 between loops so as to be laid into the stitches of the wale and thereby anchored in the same. The ends of each loop are anchored in spaced, non-consecutive courses of the same wale.

The fabric pattern illustrated in FIG. 2 was produced by four sets of yarns threaded in respective guide bars which performed the following lapping movements:

Guide Bar IV: 0-1/1-0/0-1/1-0
Guide Bar III: 1-0/2-2/2-3/1-1
Guide Bar II: 1-0/2-2/2-3/1-0
Guide Bar I: 2-3/1-0/2-3/1-0

and repeat

The base fabric consists of wales of plain stitches connected by two sets 11, 12 of tricot stitches with opposite laps, whereas the pile loops are formed as described with reference to FIG. 1 by laid-in pile yarn 13 forming loops on otherwise empty needles.

In the production of the fabric pattern illustrated in FIG. 3, four sets of yarn guides make the following lapping movements:

Guide Bar IV: 1-0/0-1/1-0/0-1
Guide Bar III: 2-3/1-1/1-0/2-2
Guide Bar II: 1-0/2-2/2-3/1-1
Guide Bar I: 0-0/5-5/0-0/5-5

and repeat

The base fabric is formed by chain stitches 24 with laid-in weft threads 21. Two sets of pile yarns 22, 23 form loops about empty needles and are bound to the base fabric by opposite lapping movements of the associated guide bar II and III.

The fabric diagrammatically illustrated in FIG. 4 is produced on a single set of spring needles by means of three guide bars making lapping movements as follows:

Guide Bar III: 1-0/0-1/1-0/0-1
Guide Bar II: 4-5/3-2/1-0/2-3
Guide Bar I: 1-0/2-3/4-5/3-2

and repeat

The base fabric is formed by wales of plain stitches connected by the yarn 41 of guide bar II in an Atlas

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pattern, and holds the loops of the pile yarn 42 which extend between the stitches of the basic fabric.

The threading of the guide bars in the several knitting methods illustrated in the drawing is evident from the respective figures.

In the illustrated examples of the invention, the two ends of each pile loop are laid in and anchored in stitches of the ground fabric which are in different courses of the latter, and actually separated by at least one course of stitches of the ground fabric which is free from laid-in pile yarn. According to the pattern chosen, both ends of each loop may be in the same wale of the ground fabric or in different wales.

Obviously, the pattern of the base fabric may be chosen at will to suit specific requirements, and any desired base fabric may be provided with pile loops by the method of the invention.

What is claimed is:

1. A warp knitted pile fabric comprising:

(a) a base fabric having two faces and including a plurality of warp stitches arranged in wales and courses; and

(b) loops of pile yarn free from stitches on each of said faces,

(1) the two ends of each loop being laid in respective stitches of said base fabric and anchored to the base fabric by being laid in said respective stitches,

(2) the loops of said pile yarn on said two faces being substantially identical.

2. A fabric as set forth in claim 1, wherein said two ends are laid and anchored in stitches of said base fabric in different courses.

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3. A fabric as set forth in claim 2, wherein said two ends are laid and anchored in stitches of the base fabric in the same wale.

4. A method of warp knitting a pile fabric which comprises

(a) knitting stitches of a base fabric from a first set of yarns on a first group of needles in a needle bed;

(b) forming loops from a second set of yarns on a second group of needles interposed between respective pairs of needles of said first group in said needle while preventing stitch formation from said second set; and

(c) laying the yarns of said second set into the stitches of said first set without forming stitches from said yarns of the second set.

5. A method as set forth in claim 4, wherein the stitches of the yarns of said first set receiving the laid-in yarns of said second set are separated walewise by a course of stitches of the yarns of said first set free from laid-in yarns of the second set.

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