

July 15, 1958

H. LINDNER ET AL

2,842,947

KNITTED FABRICS AND METHODS FOR KNITTING SAME

Filed May 6, 1955

Fig. 1.

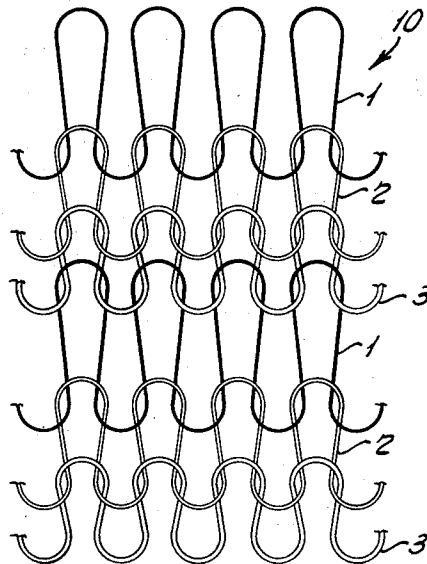
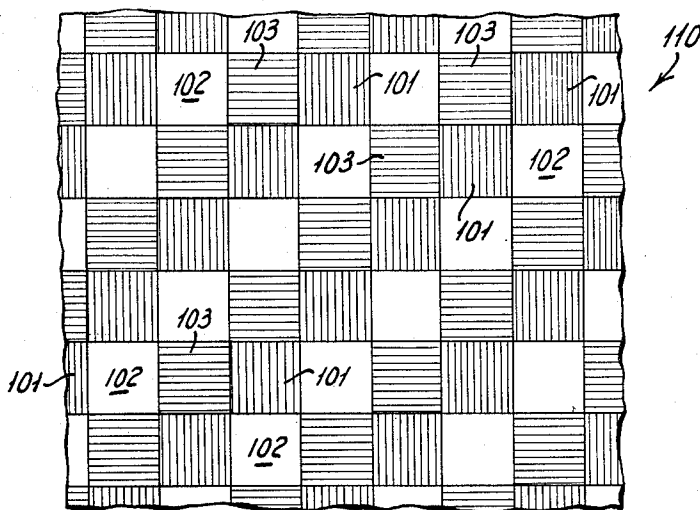


Fig. 2.



INVENTORS
HUGO LINDNER
HELLMUTH LINDNER

1

2,842,947

KNITTED FABRICS AND METHODS FOR KNITTING SAME

Hugo Lindner and Hellmuth Lindner, Auerbach, Erzgeb., Germany, assignors to Veb Vereinigte Strumpfwerke Esda, Auerbach, Erzgeb., Germany

Application May 6, 1955, Serial No. 506,594

4 Claims. (Cl. 66—202)

This invention relates to knitted fabrics, and more particularly to knitted fabrics having loops of different lengths and methods and means for knitting same.

An object of the invention is to provide a knitted fabric having great resistance to the formation of runs.

Another object of the invention is to provide a fabric with improved pattern effect.

A further object of the invention is to provide a method for the knitting of fabrics with loops of different lengths, by means of which the long loops and short loops or courses of long loops and courses of short loops may be arranged relative to each other in any suitable way.

A further object of the invention is to improve on the art of knitting fabrics with different lengths as now ordinarily made.

Other objects and structural details of the invention will be apparent from the following description when read in conjunction with the accompanying drawing forming part of this specification, wherein:

Fig. 1 is a fragmentary plan view of a fabric knitted in accordance with the invention,

Fig. 2 is a diagrammatical illustration of a pattern of a fabric knitted in accordance with the invention.

Referring now to Fig. 1, 10 generally indicates a plain knitted fabric consisting of courses 1 having long loops (hereinafter called "loose courses"), of courses 2 having loops of normal length (hereinafter called "normal courses"), and of courses 3 having loops of shorter than normal length (hereinafter called "fine courses"). The loops of courses 1 are thus longer than those of courses 2 which in turn are shorter than those of courses 3. All courses 1, 2 and 3 are formed by one and the same yarn, which varies in thickness according to the variations in length of the loops. The different thicknesses of the yarn are in inverse ratio to the lengths of the loops of the courses 1, 2 and 3. Thus, as may be readily gathered from Fig. 1, within the courses 1, the yarn is thin, while within the courses 3 the yarn is thick, the yarn in courses 2 being of intermediate thickness. In other words, the thickness of the portions of the yarn forming the long loops of the courses 1 is less than the thickness of the portions of the yarn forming the shorter loops of the courses 2, etc.

Although according to the embodiment shown in Fig. 1 the loose courses 1 continuously alternate with the normal courses 2 and fine courses 3, the invention is of course not limited to this arrangement. If desired, the relative arrangement of the loose courses and the normal and fine courses may be made in any different way. For example, a fabric knitted in accordance with the invention may have a plurality of loose courses arranged at equal distances from each other. In such a case, therefore, two or more successive normal or fine courses are followed by a loose course in regular repeats throughout the length of the fabric. Furthermore, the courses may be arranged in such a way that, in a repeated manner throughout the length of the fabric, a loose course follows two or more different courses of which the course directly

2

preceding the loose course is a fine course and the other course or courses is or are normal courses. Such a fine course may be of the type of so-called tight courses.

Furthermore, the arrangement of long loops, normal loops and shorter than normal loops in a fabric may be changed in many other ways. According to Fig. 2, for example, groups 101 of long loops alternate with groups 102 of normal and groups 103 of shorter than normal loops in transverse direction of the fabric 110 and, furthermore, said three different groups 101, 102 and 103 of loops alternate in the longitudinal direction of the fabric 110. In Fig. 2, the groups 101, 102 and 103 of loops are diagrammatically indicated by squares. The vertically-hatched squares represent the groups 101 of long loops; the blank square represents the groups 102 of normal loops and the horizontally hatched squares represent the groups 103 of shorter than normal loops. A fabric knitted in this manner has a checkerboard pattern.

As will be readily understood, advantageous pattern effects may be readily obtained in a fabric knitted in accordance with the invention.

Furthermore a fabric according to the invention shows an improved resistance to the formation of runs. In connection with the desired resistance to runs, preferably, the long loops have such a predetermined excess of yarn in relation to the shorter ones, that upon a dropping of a long loop, the latter cannot slip through the preceding shorter loop. The fact that the yarn in the preceding shorter loop is thicker than that in the long loop assists in this slip preventing feature as the open cross-section of the shorter loop is additionally reduced in this manner.

Moreover, the above mentioned difference in the thickness of the yarn in the long and short loops has an additional pattern effect. A new kind of pattern effect is obtained especially if the fabric is piece-dyed in a manner known per se. Then, the color of the thick, short loops appears to be different from the color of the long, thin loops.

For the knitting of above described fabric, preferably, an extensible or stretchable yarn, especially a fully synthetic yarn of plastic material is used. The yarn is supplied to the loop forming implements in a partially pre-drawn or completely undrawn condition. During the formation of the loops, the portions of the yarn required for the formation of the loops are drawn-out from the yarn presented to the knitting implements. If a straight bar knitting machine is used, the yarn may be layed in a slack condition in front of the knitting needles, whereupon the sinkers are advanced simultaneously in one stroke. The different lengths of the loops are obtained simply by drawing out portions of the yarn to different lengths. This feature, for example, may be obtained by making the strokes of the sinkers of different lengths. For the same purpose, auxiliary needles may be arranged behind the needles and portions of the yarn may be drawn-out over said auxiliary needles. Furthermore, portions of the yarn may be drawn out during the downward movement of the needles either over the upper edges of the nibs of the sinkers or over the knocking-over bars. Methods of this kind are described more in detail in our copending application Ser. No. 506,332, filed on May 5, 1955, now abandoned, for "A Method and a Knitting Machine for Knitting Fabric From an Extensible Yarn," to which reference is made herewith.

Fig. 1 illustrates a fabric made of a single yarn, but the invention is of course also applicable to a multi-yarn fabric.

We have described preferred embodiments of our invention, but it is understood that this disclosure is for the purpose of illustration, and that various omissions and changes in shape, proportion and arrangement of

3

parts, as well as the substitution of equivalent elements for the arrangements shown and described may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

What we claim is:

1. As an article of manufacture a knitted fabric comprising: a plurality of first courses, each first course including a series of long loops being longer than normal loops, a plurality of second courses, each second course including a series of normal loops having normal length, and a plurality of third courses, each third course including a series of short loops being shorter than normal loops, the loops of said first, second and third courses being made of the same yarn, the thickness of first portions of said yarn forming said long loops being less than the thickness of second portions of said yarn forming said normal loops, and the thickness of said second portions of the yarn being less than the thickness of third portions of said yarn forming said short loops.

2. In a knitted fabric as claimed in claim 1, the thickness of said first, second and third portions of the yarn being in inverse ratio to the lengths of the loops formed

4

by said first, second and third portions of the yarn respectively.

3. In a knitted fabric as claimed in claim 1, one first course alternating with a series of courses including at least one second course and at least one third course.

4. In a knitted fabric as claimed in claim 1, one first course alternating with a series of courses including at least one second course and at least one third course, and said third course preceding immediately said first course.

References Cited in the file of this patent

UNITED STATES PATENTS

1,254,722	Oakes	Jan. 29, 1918
1,890,299	Mutchler et al.	Dec. 6, 1932
2,057,046	Mutchler et al.	Oct. 13, 1936
2,075,662	Rubinstein	Mar. 30, 1937
2,207,606	Berger	July 9, 1940
2,333,160	Dunn	Nov. 2, 1943
2,353,090	Shelmire et al.	July 4, 1944
2,717,511	Rossak	Sept. 13, 1955