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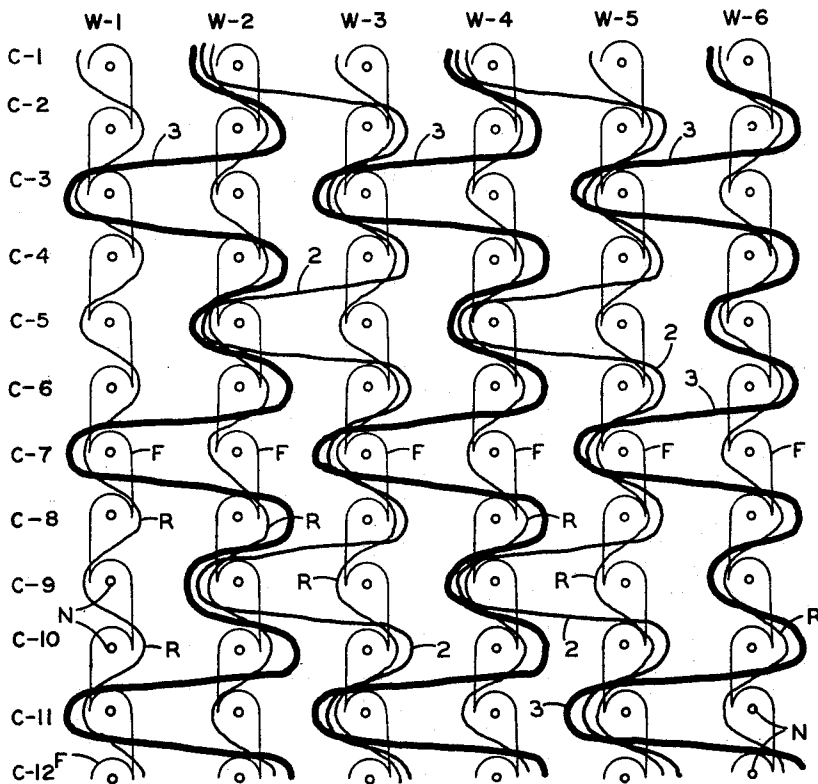
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RASCHEL LOOP NET

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2 Sheets-Sheet 1

FIG. 1



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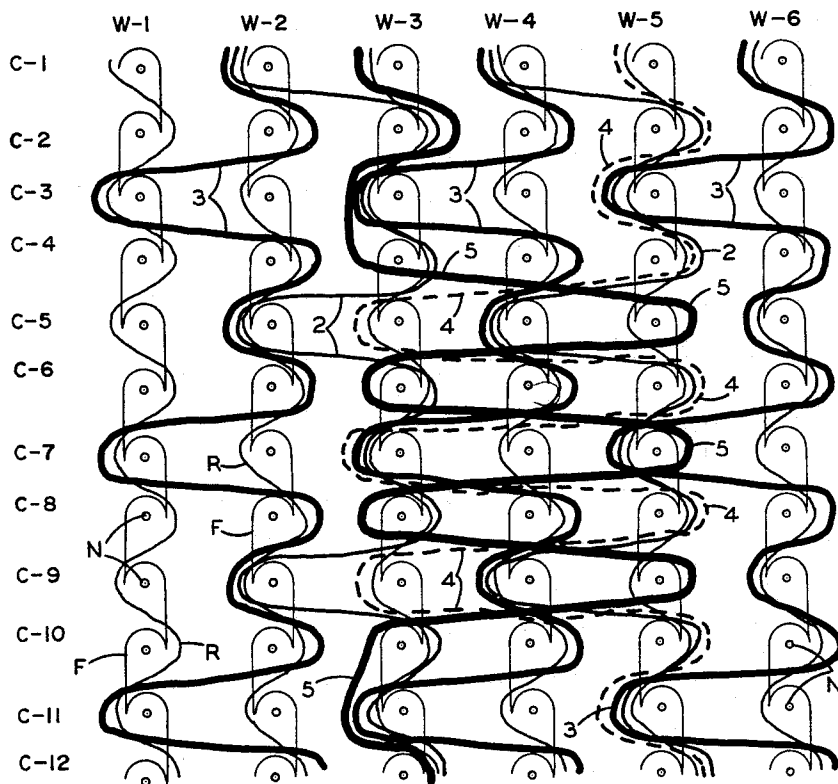
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FIG. 2



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RASCHEL LOOP NET

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3 Claims. (Cl. 66—193)

This invention relates to the manufacture of lace on a knitting machine of the Raschel type and, more particularly, to a novel lace knitting technique wherein a loop net is produced which has the appearance of a loop net formed on a Levers lace machine but which cannot be pulled apart.

The loop net made on the Levers lace machine is characterized by round interconnected loops, or net openings, the interconnected loops being formed by various yarns which are twisted around each other to form the net. The lace made on the Levers lace machine has the desirable characteristic that it very closely simulates handmade lace. However, one of the faults of the loop net made on such a machine is that it can be pulled apart readily.

A lace which quite closely simulates that made on a Levers lace machine can be made by knitting on a warp knitting machine, such as a Raschel knitting machine. This lace is, however, characterized by substantially hexagonal interconnected loops, or, stated another way, by substantially hexagonal net openings. It thus differs in appearance from handmade lace by the shape of the interconnected loops. However, it has the desirable characteristic that a loop net knitted on a Raschel machine cannot be pulled apart.

As described in "Lace Manufacture on Raschel Machines," by Charles Rothstein and published by the National Knit Outerwear Association, laces are knitted on a Raschel machine by using reciprocating latch needles in cooperation with thread guides swinging between the needles and given a lateral oscillatory movement by pattern chains so as to form loops around the raised or open needles. These thread guides are thin metal fingers, equal in number to the associated needles and movable between adjacent needles. The needles are cast into two-inch wide leads, the number of needles per lead determining the gauge of the machine. The thread guides are similarly cast into two-inch wide leads which are fixed on guide bars.

The majority of Raschel knit laces are produced using a mesh background comprising symmetrical hexagonal holes using, for example, two guide bars known as a "front" bar and a "back" bar. The front bar may have, in knitting notation, a 2-0/0-2/2-0/2-4/4-2/2-4 movement, and the back bar a 0-0/2-2/0-0/4-4/2-2/4-4 movement. This produces a mesh of good strength, handle and stability, due to the tight loops, and each hole in the mesh is formed by three loops. However, from the standpoint of close imitation of handmade lace, the net produced is undesirable due to the hexagonal holes.

In accordance with the present invention, a loop net lace fabric is produced which has the same appearance as that of lace formed on a Levers lace machine, but in which the loops cannot be pulled out. This is effected by operating full threaded first inlay guide bars to form a series of first interconnected and reinforced loops along respective adjacent wales, operating second inlay thread guide bars, each having only alternate guides threaded, to form a series of second loops along respective alternate wales, with second loops spaced by a preset number of courses extending laterally from each respective alternate wale to the same adjacent intermediate wale to connect the latter to the respective alternate wale, and operating third inlay thread guide bars, each having only alternate guides threaded, to form a series of third loops along respective intermediate wales, with third loops spaced by

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a preset number of courses extending laterally from each respective intermediate wale to the same adjacent alternate wale to connect the latter to the respective intermediate wale.

By utilizing additional inlay thread guide bars having respective predetermined chain motions, a point d'esprit loop net may be made.

For an understanding of the principles of the invention, reference is made to the following description of typical embodiments thereof as illustrated in the accompanying drawings. In the drawings:

FIG. 1 diagrammatically illustrates, on a greatly enlarged scale, the stitch formation of the basic loop net of the invention; and

FIG. 2 diagrammatically illustrates, on substantially the same scale as FIG. 1, the formation of a point d'esprit loop net in accordance with the invention.

In the drawings, the needles are indicated at N and the threads laid in by the front guide bars are indicated at F. The reinforcing threads are indicated at R.

Referring to FIG. 1, the basic loop net is formed by fully threading front guide bars with threads F, and giving these front guide bars a chain motion of, for example, 2/0-0/2. At the same time, any other preselected guide bars are fully threaded with reinforcing threads R and given a chain motion of, for example, 00-22. This forms the series of first interconnected reinforced loops extending along respective wales W-1 through W-6.

To interconnect these adjacent wales, an additional inlay thread guide bar or additional inlay thread guide bars are provided having only alternate guides threaded with threads 2, and are operated to form a series of second loops along respective alternate wales W-3, W-5, etc., with second loops spaced by a preset number of courses C-1, etc., such as every fourth course C-1, C-5, C-9, extending laterally from each respective alternate wale to the same adjacent intermediate wales W-2, W-4, etc. These additional guide bars, having only alternate thread guides threaded with the threads 2 are given a chain motion of 00-22-00-44. Simultaneously, a third set of inlay thread guide bars is threaded with threads 3 in alternate thread guides at half gauge, and these third thread guide bars are given a chain motion of 00-44-00-22. The resultant loop pattern is indicated in FIG. 1, and it will be noted that the third loop series has loops at every fourth course, C-3, C-7, C-11 extending, in the same direction laterally as the second loops, to interconnect intermediate wales W-2, W-4 and W-6 to the adjacent alternate wales W-1, W-3, W-5, respectively, on the same side.

The loop formed by the arrangement shown in FIG. 1 cannot be pulled out and is characterized by round interconnected openings in the mesh, as distinguished from the usual hexagonal openings formed when knitting lace on a Raschel machine. Thus, the loop net thus formed has the appearance of that made on a Levers lace machine, so that it essentially simulates handmade lace, but does not have the disadvantage of lace made on a Levers lace machine in that the loops cannot be pulled out.

By changing the chain motion of the guide bars threaded with the threads 2 and 3, various effects can be provided in the loop net to simulate Chantilly lace.

By applying additional inlay thread guide bars, a point d'esprit loop net can be made. Referring to FIG. 2, the basic loop net is made in the same manner as described for FIG. 1. However, in this instance additional inlay thread guide bars are threaded, at any preselected spacing of the thread guides, with threads 4, and these additional guide bars are given a chain motion of any preselected amount or number of 00-22, followed by 00-66-00-66-00-66.

At the same time, a further preselected inlay thread

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guide bar is threaded, at preselected spacings of the thread guides, with threads 5 and are given a chain motion involving any preselected amount or number of 44-66, corresponding with the amount of 00-22 chain motion being given to the guide bars for threads 3, followed by a chain motion of 66-00-66-00-66-00-66-66. The resulting thread structure will be readily apparent from a consideration of FIG. 2.

By employing additional inlay thread guide bars and yarns of various sizes made of either natural or man-made fibers, floral patterns can be made or knitted into a lace design.

By changing the chain motion of the front guide bars feeding the threads F to 0/2-2/0, and changing the chain motion of the guide bars feeding the reinforcing threads R to 22-00, the loop net can be made by knitting against the stitches.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. A Raschel net loop knit lace having the appearance of a loop net formed on a Levers lace machine and characterized in that the loop net cannot be pulled apart, said lace comprising a series of first interconnected reinforced loops along respective adjacent wales; a series of second loops along respective alternate wales, with second loops spaced by a preset number of courses extending laterally from each respective alternate wale to the same adjacent

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intermediate wale to connect the latter to the respective alternate wale; and a series of third loops along the respective intermediate wales, with third loops spaced by a preset number of courses extending laterally from each intermediate wale to the same adjacent alternate wale to connect the latter to the respective intermediate wale.

2. A Raschel net loop knit lace, having as claimed in claim 1, in which such third loops spaced by a preset number of courses extend laterally in the same direction as said second loops spaced by a preset number of courses.

3. A Raschel net loop knit lace, as claimed in claim 1, in which the lace is a point d'esprit net including at least one additional thread inlaid across adjacent wales.

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