

WEAVING AND TYPES OF KNITTED MATERIALS

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Abstract

This article explores various types of weaving techniques used in the production of knitted materials, focusing on the significance of ring counts and their impact on the final products. It provides a comprehensive overview of different weaving methods and their applications in creating diverse knitted fabrics. The study examines how variations in the number of rings influence the properties and quality of these materials and it details the range of products manufactured from them. By analysing the relationship between weaving techniques, ring structures, and product outcomes, the article aims to offer valuable insights into the textile industry's practices and innovations in knitted fabric production.

Keywords: material name, light industry, clothing, need ring, winding, one-thread, two-thread, glad, lastik, atlas, sukno, sharme, ring row, ring column, incomplete knitting.

Introduction

Textile enterprises produce knitted fabrics, including technical fabrics, socks, knitted underwear and outerwear, gloves, headwear, scarves, and industrial products. Cotton, wool, and chemical fibre yarns are widely used in the production of knitted goods. The knitwear industry originated in Great Britain and France in the late 18th and early 19th centuries and in Russia in the late 19th century. The weight of knitted clothing is regularly increasing. This is due to the high serviceability and cost-effectiveness of knitted products. The production of chemical fibres, especially synthetic threads, regular growth knitwear production rapid development of technology largely contributed to the development of the knitwear industry. Knitwear production main direction of development of technology [1].

Main part

Tricotta -textile material (knitted fabric) or a finished product made of knitted fabric, as well as a whole knitted product, the structure of which is loops connected. The loops are arranged in rows of loops and columns of loops [2].

Types of knitwear by weaving structure:

1. Cross-knitted (kulirny) loops of one row form a sequential connection of one or more threads. Weaving occurs in the direction of the loop row. The fabric can be unravelled in any direction, it turns out very elastic.

2. Warp knitted formed by individual threads or entire systems of them, i.e. warps. Each warp forms several loops. To create a row of loops, it is necessary to use as many threads as there are loops in the row[3].

Types of knitted fabric weaving:

- one layer -the face threads are on one side and the back threads are on the other;
- two-layer- both sides are considered face.

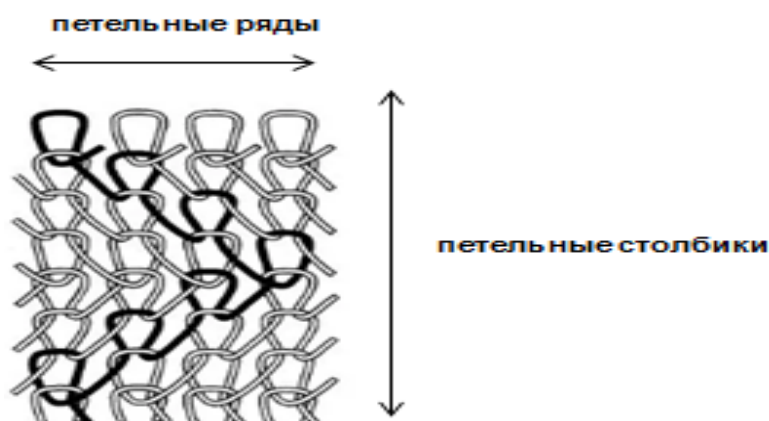


Figure 1. Loops arranged vertically and horizontally.

Class of main interlacings:

Smooth—knitted weave, the back and front sides are different. On the front side, there are loop sticks, and on the back side, there are loop arcs. The front side is smooth and shiny, and the back side is rough and matte, with good stretchability, tensile strength in longitudinal tension, easy to unravel, and curling at the edges.

Garter stitch- has the same structure on both sides, resembles the back of a satin stitch, does not curl at the edges, and easily unravels in the direction opposite to knitting.

Eraser— weave with uniform front and back sides, in the rib weave the columns of loop sticks alternate with the columns of loop arcs. Such knitwear is called double-faced, it can be rib 1 + 1, 2 + 2, etc., more massive than satin, differs in thickness, is stronger, unravels less (only in the direction opposite to knitting), and does not curl at the edges.

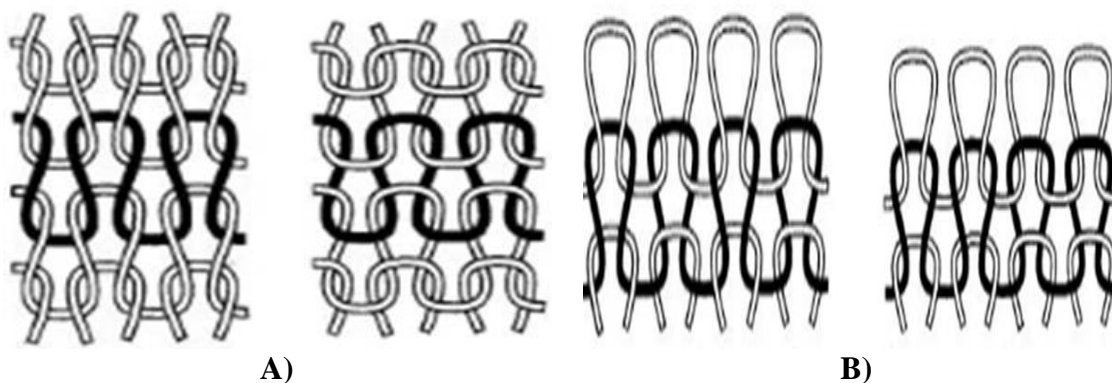


Figure 2. Interlacing a) - satin stitch and b) - eraser.

Chain— a simple type of warp knitting. Chain — a stretched row of loops produced from one thread on each needle of the machine. Used to make fringe shawls, scarves, or in combination with other types of weaves [4].

Tights- after knitting a row, the threads shift to the first needle, and after knitting the second row, they return to their original position; the loops in the fabric are arranged in a zigzag pattern; they are easily deformed and unravel along the loop columns when the thread breaks.

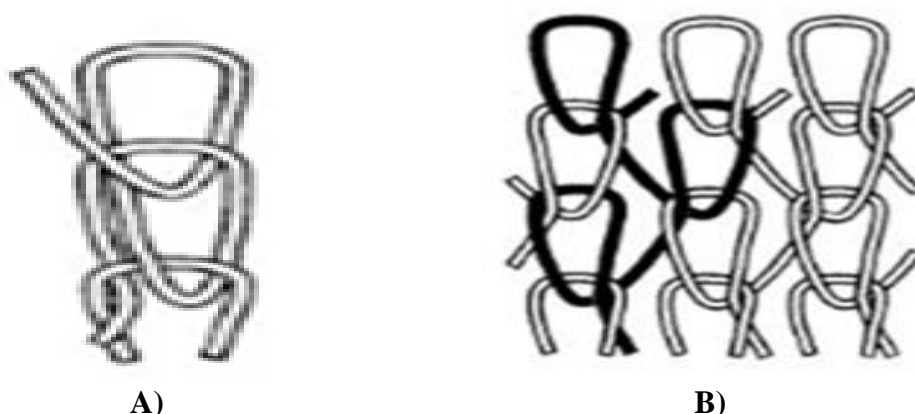
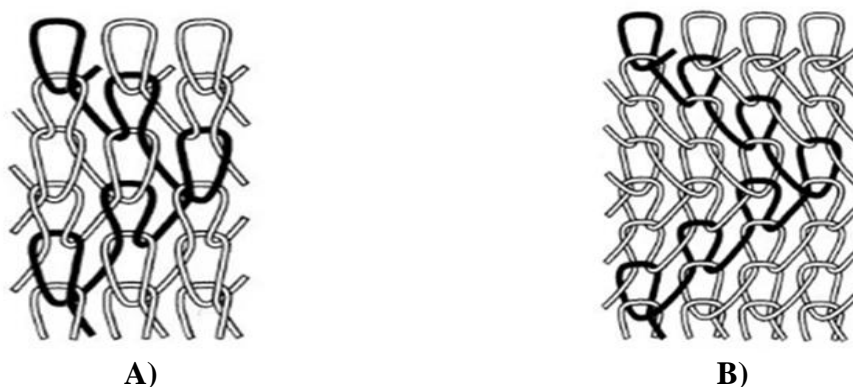
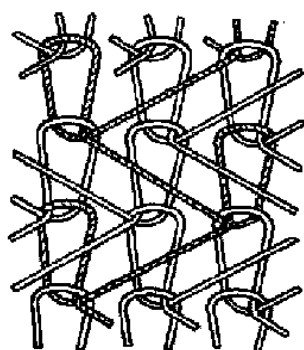


Figure 3. Interlacing a) - chain and b) - tricot.

Atlas— the entire warp thread forms loops in many loop columns. The direction of the comb shift changes first to the first, then to the other side; zigzag stripes are noticeable on the front and back sides; it has significant stretchability in width, and the curling of the edges unravels along the loop columns when the threads break.





IN)



G)

Figure 4. Interlacing of knitwear.

Figure 4 shows the interlacing of knitted fabrics: A), B) - satin, B) - double-smooth, D) - cloth.

Class of derivative interlacings:

The material of derivative weaves is formed based on the main ones by connecting elementary links in the form of loops with extended drawstrings through 1, 2 or more loop columns.

Two-finger(interlock knitwear) - a double cross-knit weave formed by combining two ribs in such a way that the loop posts of one rib are placed between the stretched loop posts of the other.

Derivative satin stitch (double satin stitch) - double cross-knitted fabric is a combination of two satin stitch weaves.

Cloth— double warp knitting, is a combination of two tricot. The loops are formed by shifting the threads through the first row of columns, as a result of which the loops are longer and form a herringbone pattern on the back of the fabric. Compared to tricot, it has a greater width, weight, less stretchability and unravelling.

Charme— is a combination of three tricot, as a result of which, compared to cloth, it has greater stretch and looseness [5].

Class of patterned weaves:

Canvases, in the formation of which, based on the main and derivative bindings, additional structural elements (drawings, broaches, threads) are used or changes in the shape, size, and mutual arrangement of loops are made, allowing for the production of knitwear with new properties.

Lined knitwear(knitwear with fleece) - is produced based on satin stitch, and has on the reverse side fleece threads (fleece) made of thick yarn, which do not form loops, although they are laid on needles.

Plush weave— the fabric is characterized by a pile surface, which is formed by laying two threads on each needle, while the loop frames are the same, and the drawstrings have different lengths.

Partial knitwear- produced by turning off the needles from the work, as a result of which skipped loop columns are formed, which create a patterned effect on the front side of the fabric in the form of longitudinal openwork stripes.

Weft knitwear— a fabric in which, in addition to the ground threads, additional weft threads are laid, which do not form loops and are located between the skeletons of loops and draw-

throughs in single weaves and between the front and back loops in double weaves.

Filet (openwork) knitwear- has through holes in the form of cells, since some connections of loop columns are not connected in one or several loop rows.

Press knitwear— a fabric in which the thread is always laid on the needles of the knitting machine, but is dropped depending on the pattern. As a result, press loops are formed in the structure of the fabric, which differs from the usual ones by their greater height and outlines. If all the loops in the fabric are press loops, then the weave is called fang. If the loop columns of the press loops alternate with the usual loop columns, then the weave is called half-fang [6].

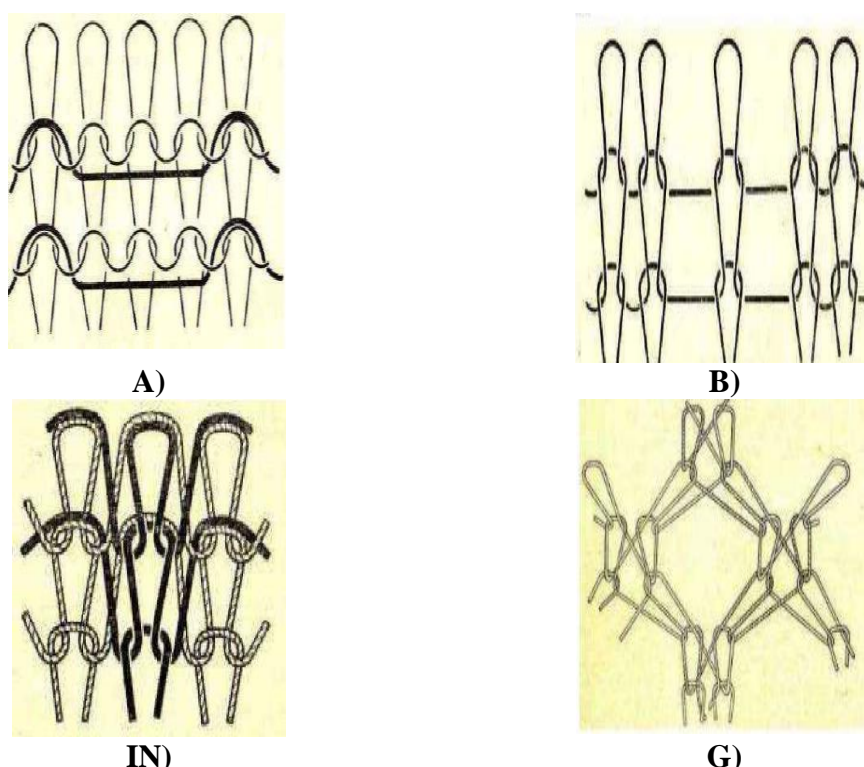


Figure 5. Interlacing of a) lined knitwear, b) partial knitwear, c) fillet (openwork) knitwear and d) press knitwear.

Knitted material does not interfere with the process of human movement due to its remarkable properties. This prevents the occurrence of technical defects in parts exposed to movement. The demand for knitted materials is very high today because it can be said that manufacturing enterprises widely use various types of this material to produce necessary clothing for the population. It is widely used not only for slim figures and for sewing women's, men's and children's clothing of the correct physique for different seasons [7].

The practicality and versatility of knitted material make it possible to sew a variety of clothing styles from it. These items fit well, are tactilely pleasant, do not restrict movement, and are varied in texture and colour. Most often, knitwear is used to sew:

1. Dresses - gentle, figure-hugging models will highlight your advantages. Stylish dresses of interesting designs with a large selection of colours are sewn from knitted material.
2. Cardigans - from knitwear, you can create designs of sweaters with drapes, folds, and clips and combine different patterns on different parts of the item.



3. Shirts - models made of cotton, viscose or wool knitwear are distinguished by their density, so shirts for different seasons are made of knitwear. Such a wardrobe item goes well with skirts and trousers, shorts and overalls.
4. Leggings and trousers. Knitted trousers for women can be both formal and informal, they can be used as an element of business style, as well as sports or casual. There can be no age restrictions here, only the correct selection of the style of the product is important.
5. Skirts and shorts are lightweight. Knitted fabric is breathable and cools in the summer, making it an imperceptible material for summer models.
6. Tank tops and T-shirts. The most commonly used versatile and comfortable elements of a casual wardrobe. They can be combined into comfortable sets in all clothing styles[8].

Conclusions

To sum it up, we can say with confidence that the types of weaving of knitted materials, the number of loops made in various forms, and the number of braided threads affect the appearance of the materials, and also that today, products made of these materials are the most commonly used material. Products sewn from knitted materials are distinguished by their convenience.

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