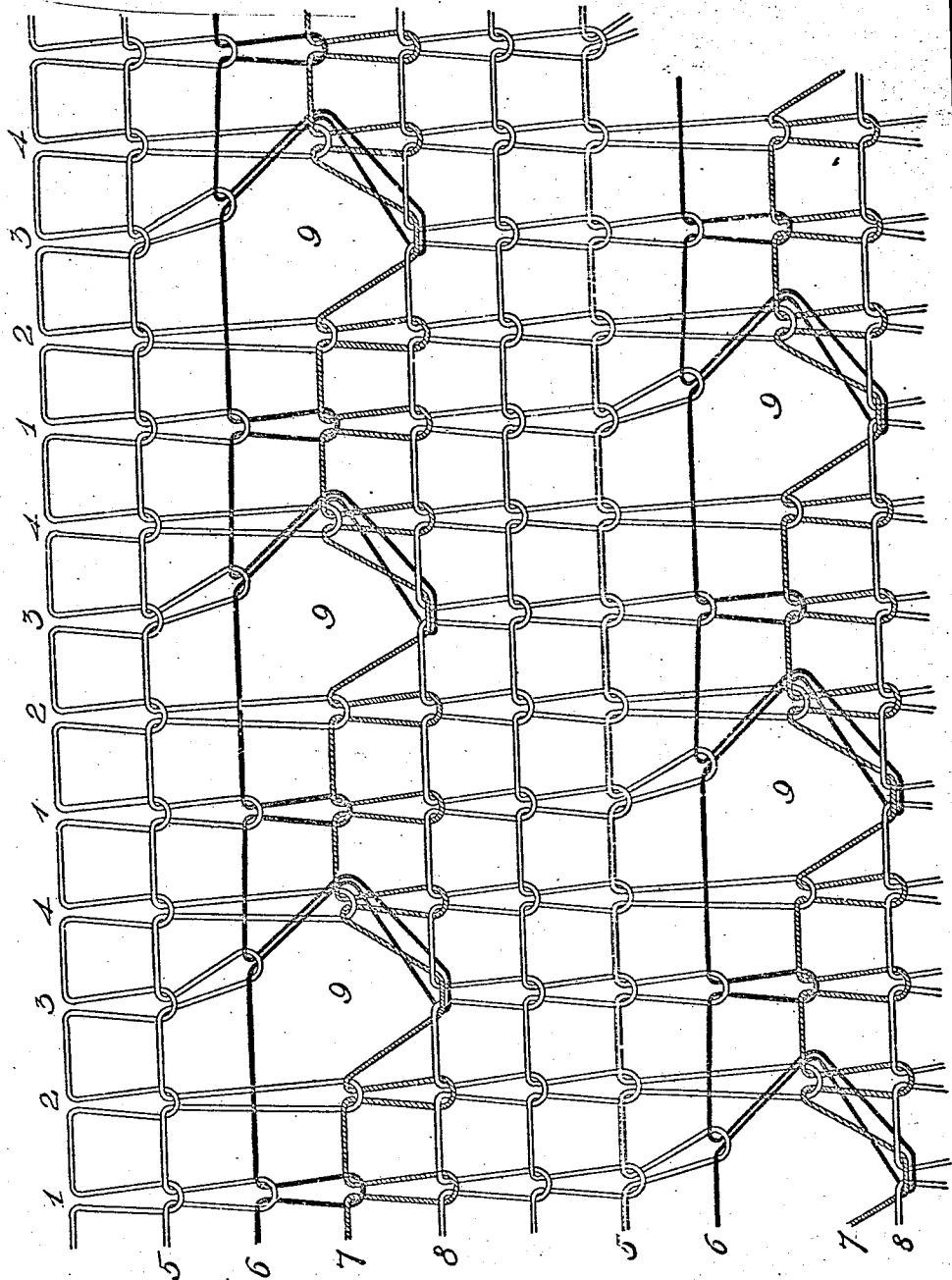


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KNIT FABRIC.
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898,985.

Patented Sept. 15, 1908.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES McNAMEE, OF AMSTERDAM, NEW YORK.

KNIT FABRIC.

No. 898,985.

Specification of Letters Patent.

Patented Sept. 15, 1908.

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To all whom it may concern:

Be it known that I, JAMES McNAMEE, a citizen of the United States, residing at Amsterdam, in the county of Montgomery and State of New York, have invented certain new and useful Improvements in Knit Fabrics; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to what is known as mesh or openwork knitted fabric, and the process of making the same, and it has for its object to form a knitted fabric having a uniform appearance and in which the holes or open portion will be well-formed and have substantially symmetrical edges, as will be hereinafter more fully set forth.

In the accompanying drawing, which is an enlarged view of a portion of fabric embodying the invention, openings are shown zig-zag or alternating with each other in the different rows or courses, but they could be arranged in any other manner without departing from the spirit of my invention.

As the main portion of the fabric can be formed in any desired manner, the ordinary structure being shown, and as the invention is embodied within four rows or wales of loops in four different courses of the yarn, I will describe the arrangement and process of constructing said loops by referring to the different rows or wales of loops, as 1, 2, 3 and 4, counting from left to right, and to the courses as 5, 6, 7 and 8, counting from top to bottom, as those loops and courses are seen from the "wrong" side of the cloth.

By an examination of the drawings, it will be seen that the yarn or material forming the course 5 is looped into or engages with the loops of the preceding course in the ordinary manner, but that the alternate loops of said course 5, as, for instance, 2 and 4, are drawn out so as to be of double the length of the other loops, 1 and 3, and are joined into or connected with the corresponding loops of course 7. In course 6 the yarn or material is passed through or looped into loops 1 and 3, of course 5, but passes unconnectedly over the elongated loops 2 and 4, from course 5. Loop 1 of course 6 is of the ordinary length and engages with the thread or material of course 7 in the ordinary manner, but loop 3 is substantially three times the length of the ordinary loop and, at its middle, is extended

laterally so that said middle is engaged by the thread or material of course 7, where said latter thread engages with the elongated loop 4 of course 5, as heretofore described.

Loop 1 of course 7 engages with the corresponding loop of course 6, and loops 2 and 4 of course 7 engage with the corresponding and elongated loops of course 5 in the ordinary manner; but the intermediate thread or material connecting loops 2 and 4 of course 7 is drawn down and caused to engage with loop 3 of course 8, along with the closed end of the elongated and laterally extended loop 3 of course 6. This arrangement of the intermediate thread or material connecting loops 2 and 4 of course 7 with the elongation and lateral displacement of the intermediate portion of loop 3 of course 6 forms an opening, 9, in the fabric, from which the fabric derives its name of mesh or open-work knitted fabric. All of the loops of course 8 are formed in the ordinary manner, and in addition to engaging with loops 1, 2 and 4 of course 7, it engages with loop 3 of course 6, and also with the intermediate thread or material connecting loops 2 and 4 of course 7, also engage with the loops of the succeeding course in the ordinary manner. The remaining portion of the fabric can be made in any desired manner, and, hence, needs no other description.

As an illustration of one method of forming the fabric as above described, I will describe it in connection with a circular spring-needle machine. With such a machine, the yarn or material of course 5 is placed in position on the needles by the ordinary stitch wheel, but the yarn or material of course 6 is placed in position on the needles by means of a plugged stitch wheel, plugged one and one, as the word "plugged" is understood in the trade, which is so arranged that the beards of the needles which from loops 2 and 4 are closed and the yarn or the material is carried outside of the beards of the needles upon which are formed said loops 2 and 4, but under the beards of the needles upon which are formed loops 1 and 3, as the cylinder rotates. This is followed by a presser that is cut one and one which co-acts with the plugged stitch wheel in such manner that the cut-presser presses off each needle under whose beard the plugged stitch wheel has carried the yarn, but fails to press off each needle that has no yarn placed under its beard. In this manner, needle 3 when forming course 6,

is flanked upon each side by a needle that was not pressed off but which had yarn furnished to it outside of the beard, thus forming a loop on each alternate needle only and thereby providing surplus material for forming the elongated and laterally extended loop 3 of course 6 by the subsequent action of the machine. After the material of course 6 has been delivered or placed upon the needles in this manner, what I shall call an interchanging wheel is caused to engage with two of the needles, as 3 and 4, so as to cause their tops to be crossed before the course is pressed down, which will cause the material forming loop 3 of said course to lie in such position relatively to the needle of loop 4 that when the loops are pressed down by the cloth wheel, or otherwise, so as to permit the placing of the material for the succeeding course, and the needles are released from the interchanging wheel, said loop 3 will be drawn out and will extend around the needle of loop 4, and thus take up the surplus yarn or material furnished to the needles of loops 2 and 4.

The material for forming course 7 is fed to the needles by the ordinary unplugged stitch wheel which is followed by the usual wheels except that the presser wheel, cut one and three, is arranged to co-act with the interchanging wheel, so that it will not close the beard of the needle holding the closed end of loop 3 of course 6. Hence, there will be two loops retained on said last mentioned needle, while the loops on the other needles will be cast off in the ordinary manner. The material for course 8 is fed to the machine by an ordinary unplugged stitch wheel, which is followed by the ordinary wheels, whereby all of the old loops are cast off and new loops are placed thereon ready to form the ordinary fabric.

By constructing the fabric in this manner, it will have substantially the same appearance as the ordinary knitted fabric, except that it will have regular and well defined openings formed therein, the crossings of course 6 over the elongated loops 2 and 4 of course 5, without engaging therewith, not being noticeable in knitted goods.

A previous method heretofore practiced for making a lock-stitch mesh fabric on a spring needle knitting machine was to transfer the loop from one needle to an adjacent needle by causing one of two loops to be pressed down over and around the two needles and then pressing off that loop from its original needle, thus leaving the two loops upon one needle. By that method, which requires a very delicate manipulation of the loops, if the mechanism failed to cause the single loop to encircle both needles a defect, called a "drop-stitch" was the result.

Among the important advantages of my invention over other methods, is the fact that in the use of my invention no stitches or loops

are transferred from one needle to another; but the loop of one needle is simply elongated and both sides of the loop carried or wrapped around the adjacent needle, without casting off or detaching the loop from its original needle, until the formation of a subsequent course. A failure of the mechanism to properly manipulate the loops, in my method of forming the fabric, does not result in a "drop-stitch" or other noticeable defect, the only result being the formation of plain cloth where an opening was intended.

In the drawing, the wrong side of the fabric is shown, that is, the outside of the fabric as it would appear when being formed upon an ordinary circular spring-needle machine, as this view more clearly illustrates the predominating feature of my invention, that is, the elongated and lateral bend of loop 3 of course 6, or what I shall call the "interchanged" loop or stitch. As heretofore stated, the above described and illustrated form of the fabric and the method of forming the same have only been given as illustrative, for it is evident that other methods may be adopted, and the loops of the different courses may be otherwise arranged, except that the interchanged loop must be used in connection therewith.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters-Patent, is:

1. As a new article of manufacture, an open-mesh knitted fabric having one loop of one course elongated and bent laterally at its intermediate portion and engaged by the loops of the two succeeding courses.

2. As a new article of manufacture, an open-mesh knitted fabric having one loop of one course elongated and extended laterally, at its intermediate portion, said intermediate portion being engaged, and bound in, by the loops in an adjacent wale of the succeeding course, and having its closed end engaged by the loop in its original wale, and of the second succeeding course.

3. As a new article of manufacture, an open-mesh knitted fabric having one loop of one course engaged with a loop of the preceding course said loop being flanked in adjacent wales of said course by disengaged float threads, said first mentioned loop being extended and bent laterally at its intermediate portion and engaged by the loops of the two succeeding courses.

4. As a new article of manufacture, an open-mesh knitted fabric having one loop of one course engaged with a loop of the preceding course and the material or thread proceeding from each side of the first mentioned loop passing over but disconnected from the adjacent loops of said preceding course, said first mentioned loop being extended and bent laterally at its intermediate portion, said intermediate portion being engaged on that

side by the loops of an adjacent wale, and its closed end being engaged by a loop of its own wale.

5 5. As a new article of manufacture, an open-mesh knitted fabric having two loops of one course extended and engaging with the corresponding loops of the second course therefrom, the loop between said two loops being of normal length and the loop of the
10 succeeding course that engages with said normal loop being of triple length and extended laterally substantially at its middle so as to be engaged by the adjacent loops on that side in a following course, and having a
15 third course whose loops engage with the loops of the second, first and fourth courses, respectively.

6. As a new article of manufacture, an open-mesh knitted fabric in which the opening is formed within three wales or rows of
20 loops, counting from left to right, and four courses, counting from top to bottom, comprising loops 1 and 3 of course 1 elongated and engaging with loops 1 and 3 of course 3
25 in the corresponding wales, loop 2 of course

1 being normal and engaging at its closed end with loop 2 of course 2, in the ordinary way; loop 2 of course 2 being elongated to substantially triple length and its intermediate portion being extended laterally and engaging with loop 3 of course 3, and its closed end
30 with loop 2 of course 4, the material forming loop 2 of course 2 proceeding each side of loop 2 in course 2 and passing over loops 1 and 3 of course 1, but not engaging with said
35 last mentioned loops 1 and 3, and the material intermediate of loops 1 and 3 of course 3, being drawn down and engaged, along with the closed end of loop 2 of course 2, with
40 loop 2 of course 4, no loop being formed by the material intermediate of loops 1 and 3 of course 3.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JAMES McNAMEE.

Witnesses:

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