M. G. ROSENTHAL.

KNITTED FABRIC.

APPLICATION FILED OCT. 23, 1911.

1,029,636. Patented June 18, 1912.

Fig. 1.

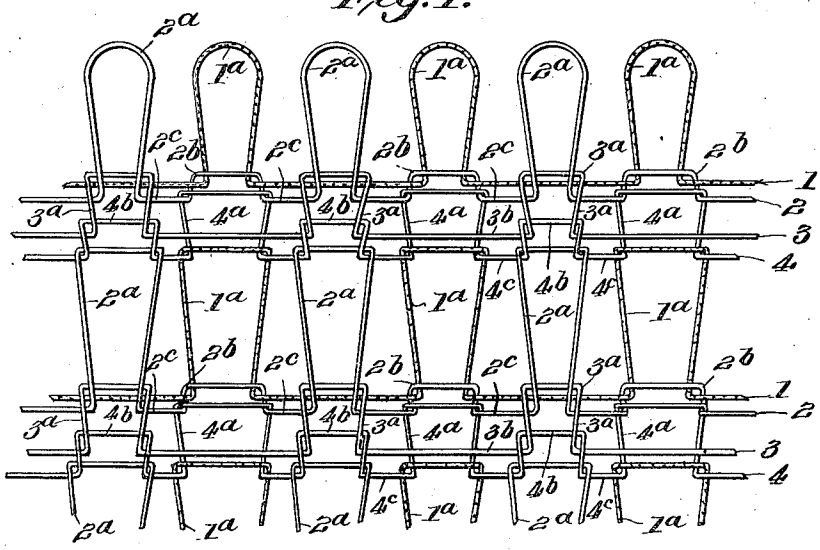


Fig. 2.

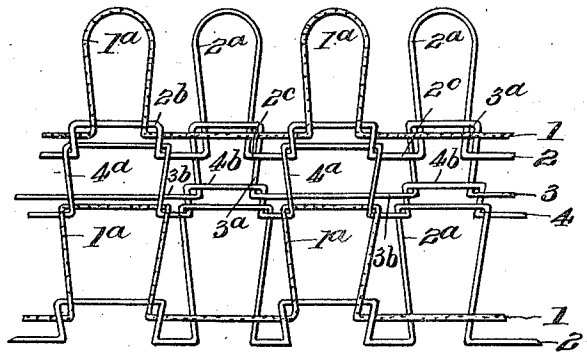
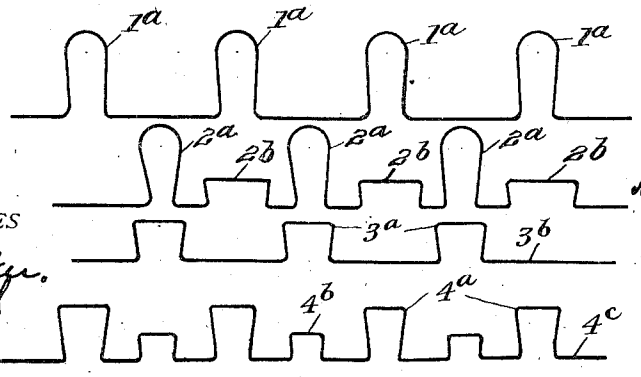


Fig. 3.



WITNESSES

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KNITTED FABRIC.

1,029,636. Specification of Letters Patent. Patented June 18, 1912.

Application filed October 23, 1911. Serial No. 656,339.

To all whom it may concern:

Be it known that I, MORRIS G. ROSENTHAL, citizen of the United States, residing at Mentor, in the county of Lake and State of Ohio, have invented certain new and useful Improvements in Knitted Fabric, of which the following is a specification.

This invention relates to knitted fabrics, and has for its object to provide an improved ribbed fabric of fine appearance and good wearing qualities, and capable of being made either porous or close knit. The fabric will have the desirable elasticity of regular ribbed goods, and being made with a double web can have different colors on face and back as desired.

The fabric comprises two interlocked webs having front and back loops which are interwoven with other yarns to form ribs. The fabric is made by employing both sets of needles, dial and cylinder respectively, the ribs being sufficiently heavy to give body to the goods and the yarns of the ribs being connected by loops which give elastic qualities and the joining of the threads or yarns is not on the face of the fabric, being interwoven with front and back loops formed alternately in the respective yarns. Four courses are employed, one of which forms front loops, another back loops, and the remaining two both front and back loops, the two latter forming ribs on both faces, the wales on one face being equal to those on the other, with openings between to give a porous effect.

In the accompanying drawings—Figure 1 is a front face view of the fabric on an enlarged scale. Fig. 2 is a rear face view. Fig. 3 is a plan showing the loops of the various threads, detached.

Referring specifically to the drawings the respective threads or yarns of the fabric are indicated at 1, 2, 3 and 4, 1, being the courses forming the back web, 3 the courses forming the front web, and 2 and 4 the courses which interlock with the others, and the loops of which alternate with the loops of the courses 1 and 2. Thus each back yarn 1 forms a series of single loops 1^a. These loops are comparatively long and connect the ribs on the back. The yarn indicated at 2 is formed with alternate long and short loops 2^a and 2^b respectively, the former being in the front web, and the latter in the back web, the short loops 2^b drawing over the necks of the loops 1^a at the back and the long loops 2^a being disposed at the front of the fabric, the connecting parts 2^c extending through the fabric, the long loops 2^a and 1^a being located in alternation. The front yarn 3 has a series of short single loops 3^a which draw under the necks of the loops 2^a and float across the spaces intervening between said loops, at the front of the fabric. It will thus be seen that the webs composed of the courses 1 and 3 are interwoven or interlocked by the long and short loops respectively of the course 2. The course 4 which is also an interlocking course has long loops 4^a at the back which draw over the short loops 2^b at the back of the fabric and also has short loops 4^b which draw under the loops 3^a at the front, extending intermediately through the fabric in the form of loops 4^c which interlock through the loops 1^a and 2^a of the next course, and said yarns 1 and 2, last mentioned, are in turn interwoven with each other and with the successive yarns 3 and 4 in a similar manner.

The courses 2 and 4, where they extend across the fabric in interwoven relation with the courses 1 and 3, form a heavier body at regular intervals, producing the ribs in the fabric, partly in connection with the adjacent float portions 1^b and 3^b of the courses forming the front and back webs, and the ribs are connected by the long loops 1^a and 2^a which when the fabric is loosely knitted give a desirable porosity to the fabric. By drawing these loops tight a heavy close knit fabric will be produced.

A fabric with different colors on opposite sides may be produced by making the yarns 1 and 3 of different colors, and it will be noticed that the necks of the loops all tend to draw in, or away from the surface at both sides, so that the joints where the yarns cross are not exposed to wear. In consequence of this the fabric has great durability and a finer finish.

The wales containing the loops 1^a are located at the side of the fabric opposite to the wales containing the loops 2^a, and in alternation therewith. For convenience, the former are in the back and the latter the front of the fabric, but this of course is optional. It will be understood from the drawings that the loops 1^a and 2^a may be drawn as tight as desired, thereby varying the size of the opening between the ribs and consequently the porous nature of the fabric. Similarly the tension of the rib

threads may be varied to make the ribs more or less dense.

The above describes the produced fabric. With respect to the order and manner of knitting, course 4 is knit on the cylinder and dial needles of a rib knitting machine in one-and-one rib, the stitches being alternately long and short; course 3 is then knit as a plain fabric upon each of the cylinder needles only; course 2 is then knit upon both cylinders and dial needles as one-and-one rib fabric; and course 1 is then knit as a plain fabric upon each of the dial needles. The result is a succession of one course welts knit respectively upon the back or dial sides of the fabric and upon the front or cylinder side of the fabric, said welts being united by a single course of one-and-one rib fabric.

The invention is not limited to the exact embodiment shown, as the number of courses or stitches, particularly in the welts and the ribs, may be varied, within the scope of the following claims.

I claim:

1. A knitted fabric comprising a succession of one walled welts one set of which is exclusively on one side of the fabric and another set of which is exclusively on the opposite side of the fabric, and rib courses connecting said welts.

2. A knitted fabric comprising a succession of one-walled welts some of which are knit exclusively on one side of the fabric and others of which are knit exclusively on the other side of the fabric, and courses of one-and-one rib uniting said welts.

3. A knitted fabric comprising a succession of one-course welts knit respectively on opposite sides of the fabric, and single courses of one-and-one rib uniting said welts.

4. A knitted fabric comprising a succession of welt courses knit respectively on opposite sides of the fabric, and courses of one-and-one rib uniting said welts, said rib courses having alternate long and short loops.

5. A knitted fabric comprising a succession of welt courses knit respectively on opposite sides of the fabric, and rib courses connecting said welts, the wales containing the loops of the welt courses on one side of the fabric being in alternation with the wales containing the loops of the welt courses on the other side.

6. A knitted fabric comprising a succession of one walled welt courses one set of which has comparatively long loops and is knit exclusively on one side of the fabric and another set of which has shorter loops and is knit exclusively on the other side of the fabric, and one-and-one rib courses uniting said welts, the rib courses having long and short loops corresponding to the long and short loops of the respective welt courses.

7. A knitted fabric comprising a succession of welt courses knit respectively on opposite sides of the fabric, and rib courses connecting said welts, the wales containing the loops of the welt courses on one side of the fabric being in alternation with the wales containing the loops of the welt courses on the other side, and the rib courses having long loops in the wales on one side of the fabric and short loops in the wales on the other side.

8. A ribbed knitted fabric having one-walled welt courses on opposite sides respectively, the courses on each side being exclusively on such sides.

9. A ribbed knitted fabric having a succession of one-walled welt courses in alternation on opposite sides respectively, the courses on each side being exclusively on such side.

10. A ribbed knitted fabric having a succession of welt courses in alternation on opposite sides respectively, the wales containing the loops of the welt courses on one side being in alternation with the wales containing the loops on the welt courses on the other side, of the fabric.

In testimony whereof, I do affix my signature in presence of two witnesses.

MORRIS G. ROSENTHAL.

Witnesses:
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STEDMAN J. ROCKWELL.