R. W. SCOTT.

RIBBED KNITTED WEB.

APPLICATION FILED JULY 7, 1908.

899,439. Patented Sept. 22, 1908.

2 SHEETS—SHEET 1.

Fig. 1

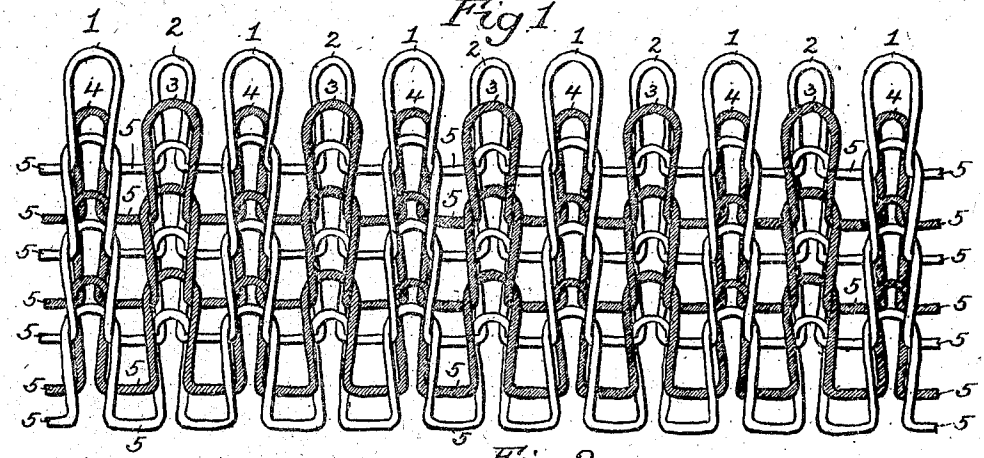


Fig. 2

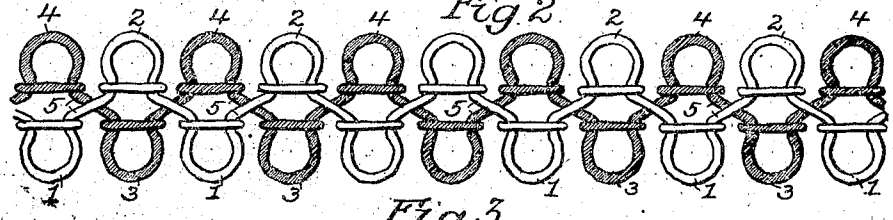
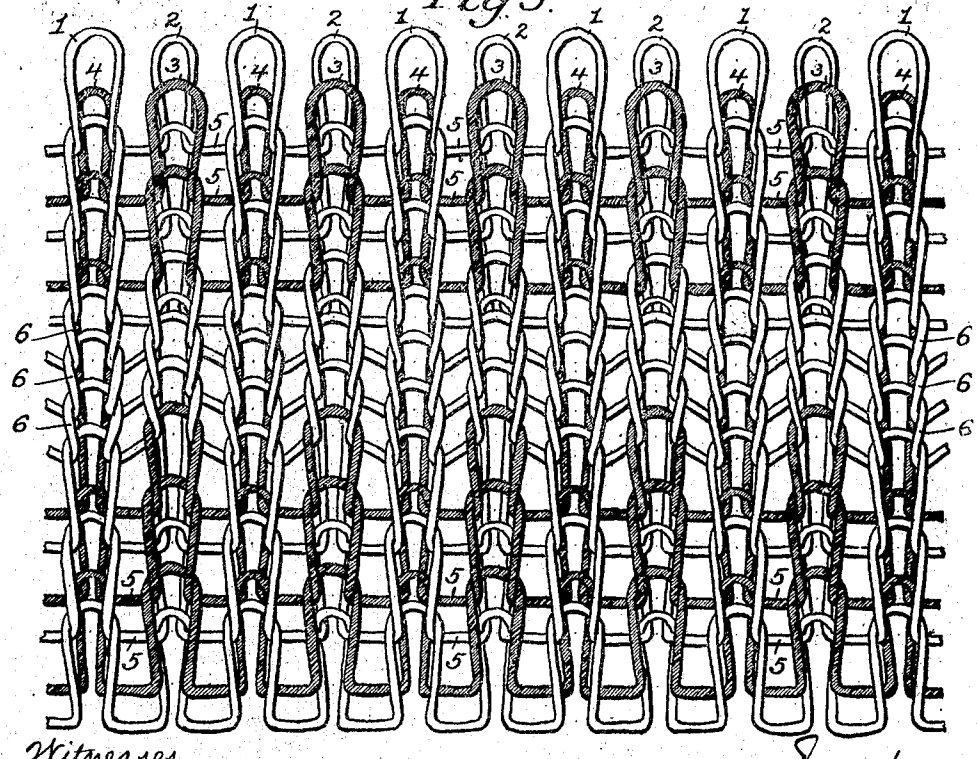


Fig. 3



Witnesses.
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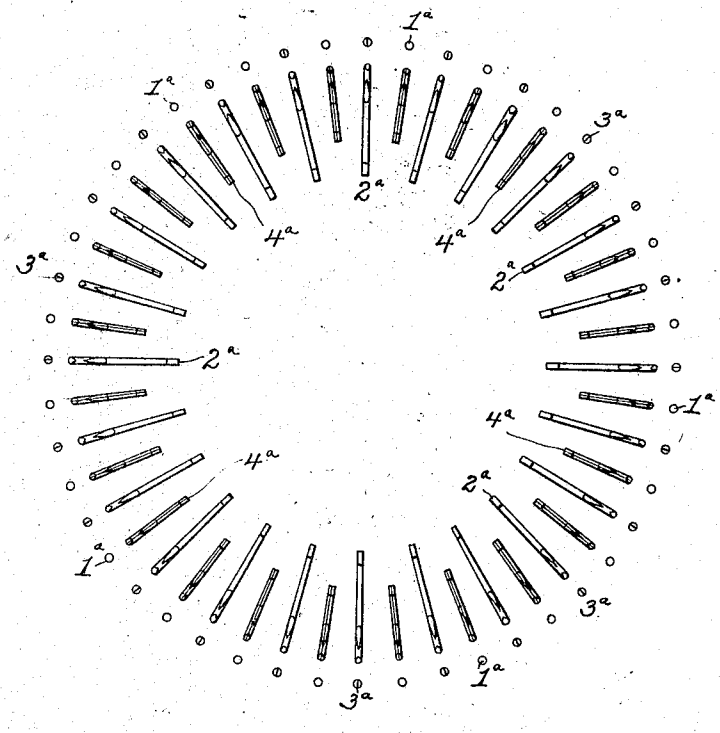
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2 SHEETS—SHEET 2.

Fig 1



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UNITED STATES PATENT OFFICE.

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RIBBED KNITTED WEB.

No. 899,439. Specification of Letters Patent. Patented Sept. 22, 1908.

Application filed July 7, 1908. Serial No. 442,414.

To all whom it may concern:

Be it known that I, ROBERT W. SCOTT, a citizen of the United States, residing in Leeds Point, Atlantic county, New Jersey, have invented certain Improvements in Ribbed Knitted Webs, of which the following is a specification.

The object of my invention is to provide a ribbed fabric of uniform character and possessing the quality of elasticity characteristic of a ribbed fabric but having a closer disposition of the wales and a heavier or firmer texture than a ribbed knitted fabric produced in the usual way, my invention also providing a ready means for producing vertical stripes or other ornamental effects in the web.

In the accompanying drawings Figure 1 is an exaggerated face view of a piece of knitted fabric constructed in accordance with my invention; Fig. 2 is an exaggerated sectional view of a piece of the fabric; Fig. 3 is a view similar to Fig. 1, but illustrating a piece of the improved fabric having a "welt" formation thereon; and Fig. 4 is a diagrammatic representation of the needles of a circular knitting machine adapted for the production of my improved fabric.

The fabric shown in Figs. 1, 2 and 3 consists of two interlocked ribbed webs with crossed sinker wales, the ribs of each face of one web being disposed in the spaces between the ribs of the corresponding face of the other web, thus, as shown in Figs. 1 and 2 of the drawing, the needle wales constituting the ribs of one face of one web, which may for convenience be termed the front face are represented at 1 and the needle wales constituting the ribs of the back face of said web are represented at 2, the needle wales 3 constituting the ribs of the front face of the other web being disposed in the spaces between the wales 1, and the needle wales 4 constituting the ribs of the back face of said web, being disposed in the spaces between the needle wales 2, the sinker wales 5 of the two webs crossing each other.

In producing a fabric of the character described an ordinary rib knitting machine may be employed but the needles of both the cylinder and dial of said machine are disposed in independently operable sets, a needle of one set alternating with a needle of the other set both around the cylinder and around the dial, thus, as shown in Fig. 4, the cylinder needles 1^a which produce the face wales 1 of one web alternate with the cylinder needles 3^a which produce the face wales 3 of the other web, and in like manner the dial needles 2^a which produce the back wales 2 of one web alternate with dial needles 4^a which produce the back wales 4, of the other web, the dial needles 2^a being in line with the cylinder needles 3^a and the dial needles 4^a being in line with the cylinder needles 1^a.

In order that they may be independently operated the needles of one set may be longer than the needles of the other set, or may have their projecting butts in different planes so as to be operable by different sets of cams, and the machine will be equipped with one or more yarn guides for each set of needles, one guide feeding its yarn to the needles 1^a and 2^a in the production of one course of the web and the next guide feeding its yarn to the needles 3^a and 4^a in the production of the next course of the web, whereby, while the two webs are, in effect, independent of each other and independently produced, they are so interlocked by means of their crossing sinker wales as to constitute, in effect, one fabric.

The value of my invention in the production of ribbed fabrics of close or heavy texture will be understood when it is borne in mind that it is impracticable on an ordinary rib knitting machine, to produce a web having more than about fourteen wales to the inch, on each face, for in such ordinary rib knitting machine the dial needles alternate with the cylinder needles and consequently the whole twenty-eight needles must be crowded into one inch of space. In a machine for producing my improved web, however, the dial needles are in line with the cylinder needles, hence the only limit to the number of wales in the web is the limit of fineness to which each needle-carrying member of the machine can be cut, and I can produce ribbed webs having as many as twenty-four wales to the inch on each face, while the knitting operation can be carried on with the same facility as in an ordinary rib knitting machine having a gage of but twelve to the inch, in each needle carrier, owing to the fact that but one half of the total number of needles are knitting at each feed. I can therefore produce ribbed fabric having a much finer texture than usual, arising from the closer disposition of the wales and I can pro-

duce ribbed fabric of heavy weight with the use of light yarns, because of the number of needle wales and courses of stitches per inch which my invention renders possible, whereas weight in an ordinary ribbed fabric means heavy yarn, and this, in turn, necessitates a coarse gage.

My invention is applicable both to circular and to straight machines, and although, in the fabric shown in Figs. 1, 2 and 3 of the drawing, each of the ribbed webs composing the same constitutes a one-and-one rib with needle wales of one face alternating with needle wales of the other face, the ribs of either or both faces of either or both webs may consist of a plurality of wales, if desired, depending upon the disposition and mode of operation of the needles of the two sets in each of the needle carriers, and the character of the stitches in the webs may be varied by tucking upon the needles of either or both of the needle carriers in the customary manner.

It may, in some cases, be necessary to produce a welt on my improved fabric, such welt consisting of a series of plain courses of stitches, such for instance, as shown at 6 in Fig. 3, these stitches being produced while the formation of the ribbed webs is temporarily suspended. In order to produce such a welt, the cams for operating both sets of dial needles are temporarily rendered inoperative while both sets of cylinder needles are caused to knit at the same yarn feed, a special cam being employed in the cylinder for actuating that set of the cylinder needles which, in the normal operation of the machine, is not caused to engage the yarn at that feed.

By providing the yarn feed for the needles of one set with yarn of a different color from that which feeds the needles of the other set vertical stripes can be produced in the simplest possible manner, and, by providing each yarn feed with any of the usual means for changing the color of the yarns fed thereby, patterns of considerable variety can be produced.

A fabric made in accordance with my invention is of uniform character throughout and possesses the quality of elasticity which is characteristic of an ordinary ribbed fabric.

I am aware that it has been proposed to knit a plain web with two yarns, each producing stitches in alternate courses and alternate wales of the web, but my invention relates wholly to a ribbed web, and the advantages of my invention are attained only in connection with such a web. I am also aware that it has been proposed to combine a ribbed web with a plain web having its needle wales disposed between the needle wales of one face of said ribbed web, but such a composite fabric is of uneven character owing to the fact that single wales alternate with double wales throughout the fabric and its elasticity is reduced to that of the plain web which limits the stretching of the ribbed web and therefore deprives the composite fabric of one of the principal characteristics of a ribbed web.

I claim:

1. A knitted fabric comprising two ribbed webs with crossing sinker wales, each face of the fabric presenting first a rib of one web and then a rib of the other web.

2. A knitted fabric comprising two ribbed webs with crossed sinker wales, the ribs of one web being disposed in the spaces between the ribs of the other web.

3. A knitted fabric comprising two interlocked ribbed webs, with crossed sinker wales and a welt composed of a plurality of successive plain courses.

4. The mode herein described of producing a knitted fabric, said mode consisting in feeding one yarn to one set of needles drawing stitches first in one direction and then in the opposite direction, to produce a ribbed web, and feeding another yarn to an alternating set of needles likewise drawing stitches first in one direction and then in the other direction, and between the stitches drawn by the needles of the first set.

5. The mode herein described of producing a knitted web, said mode consisting in feeding one yarn to one set of needles, drawing stitches first in one direction and then in the opposite direction, to produce a ribbed web, feeding another yarn to an alternating set of needles likewise drawing stitches first in one direction and then in the opposite direction, and between the stitches drawn by needles of the first set, arresting the operation of all of the needles which draw their stitches in one direction, and knitting a number of courses upon all of the needles which draw their stitches in the opposite direction.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ROBERT W. SCOTT.

Witnesses:
HAMILTON D. TURNER,
KATE A. BEADLE.