F. P. WALTER.

KNITTED FABRIC.

APPLICATION FILED JULY 24, 1920.

1,407,343.

Patented Feb. 21, 1922.

2 SHEETS—SHEET 1.

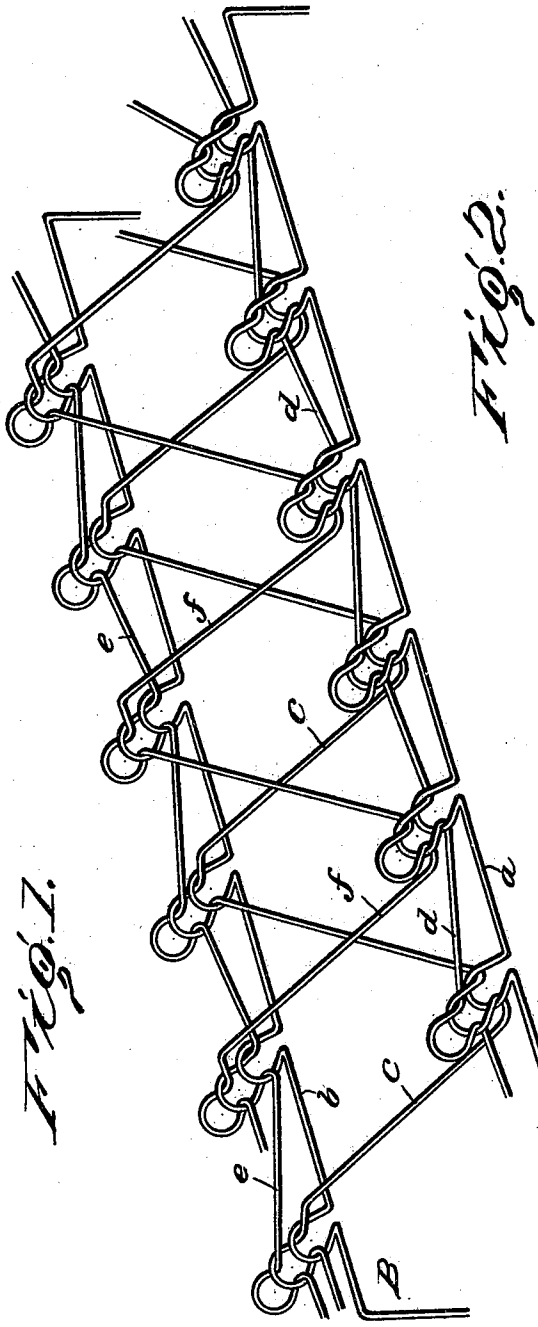


Fig. 1.

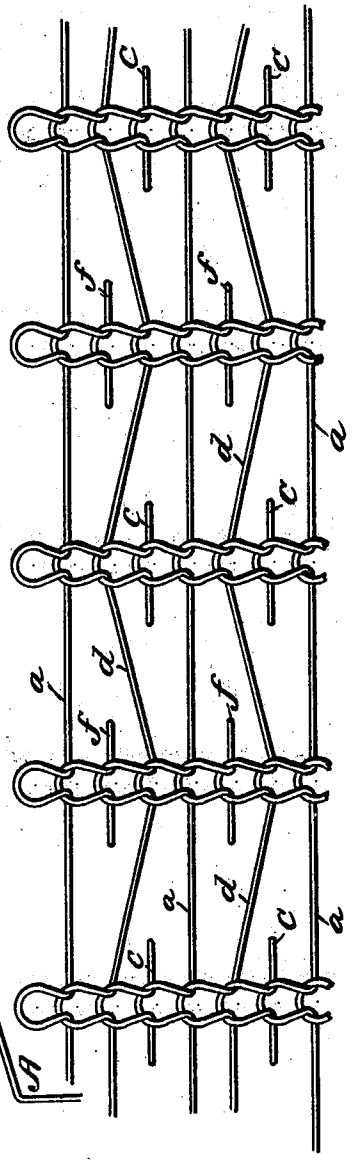


Fig. 2.

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2 SHEETS—SHEET 2.

FIG. 3.

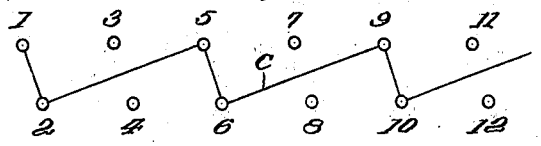


FIG. 4.

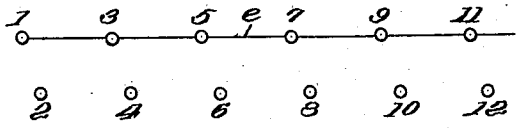


FIG. 5.

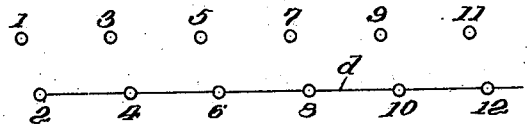


FIG. 6.

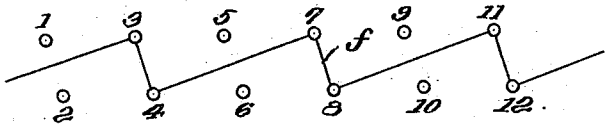


FIG. 7.

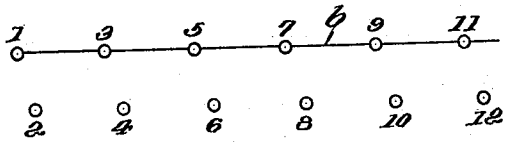
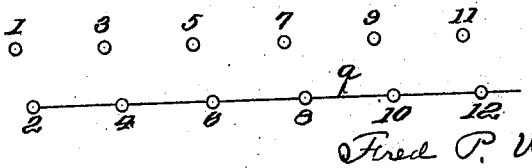


FIG. 8.



Inventor

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UNITED STATES PATENT OFFICE.

FREDERICK P. WALTER, OF OSWEGO, NEW YORK, ASSIGNOR OF ONE-THIRD TO FREDERIC CONDE AND ONE-THIRD TO FREDERICK A. SCHENTZOW, BOTH OF OSWEGO, NEW YORK.

KNITTED FABRIC.

1,407,343. Specification of Letters Patent. Patented Feb. 21, 1922.

Application filed July 24, 1920. Serial No. 398,838.

To all whom it may concern:

Be it known that I, FREDERICK P. WALTER, a citizen of the United States, residing at Oswego, in the county of Oswego, State of New York, have invented certain new and useful Improvements in Knitted Fabrics, of which the following is a description, reference being had to the accompanying drawing, and to the figures of reference marked thereon.

The invention relates to new and useful improvements in knitted fabrics and the process of forming the same, and more particularly to a knitted fabric composed of two inter-connected knitted webs.

An object of the invention is to provide a knitted fabric of the above character wherein the faces of the knitted webs are similar in appearance so that there is no right or wrong side to the knitted fabric.

A further object of the invention is to provide a knitted fabric of the above character wherein the faces of the knitted webs have the appearance of plain flat knitting.

A still further object of the invention is to provide a knitted fabric of the above character wherein the connected webs are formed in part of independent courses of flat knitting inter-connected by cross knitting so disposed that the number of knitted loops in each wale shall be the same.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings:—

Figure 1 is a diagrammatic view showing the two connected webs forming the fabric, and the arrangements of the loops in the webs;

Fig. 2 is a diagrammatic view showing one face of the fabric and the arrangement of the loops;

Fig. 3 is a diagrammatic view showing two banks of needles and the particular needles to which yarn is fed at one yarn feed;

Figures 4, 5, 6, 7 and 8 are similar views showing the needles fed by the respective yarn feeds in succession.

In carrying out my improved process of forming knitted fabrics, and in the making my improved knitted fabric embodying the invention, I prefer to use a circular knitting machine consisting of a bank of radial needles, and a bank of cylinder needles which are disposed so as to be reciprocated in a direction at right angles to the radial needles. There are the same number of radial needles as cylinder needles, and these needles are associated in pairs and disposed so that a radial needle passes very close to a cylinder needle as distinguished from the needles being one behind the other. This is a great advantage in the operation of the machine as it gives the operator a clear view of all of the needles. There are six yarn feeds, each supplying an independent yarn to the needles. There are cams associated with each yarn feed which manipulate the needles so as to produce my new fabric.

In Figures 3 to 8, inclusive, the dial needles are indicated at 1, 3, 5, 7, 9, etc., while the cylinder needles are indicated at 2, 4, 6, 8, 10, etc. At one yarn feed, alternating needles in the dial are brought into knitting position and likewise alternating needles in the cylinder are brought into knitting position. The alternate needles in the cylinder which are active at this time, are closely disposed relative to the alternate needles in the dial and the yarn is laid therefor into the pair of needles, 1—2, and then into the pair of needles 5—6, and then into the pair of needles 9—10. At the next yarn feed, the cams are so constructed as to project all the dial needles into operative position, while all the cylinder needles are inactive, merely holding the loops which are in the same. Therefore, at this yarn feed, the yarn will be laid into the needles 1, 3, 5, 7, 9, etc. At the next yarn feed, the cams are so constructed that the dial needles are idle while all the cylinder needles are raised to operative position and the yarn is laid into the needles 2, 4, 6, 8, 10, etc., as shown in Fig. 5. At the next yarn feed, the cams are so constructed as to bring into operative position the pairs of needles in the dial and cylinder which were idle when the yarn was knit, as indicated in Fig. 3. A yarn is now laid into the needles 3—4, 7—8, 11—12, etc. At the next yarn feed, the cams are so constructed as to bring the dial needles into operative position as indicated in Fig. 7, and at the next yarn feed, the cylinder needles are brought into active position as indicated in Fig. 8. From the above, it will be apparent that my improved process of knitting a fabric having two webs

consists in forming a series of loops on all the needles of one of two associated groups of needles, then forming a series of loops on all of the needles of the other associated group of needles, and then forming a series of cross course loops alternately and on alternate needles of first one group and then the other; then knitting a series of loops on all the needles in one group, and then a series of loops on all of the needles of the other group, and then a series of loops on the needles which are idle in the respective groups during the first cross course knitting.

From the above it will be apparent that my improved fabric is knitted from six yarns, two of which form flat knitting in one web of the fabric, that is, the loops formed as shown in Figures 4 and 7, while two more of the yarns form flat knitting in the other web of the fabric, that is, the knitting as indicated in Figures 5 and 8. The other two yarns form cross knitting which join the two fabrics, and these yarns are so disposed as to be interlooped respectively by alternate pairs of needles, thus when the six yarns are fed into a course or rather six courses, the loops in each wale will be the same in number.

The structure and appearance of the fabric resulting from the above process of knitting will be plain from Figures 1 and 2. The two webs are indicated at A and B. The web A consists of a course of flat knitting *a*, and there is a substantially opposed course of flat knitting *b* in the web B. There is next a course of cross knitting indicated at *c*, wherein alternate pairs of loops in the two webs are engaged. There is then a course of flat knitting *d* in the web A which engages all the loops, and a similar course of flat knitting *e* in the web B which engages all the loops in that web. There is then a course of cross knitting *f* which engages alternate pairs of loops in the two webs and the pairs of loops intermediate those engaged by the cross thread *c*. This is followed by a flat course of knitting in the web A and an opposed course of flat knitting in the web B, then cross knitting, and so on.

It will be apparent from the above that the yarn which forms the flat knitting in one web may be of one color, while the yarn forming the flat knitting in the other web may be of another color, and therefore, in the resulting fabric, the two faces will be in part of different colors. The cross yarns may still be of a different color, and the result will be diagonal arrangement of the loops in the cross thread which appear on the opposite faces of the fabric. The cross yarns, on the other hand, may be of the same color as the yarn forming one face of the fabric, which would result in a fabric, wherein one face is one solid color. By using different colored yarns, various color effects may be obtained in the different faces of the fabric.

It will be noted from Fig. 2 that there are the same number of loops in each wale in every six courses, and this produces a fabric which is of uniform appearance on each face, and in fact, has the appearance of plain knitting throughout. Then again, by this cross knitting with alternate pairs of loops, great elasticity is given to the fabric in a direction lengthwise of the wale as well as crosswise of the wales. It will be understood that my improvement consists, not only in a knitted fabric, but also in the new process for forming the knitted fabric.

While I have described my improved fabric as consisting of six courses knit in the manner stated, it will be obvious of course that any multiple of six may be used, and the same result accomplished.

Having thus described the invention, what I claim as new and desire to secure by Letters-Patent, is—

1. A knitted fabric composed of two webs containing independent opposed flat knit courses, a cross knit course connecting the loops in certain of the wales in the flat knit courses, other independent opposed flat knit courses engaging the loops in each wale, and a cross knit course connecting the loops in the remaining wales in the flat knit courses.

2. The process of knitting fabric consisting of forming a series of loops on all the needles of a group, then forming a series of independent loops on all the needles of another group, then forming a series of cross course loops alternately on certain of the needles first of one group and then the other, then forming a series of loops on all the needles of one group, and then a series of loops on all the needles of the other group, and then a series of loops alternately on the needles first of one group and then the other which needles were idle during the first cross course of knitting.

3. The process of knitting a fabric having two webs which consists in forming a series of loops on all the needles of one of two associated groups of needles, then forming a series of loops on all the needles of the other associated group of needles, then forming a series of cross course loops alternately and on alternate needles of first one group and then the other, the yarn between alternate loops in said course passing between adjacent idle needles in the respective groups of needles, then knitting a series of loops on all the needles of one group and then a series of loops on all the needles of the other group, and then a series of loops on the needles which are idle in the respective groups during the first cross course knitting.

In testimony whereof, I affix my signature.

FREDERICK P. WALTER.