No. 630,110. Patented Aug. 1, 1899.

G. RILEY.

ELASTIC FABRIC.

(Application filed Mar. 11, 1899.)

(No Model.)

Fig. 1.

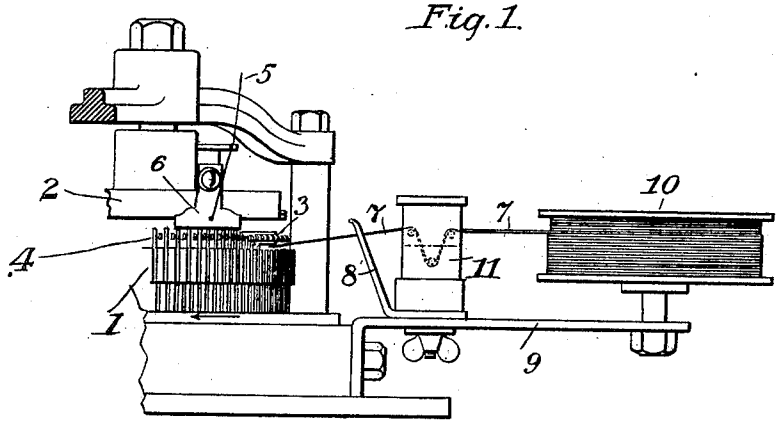


Fig. 3.

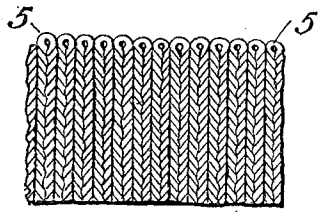


Fig. 2.

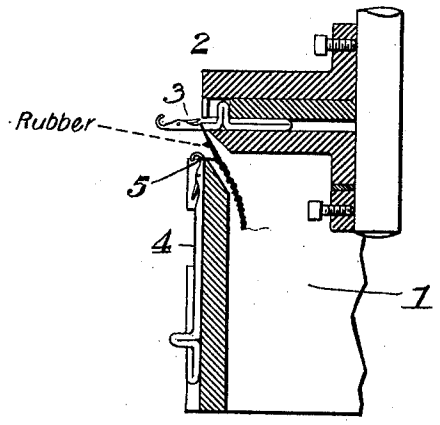


Fig. 4.

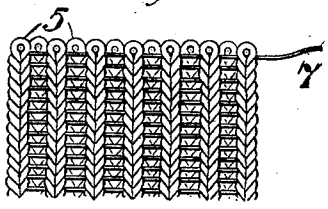
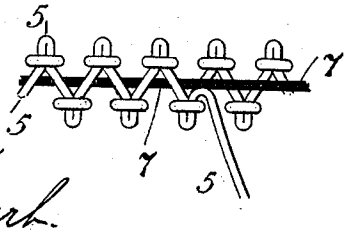


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE RILEY, OF LEICESTER, ENGLAND, ASSIGNOR OF TWO-THIRDS TO NYE & TREDICK, OF PHILADELPHIA, PENNSYLVANIA.

ELASTIC FABRIC.

SPECIFICATION forming part of Letters Patent No. 630,110, dated August 1, 1899.

Original application filed December 6, 1897, Serial No. 660,902. Divided and this application filed March 11, 1899. Serial No. 708,642. (No specimens.)

To all whom it may concern:

Be it known that I, GEORGE RILEY, of Leicester, county of Leicester, England, have invented a new and useful Improvement in Elastic Fabrics, of which the following is a specification, being a division of an application filed by me on the 6th day of December, 1897, Serial No. 660,902.

This invention has reference to that class of elastic fabrics in which is incorporated one or more elastic threads; and the invention has for its object the production of a fabric of this character in which the elastic threads will be prevented from slipping and the fabric prevented from unraveling. To this end the invention consists in applying to the elastic threads an adhesive composition of such character that on hardening or setting it will not interfere with or impair the natural elasticity of the rubber threads—such, for instance, as an india-rubber solution—the result being that the elastic threads will be cemented throughout to the material of the fabric and be prevented from slipping or unraveling, at the same time possessing the full degree of natural elasticity.

I prefer to embody my invention in a knit fabric, and in the drawings I have illustrated the manner in which this may be accomplished in connection with a circular-knitting machine employing two sets of needles and producing the well-known tubular fabric with ribs on opposite sides; but it will be understood that my invention is not limited in this specification to a knit fabric, but is applicable as well to other fabrics in which are incorporated elastic threads.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a cylinder and dial knitting-machine provided with means for coating the rubber threads with an adhesive composition. Fig. 2 is a sectional view showing how the rubber thread is laid in the fabric during the formation of the latter. Fig. 3 is an elevation of a portion of the fabric. Fig. 4 is a similar view of the fabric extended to show the disposition of the elastic threads. Fig. 5 is an edge view, on an enlarged scale, showing how the elastic threads extend between the wales of the fabric.

Referring to the drawings, 1 represents the cylinder, and 2 the dial, of the well-known circular-knitting machine, equipped, as usual, with dial-needles 3 and cylinder-needles 4, the latter as they rise taking a thread 5 through a suitable guide 6 and the two sets of needles operating on this thread to produce a tubular fabric ribbed on the inside and out. An india-rubber thread 7 is incorporated in this fabric by introducing the same above and back of the cylinder-needles when they are in their lowered position, as shown in Figs. 1 and 2, a guide 8 being sustained adjacent to the cylinder at this point on a bracket 9, fixed to the frame of the machine, and the rubber thread passing through this guide from a reel 10, mounted on the outer end of the bracket. The elastic thread introduced at this point is carried around by the revolution of the cylinder to the point where the cylinder-needles rise to take the thread for the stitches, and as they rise the rubber thread is closed in and held by the cylinder-needles on the front, a dial-loop on the back, as shown in Fig. 2, a dial-needle on the top, and a cylinder-loop on the bottom. In this position it progresses to where the knitting is accomplished, at which point new loops are taken on the needles and the previous loops cast off, and as these loops are cast they close over the rubber thread, which is thus held in the fabric between the opposite ribs, as shown in Fig. 3.

The coating of the rubber thread with the adhesive composition is effected previous to its incorporation in the fabric by passing the same through a receptacle 11 containing the coating composition, which receptacle is formed in opposite sides with openings for the passage of the rubber thread and sustained on the bracket-arm between the reel and the machine. The thread in passing through the receptacle receives a coating of the solution therein and in this condition is incorporated in the fabric, as described, the solution on setting or hardening cementing the thread to the fabric and causing it to adhere throughout its length, by which means it is firmly held and prevented from slipping.

The coating composition should be of such character as not to interfere with or impair

the elastic nature of the thread, so that the fabric may possess the full degree of elasticity. A suitable composition for this purpose is an india-rubber solution.

From this description it will be observed that I produce a fabric in which the rubber thread is connected to the same and held throughout its length, it being thus effectually prevented from slipping or unraveling and this without destroying the elasticity of the thread.

I am aware that it has been proposed to form a composite fabric by cementing together two sheets of textile fabric, between which are laid elastric strips cemented in place; but I believe myself to be the first to incorporate an elastic thread or threads in the body of a single sheet of fabric complete in itself in such manner that the threads will be inclosed by the material of the sheet and to cement these threads to the material of the fabric.

Having thus described my invention, what I claim is—

1. As a new article of manufacture an elastic fabric consisting of a single sheet complete in itself, as distinguished from a composite fabric, said single sheet having incorporated within its body and inclosed by the material thereof, an elastic thread or threads cemented to the material of the fabric.

2. A knit fabric having laid in the same, an elastic thread or threads cemented to the material thereof.

3. A knit fabric provided with wales, and having laid in the fabric between the wales, an elastic thread cemented to the material of the fabric.

4. A tubular knit fabric having a continuous india-rubber thread laid in the fabric between the wales and cemented to the material of the fabric.

In testimony whereof I hereunto set my hand, this 14th day of February, 1899, in the presence of two attesting witnesses.

GEORGE RILEY.

Witnesses:
WALTER SAMUEL SAVIGE,
WM. VAUGHAN ICKE.