Dec. 22, 1925. 1,566,727

F. L. BRIGHAM

FABRIC AND METHOD OF MAKING THE SAME

Filed Nov. 18, 1924

Fig. 1

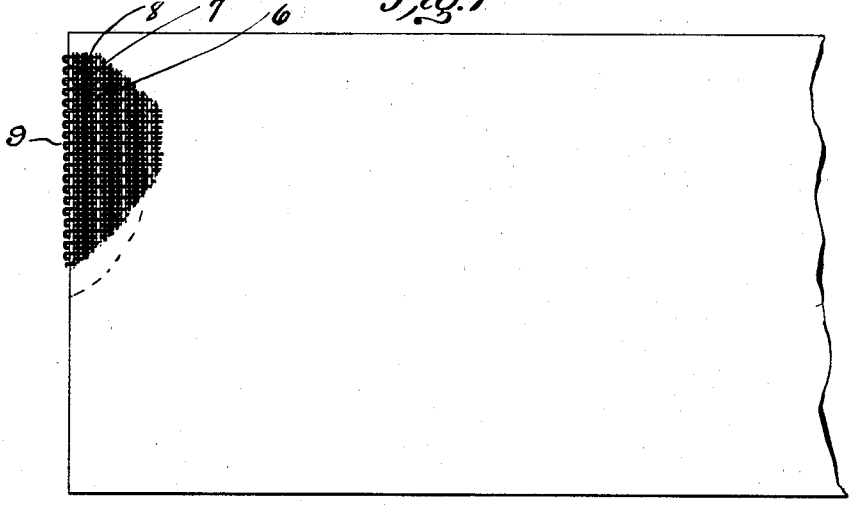
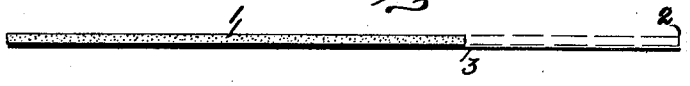


Fig. 2



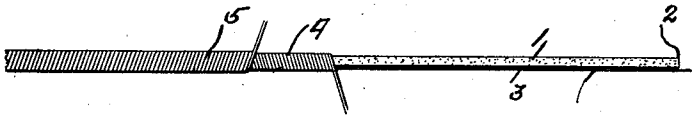
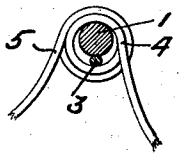


Fig. 3



Fig. 4

Fig. 5



INVENTOR
Frederick L. Brigham
BY
Riddle & Marquess.
ATTORNEYS.

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UNITED STATES PATENT OFFICE.

FREDERICK L. BRIGHAM, OF UPPER MONTCLAIR, NEW JERSEY.

FABRIC AND METHOD OF MAKING THE SAME.

Application filed November 18, 1924. Serial No. 750,528.

To all whom it may concern:

Be it known that I, FREDERICK L. BRIGHAM, a citizen of the United States, and a resident of Upper Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Fabrics and Methods of Making the Same, of which the following is a specification.

My invention, which relates broadly to fabrics, is directed to improving the methods now employed in the manufacture of fabrics employing covered rubber warp threads.

In the manufacture of fabrics employing covered rubber warp threads under present methods, the elastic core of the warp threads is enclosed in one or more fibrous coverings, such as cotton or silk, for example, wound in opposite directions around the elastic core thread while the core thread is stretched to its approximate limit. In the weaving of fabrics from such warp threads, the warp threads are extended to the approximate limit of the elastic of the core thread, giving a long stretch fabric. If a short stretch fabric is desired, the fabric is woven with the elastic core threads stretched to their approximate limit, but in this case the filler threads are beaten up to an abnormal extent. In the finishing process, it is customary to use starch in order to give body and smoothness to the finished fabric.

When making up such a fabric into garments, however, care must be taken not to cut the fabric along the selvage, inasmuch as this releases the rubber cores of the warp threads, allowing the same to pull back through the fabric to cause "runs" therein.

Again, as above mentioned, starch is employed in the manufacture of such fabrics and consequently any benefit derived from the presence of the starch is lost when the starch becomes softened from moisture or as soon as the starch is dissolved by washing the fabric.

Furthermore, in making such fabrics into garments such as corsets, girdles, etc., it is almost impossible, during the stitching of the stays, etc. in place, to avoid cutting some of the elastic core threads, with the result that these threads will draw or work back through their fibrous covering, producing "runs" in the garment.

My invention provides an improved fabric wherein should any of the elastic warp core threads be cut when making the same into garments, or should it be desirable or necessary to cut the fabric along the selvage edge or edges, the severed elastics or rubbers will nevertheless be held against pulling back through their fibrous coverings or through the fabric.

My invention provides also a method whereby the results desired may be produced without employing starch and without any abnormal beating up of the filler threads and without stretching the elastic cores of the warp threads to their approximate limit while weaving, thereby prolonging the life of the warp threads.

Briefly, my invention consist in providing an improved thread and incorporating this thread into a warp of the fabric, to thereby provide a fabric in which the elastic of the warp threads will remain in place should it be necessary or desirable to cut the fabric along the selvage edge or edges. Further, my invention also consists in providing a warp thread having a core composed of one or more elastic threads and one or more non-extensible stay threads, such as fibrous stay threads, extending lengthwise of the warp thread, this core being covered with a fibrous non-interlaced covering, such as silk or cotton, which is wound or wrapped spirally about the elastic core thread or threads and the fibrous stay thread or threads to cause the stay and core threads to become intertwined and bound together. The non-extensible or inelastic stay thread of the core is of such a length from one point of view of the invention that the elastic core thread may not be stretched beyond its elastic limit, thereby limiting the stretch of a fabric made therefrom—a desirable characteristic—and in the weaving or knitting of fabric employing my improved warp threads, at which time the elastic core threads are under tension, these threads can only be stretched to the limit permitted by the stay threads. I find also that in the finished thread the core and stay threads have changed their relative positions so as to cross each other or become intertwined, and this, in conjunction with the fibrous covering or coverings of the warp threads, which as above mentioned bind the stay threads to the elastic core threads, prevents the elastic core threads from pulling back or retracting through their fibrous coverings. Consequently, when my improved fabric is made up into a garment, should any

of the elastic core threads be cut either by reason of cutting of the fabric along the selvage or in stitching stays in place, etc., the cut threads do not pull back but remain in place in their coverings.

In the accompanying drawings, wherein I have illustrated an embodiment of my invention—

Figure 1 is a plan view of a fabric woven in accordance with my improved method;

Fig. 2 is a view showing the first step of the method of making my improved warp thread;

Fig. 3 shows the fibrous covering being applied to the core of the thread;

Fig. 4 shows the completed thread; and

Fig. 5 is a section through the thread of Fig. 4.

Referring to the drawings in detail, 1 designates a length of extensible material, such as elastic or rubber, constituting a part of the core of my improved warp thread. In the manufacture of my improved thread this elastic core thread 1 is stretched or placed under tension, as indicated in Fig. 2, where it is shown stretched or tensioned to the point designated 2, which is not beyond its limit of elasticity. With the elastic core thread so stretched, I place beside it, i. e., feed along with it, a substantially non-extensible stay thread 3 of a length equal to the length of the elastic thread in its stretched condition, this thread 3 being cotton, silk, or any other suitable fibrous non-elastic material. These two threads constitute the core of my improved warp thread and extend lengthwise thereof. I may here mention, however, that several of these core and stay threads may be employed in a thread if desired, one of each having been shown merely for purposes of illustration. With these two threads under the tension permitted by the stay thread, a covering 4, and if desired a covering 5, are wound or wrapped about the same, these coverings being composed of any suitable fibrous material wound or wrapped spirally about the core, one covering preferably being wound or wrapped right-hand while the other is wrapped left-hand. The application of the covering thread causes the core thread and stay thread to change their positions, so that while these threads originally lie or are fed substantially parallel to each other, upon the application of the covering thread they cross each other and become intertwined as indicated in Fig. 4.

I find after many tests that my improved method provides a thread in which the elastic or rubber core thread 1 will be held in proper position, i. e., will not retract to a detrimental degree relatively to the fibrous coverings 4 and 5.

In the manufacture of my improved fabric I employ for the warp the improved thread above described, and which I will designate 6 in Fig. 1, preferably in conjunction with fibrous binder threads 7 and gut threads 8, which may be cotton, silk, or other suitable material. The gut thread I prefer is composed of four threads as indicated.

In weaving this fabric the extensible warp threads 6 are placed under the tension permitted by the stay threads 3. In other words, the elastic core threads are stretched as far as the stay threads 3 will permit, it being understood, of course, that the fibrous binder and gut threads above referred to are also under some tension. With the warp threads under tension as just pointed out, the fabric may be woven in the usual way. This method will provide a short stretch fabric, the stretch being limited by the stay threads, as will be obvious, and no starching or abnormal beating up of the filler threads 9 is necessary.

I find that the employment of threads such as above described in a fabric permits of the elastic or rubber core thread or threads being cut during the process of manufacturing the fabric into a garment, without pulling back through the fibrous coverings 4 and 5.

Apparently, this is due to the pressing of the fibrous stay thread into the elastic core thread wherever the stay thread is crossed by the fibrous coverings 4 and 5. In other words, the stay thread and the elastic core thread are bound to each other by the covering threads, the elastic core thread, the stay thread and the cover threads all being bound to each other so as to prevent slipping of the elastic core thread relatively to the other threads. No doubt, also, the stay thread is pressed into the elastic core thread by the filler threads to further aid in holding the elastic and the warp threads in place. It is probable, likewise, that the intertwining of the stay threads and the elastic core threads above described very materially aids in retaining the core threads in place. In fact, it may be that the intertwining of these threads is the prime reason that the elastic core threads remain in place.

A fabric in which the selvage may be cut, as indicated by dotted line in Fig. 1, without the elastic or rubber warp thread cores pulling through, may be produced by the method above described, and as an illustration I have found such a fabric is produced by employing eighteen or nineteen covered elastic warp threads to the inch, and thirty-two ply yarn for the gut thread and forty-two ply yarn for the binder threads.

It will be seen that I have produced a fabric employing covered elastic warp threads which may be cut along the selvage without, however, releasing these threads so as to permit them to pull back through the fabric when the fabric is placed under

tension, as, for example, when the fabric is embodied in a corset or other garment.

It will be seen also that I have produced a fabric which need not be starched, and hence which may be washed, and, as a matter of fact, ironed without any detrimental effect on the fabric.

It will be seen further that my invention provides an improved thread in which the elastic or rubber core threads will remain in place in their fibrous coverings even though these threads may be cut, as, for example, in the process of manufacturing the fabric employing such threads in the warp into garments.

It is to be understood that while I have described my invention in detail, changes may be made therein within the purview of my invention. It is to be further understood also that while my improved thread has been referred to as a warp thread in the art of weaving, yet the same may be used, if desired, in the art of knitting.

What I claim is:

1. As an article of manufacture, an extensible fabric employing warp threads consisting of a core composed of an extensible thread and a non-extensible thread, both extending lengthwise of the warp thread, and a covering for said core, said warp threads being so constructed that the core threads will remain in position when the selvage of the fabric is cut.

2. As an article of manufacture, an extensible fabric employing threads consisting of a core and a covering for the core, the core comprising at least one extensible thread and one inextensible thread, the inextensible thread lying about the extensible thread in a long pitched spiral, both threads of the core extending lengthwise of the thread, said covering for the core comprising one or more threads of inextensible material wrapped spirally about the same to bind the extensible thread and the inextensible thread of the core to each other, whereby the selvage of the fabric may be cut without releasing the extensible core threads.

3. An article of manufacture comprising a non-extensible thread and an elastic thread intertwined, and a non-extensible thread wrapped about the two first-mentioned threads.

4. An article of manufacture comprising a non-extensible thread and an elastic thread crossing each other, and a non-extensible thread wound spirally about the two first-mentioned threads.

5. An article of manufacture comprising a non-extensible stay thread and an elastic core thread intertwined, and a non-extensible thread wound spirally about the two first-mentioned threads, the non-extensible stay thread being of a length to limit the stretch or extension of the said elastic core thread.

6. A fabric comprising a plurality of interlaced threads, certain of said threads comprising an elastic core thread and a non-elastic stay thread intertwined, and a non-elastic thread wrapped spirally about said core and stay threads.

7. A fabric comprising a plurality of warp threads some of which warp threads comprise an elastic core thread and a non-elastic stay thread intertwined, and a thread wrapped about the said core and stay threads to bind the two together, the said stay thread being of a length to limit the stretch of the elastic core thread.

8. The method which consists in wrapping a non-extensible thread about an elastic thread and a non-extensible thread to cause the two last-mentioned threads to become intertwined.

9. The method which consists in winding a thread spirally about a non-extensible thread and an elastic thread to cause the two last mentioned threads to change their positions so as to cross each other.

10. The method which consists in winding a thread spirally about a non-extensible thread and an elastic thread with the elastic thread under the tension permitted by the non-extensible thread, to cause the elastic thread and the non-extensible thread to become intertwined.

11. The method of manufacturing a fabric, which method consists in employing threads in the warp of the fabric comprising an elastic core thread and a non-elastic stay thread intertwined and covered with a winding of non-elastic thread, and weaving the fabric with the said elastic core threads under the tension permitted by the non-elastic stay thread.

This specification signed this 17″ day of November, 1924.

FREDERICK L. BRIGHAM.