April 14, 1931. W. J. FOX 1,800,992

ELASTIC FABRIC

Filed July 15, 1929 2 Sheets-Sheet 1

Fig. 1.

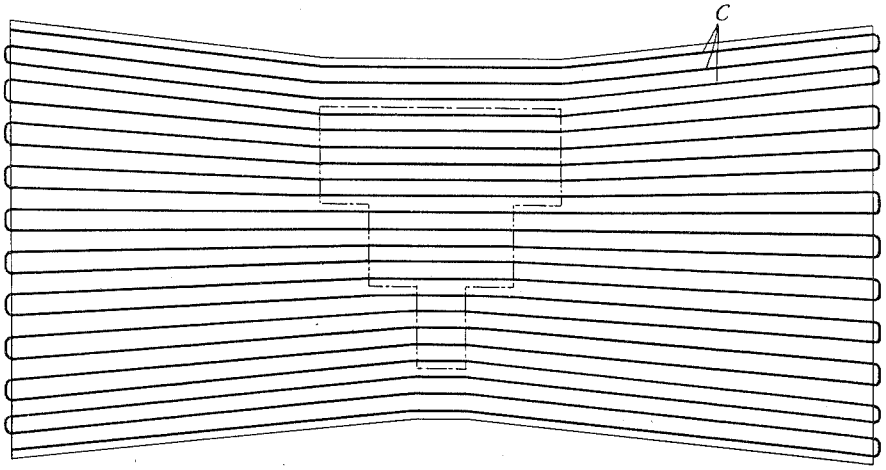


Fig. 2.

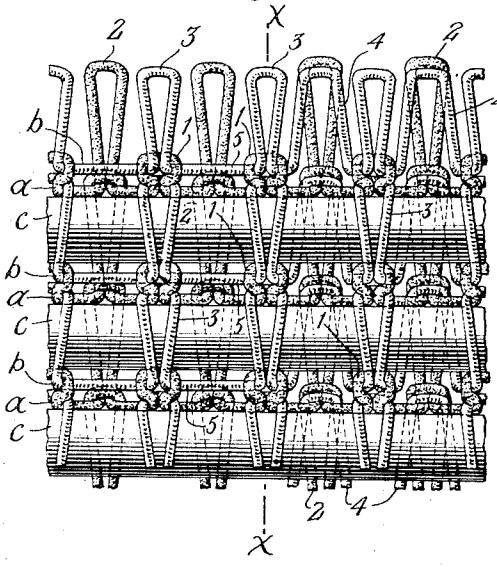
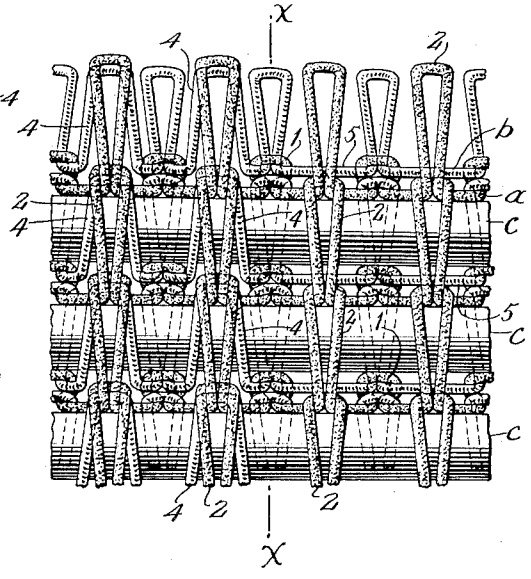


Fig. 3.



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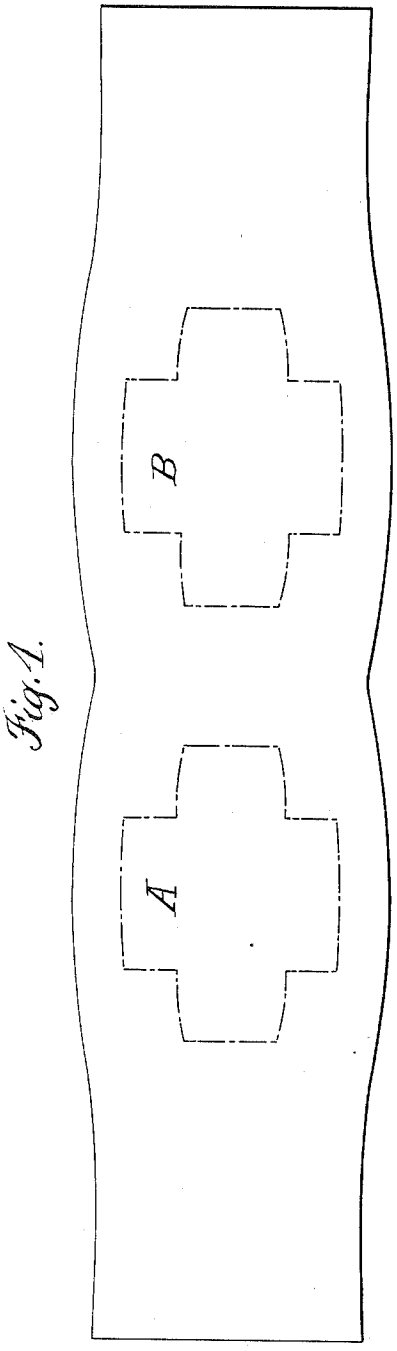


Fig. 1.

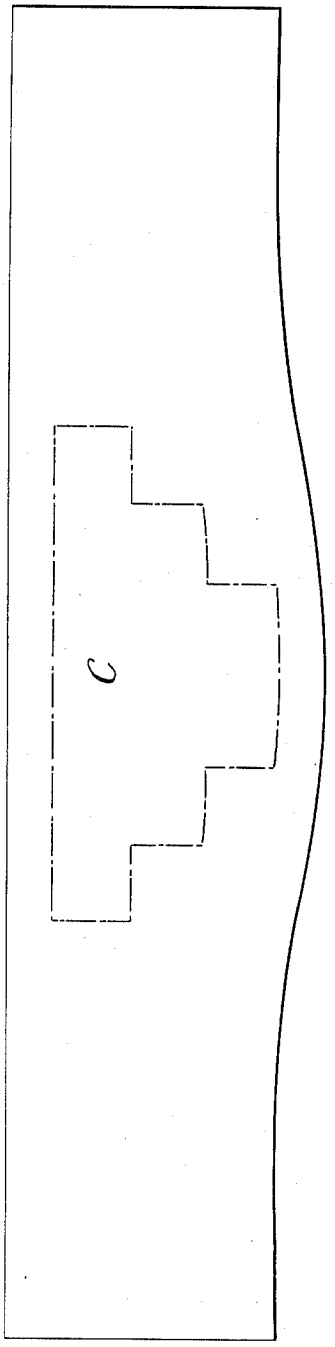


Fig. 5.

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UNITED STATES PATENT OFFICE

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ELASTIC FABRIC

Application filed July 15, 1929. Serial No. 378,448.

This invention relates to improvements in elastic fabrics of the kind employed in the manufacture of corsets, brassières, abdominal belts, arm and leg bands and other articles for surgical and other uses.

Such fabrics, as generally stated, comprise longitudinally extending elastic strands and knitted threads having connected loops which form enclosures through which the elastic strands extend.

In employing fabrics of this character in the manufacture of various articles it is desirable to have strips of the fabric shaped or fashioned to provide wide portions merging into narrower portions longitudinally of the fabric.

In the usual method employed in the production of such shaped or fashioned strips, prior to my present invention, it has been necessary to insert a greater number of laterally disposed elastic strands in the wide portions of the strips than in the narrow portions thereof and to form reverse or U-shaped bends in the elastic strands at various places in the body portions of the strips to turn certain of the elastic strands at certain places between the ends of the strips and cause them to extend in a reverse direction.

The shaped or fashioned strips of fabric produced under this old method were objectionable and unsightly in the regions thereof where the reverse bends in the elastic strands occurred, and they were costly on account of the time required in the production thereof, owing to the necessity of reversing the feeds of the elastic strands and the knitted threads enclosing them at the places where the reverse bends occurred.

The object of my present invention is to provide a novel fabric which may be shaped or fashioned to provide one or more wide portions merging into one or more narrower portions which will be free from the objectionable reverse bends in the elastic strands and which may be manufactured on a straight knitting machine at less cost than fabrics heretofore generally employed for the same purpose.

I accomplish my object by providing the same number of elastic strands in both the wide and narrow portions of the fabric by extending all the elastic strands continuously from end to end of the fabric and by knitting the knitted threads, which enclose the elastic strands, together in a novel manner to cause them to hold the elastic strands in closer relation to each other in the narrow portion or portions of the fabric than in the wide portion or portions thereof and to cause them to maintain the elastic strands in greater spaced relation in the wide portion or portions of the fabric than in the narrow portion or portions thereof.

The invention resides in the novel location and arrangement of the loops of the knitted threads in combination with the elastic strands as hereinafter described and claimed.

In the accompanying drawings illustrating my invention,

Figure 1 is a view showing the outline of a piece of fabric produced in accordance with my invention and showing diagrammatically the elastic strands extending continuously through the wide and narrow portions of the fabric from end to end thereof and showing by dot-and-dash lines the outline of a certain region in the fabric wherein the knitted threads of the fabric have characteristics different from the characteristics of the knitted threads of other regions of the fabric.

Figure 2 is an enlarged view showing one face of an elsatic fabric embodying my invention.

Figure 3 is a view showing the opposite face of the fabric shown in Fig. 2.

Figure 4 is a view showing the outline of a piece of fabric produced in accordance with my invention and fashioned into a particular shape, showing by dot-and-dash lines the outline of certain regions wherein the characteristics of the knitted threads differ from the characteristics of the knitted threads of other regions.

Figure 5 is a view similar to Fig. 4, showing a piece of fabric fashioned into a different shape.

Referring to the drawings, the fabric comprises knitted threads *a* and *b* and elastic filling strands *c*.

On the particular stitches of the form of embodiment of the invention illustrated in Figs. 2 and 3, the threads *a* and *b* are knitted into the fabric individually in alternate succession in courses which extend longitudinally of the fabric.

The elastic strands *c* extend longitudinally of the fabric from end to end thereof and they are of usual construction, well known in this art, comprising rubber cores and wrappings of fine threads.

That portion of the fabric shown in Figs. 2 and 3 which is on the right hand side of the line *x*—*x* in Fig. 2 and on the left hand side of the line in Fig. 3 is wider than that portion of the fabric which is on the left hand side of the line *x*—*x* in Fig. 2 and on the right hand side of the line in Fig. 3; that is to say, the character of the stitches of the knitted threads *a* and *b* on one side of the line *x*—*x* differs from the character of the stitches on the other side of the line, so that in the production of the fabric the knitted threads *a* and *b* may be caused to maintain the elastic strands *c* in greater spaced relation on one side of the line *x*—*x* than on the other side thereof, and hold the elastic strands *c* in closer relation to one another on one side of the line *x*—*x* than on the other side thereof.

Each knitted thread *a* passes between two adjacent elastic strands *c* to the respective faces of the fabric and has loops 1 formed therein on the face of the fabric shown in Fig. 2 and has loops 2 formed therein on the face of the fabric shown in Fig. 3.

Each knitted thread *b* passes between two adjacent elastic strands in the wide portion of the fabric to the respective faces thereof and has loops 3 formed therein on the face of the fabric shown in Fig. 2 in both the wide and narrow portions thereof and has loops 4 formed therein on the face of the fabric shown in Fig. 3 in only the wide portion of the fabric.

The loops 1 of the threads 2 embrace the loops 3 of the threads *b* and the loops 3 of the threads *b* embrace the loops 1 of the threads 2 and form chains of loops or wales which extend transversely of the elastic strands *c* on the face of the fabric shown in Fig. 3.

The loops 2 of each thread *a* embraces the loops 2 of the next succeeding thread *a* and form chains of loops or wales which extend transversely of the elastic strands *c* on the face of the fabric shown in Fig. 3.

Those portions of the threads *b* which connect each two adjacent loops 3 in the wide portion of the fabric extend between two adjacent elastic strands *c* from the face of the fabric shown in Fig. 2 to the face of the fabric shown in Fig. 3 and form the loops 4, and these loops 4 of each thread *b* embrace the loops 2 of the next succeeding thread *a* which is also embraced by the loops 3 of the last preceding thread *a* in the chains of loops or wales in the wide portion of the face of the fabric shown in Fig. 3; and those portions 5 of the threads *b* which connect each two adjacent loops 3 in the narrow portion of the fabric extend between the adjacent loops 3 without forming any loops which extend to and embrace loops in the chains or wales on the face of the fabric shown in Fig. 3.

The loops 1, 2, 3 and 4 of the threads *a* and *b* embracing one another, as above described, form enclosures through which the elastic strands *c* extend and by means of which the elastic strands are retained within the fabric, as clearly shown in Figs. 2 and 3.

By knitting the threads which confine the elastic strands so that the loops of the knitted threads which embrace other loops thereof are more numerous in the wide portion of the fabric than in the narrow portion thereof, I am enabled to produce on a straight knitting machine a strip of fabric of any desired shape having a wide portion or portions merging into a narrower portion or portions.

In Fig. 1 of the drawings I have shown diagrammatically a strip of fashioned elastic fabric produced in accordance with my invention and having wide end portions merging into the narrower central portion. In this figure I have indicated the elastic strands at *c* which extend continuously from end to end of the strip of fabric. These strands are inserted into the fabric during the production thereof and they are formed of one continuous strand which extends back and forth from end to end of the fabric, beginning at one longitudinal edge portion thereof and ending at the other, as is well known in this art.

In the production of the strip of fabric fashioned as shown in Fig. 1, the knitted threads in the central portion of the fabric surrounded or enclosed by the dot-and-dash lines shown in Fig. 1, are knitted together in the manner shown at the left hand side of the line *x*—*x* in Fig. 2 and at the right hand side of the line *x*—*x* in Fig. 3, and the knitted threads in the portion of the fabric outside of the central portion enclosed by the dot-and-dash lines are knitted together in the manner shown at the right hand side of the line *x*—*x* in Fig. 2 and at the left hand side of the line in Fig. 3.

By distributing the areas of the two forms of knitting shown on the respective sides of the line *x*—*x* in Figs. 2 and 3 over different places in producing strips of fabric in accordance with my invention variously shaped or fashioned pieces of fabric may be produced. For example, pieces of fabric fashioned as shown in Figs. 4 and 5 may be produced. The piece shown in Fig. 4 may be used as the body piece of a brassière and the piece shown in Fig. 5 may be used as the body piece of an abdominal belt or supporter.

In producing the piece of fabric shown in

Fig. 4, the knitted threads in the two areas indicated at A and B and enclosed by the dot-and-dash lines, are knitted together in the manner shown at the right hand side of the line *x*—*x* in Fig. 2 and at the left hand side of the line *x*—*x* in Fig. 3, and the knitted threads in the portions outside of the areas A and B are knitted together in the manner shown at the left hand side of the line *x*—*x* in Fig. 2 and at the right hand side of the line *x*—*x* of Fig. 3.

In producing the piece of fabric shown in Fig. 5, the knitted threads in the area indicated C and enclosed by the dot-and-dash lines, are knitted together in the manner shown at the right hand side of the line *x*—*x* in Fig. 2 and at the left hand side of the line *x*—*x* in Fig. 3, and the knitted threads in the portions outside of the area C are knitted together in the manner shown at the left hand side of the line *x*—*x* in Fig. 2 and at the right hand side of the lines *x*—*x* in Fig. 3.

I claim as my invention:

1. A fashioned elastic fabric having a wide portion merging into a narrower portion longitudinally of the fabric and comprising longitudinally extending elastic strands and knitted threads, each elastic strand extending without interruption throughout the length of the fabric, each knitted thread forming loops which embrace loops of other threads and thereby form enclosures through which the elastic strands extend, and the said loops which form the enclosures for the elastic strands in the wide portion of the fabric being more numerous than the said loops which form the enclosures for the elastic strands in the narrower portion of the fabric.

2. A fashioned elastic fabric having a wide portion merging into a narrower portion longitudinally of the fabric and comprising longitudinally extending elastic strands and knitted threads, each elastic strand extending without interruption throughout the length of the fabric, each knitted thread forming loops which embrace loops of other threads and thereby form enclosures through which the elastic strands extend, certain of said loops being embraced by two loops of two other threads at certain places in the fabric, certain of said loops being embraced by but one loop of another thread at certain other places in the fabric, and the last named places being more numerous in the said narrower portion of the fabric than in the said wide portion thereof.

3. A fashioned elastic fabric having a wide portion merging into a narrower portion longitudinally of the fabric and comprising longitudinally extending elastic strands and knitted threads enclosing the elastic strands within the fabric, each knitted thread forming loops which enclose loops of other threads, and the said loops of certain of said threads being more numerous in the wide portion of the fabric than in the narrower portion thereof and maintaining the elastic strands in greater spaced relation in the wide portion of the fabric than in the narrower portion thereof.

4. A fashioned elastic fabric having a wide portion merging into a narrower portion longitudinally of the fabric and comprising longitudinally extending elastic strands and knitted threads enclosing and confining the elastic strands within the fabric, each knitted thread forming loops which enclose the loops of other threads on the respective faces of the fabric, the said loops being more numerous on one face of the narrower portion of the fabric than on the opposite face thereof, and the said loops of certain of said threads being more numerous in the wide portion of the fabric than in the narrower portion thereof and maintaining the elastic strands in greater spaced relation in the wide portion of the fabric than in the narrower portion thereof.

In testimony whereof I affix my signature.

WILLIAM J. FOX.