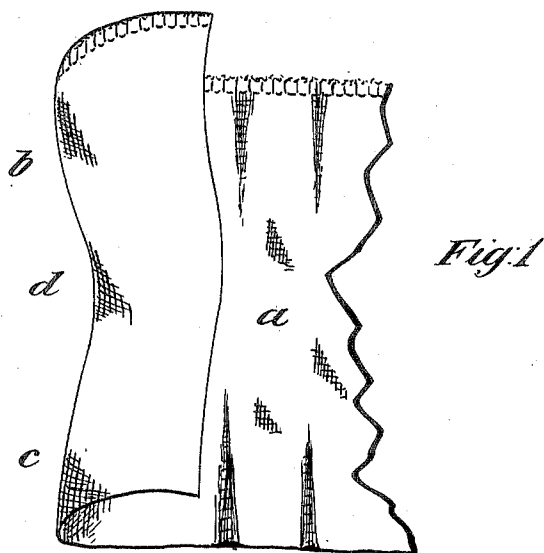
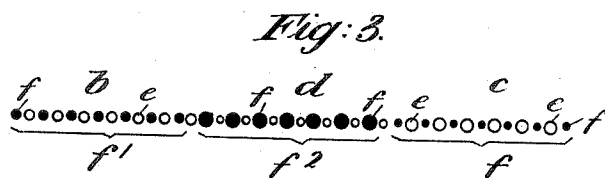


No. 817,019.

PATENTED APR. 3, 1906.

H. T. SYKES.
ELASTIC WOVEN FABRIC.
APPLICATION FILED FEB. 25, 1905.



Witnesses.

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HARRY TATTON SYKES, OF LONDON, ENGLAND.

ELASTIC WOVEN FABRIC.

No. 817,019.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed February 25, 1905. Serial No. 247,295.

To all whom it may concern:

Be it known that I, HARRY TATTON SYKES, corset manufacturer, of 280 Regent street, London, England, have invented Improvements in Elastic Woven Fabrics, of which the following is a specification.

The object of this invention is to provide a new and improved method of weaving elastic webbing and material in various shapes and with varying degrees of flatness or fullness and to adapt such materials to be used without cutting, shaping, or goring or with but little cutting, shaping, or goring for corsets or similar articles requiring to fit closely over bodies of complicated shapes.

I carry out my invention in the following manner: According to this invention the warp-threads are put into the loom in the usual way—that is to say, elastic warp-threads and inelastic warp-threads are arranged in alternation side by side. If I desire the outer edges of the elastic material to be of longer length—that is to say, to be fuller than the center, thus making a shape particularly suitable for corsets—I use for the outer edges of the material inelastic warp-threads or binders of coarser makes—cotton, silk, linen, worsted, or other threads, as the case may be—and I graduate these threads or binders toward the center, getting them finer and finer in order to obtain progressive reduction in the fullness of the material. It will of course be understood that warp-threads may for this purpose be thickened by doubling or twisting two or more single threads together, thus forming a stranded thread of increased bulk; or, as an alternative, I may get the graduated effect by using these inelastic warp-threads or binders of uniform thickness and varying the number of threads or binders put together; but this method is probably not as effective as using varying thicknesses of thread. The rubber threads may be placed in the warp in alternation with the inelastic threads just described in the ordinary manner and under the ordinary tension, or they may be disposed according to a special method of arrangement, as hereinafter described. I may also in that part of the material which it is desired to reduce the most lessen the number of inelastic warp-threads or binders used in proportion to the number of elastic warp-threads. The weft may either be all of one thickness, as in the usual manner of weaving, or I may employ threads for the weft of varying sizes, al-

ternating or graduating the threads, as required, in order to make the material when woven thicker or thinner in such proportions and at such places as may be desired. The result of using varying thicknesses of inelastic thread in the warp is that in the parts where the thicker threads are used the rubber threads are kept from shrinking together under their elasticity to so great an extent as they can where the thinner threads are used in the warp, and thus there is produced a material with curved surfaces and one which can be made to cover varying shapes as if molded by cutting on the cross and goring. In the same way the use of varying threads in the weft enables me to make any particular part or parts of the woven elastic material firmer and thicker where the thicker threads are used than where the thinner threads are used. Where the material is required to be fuller in the center than at the edges or to have any other part or parts of its breadth varying in fullness, the warp is arranged accordingly on the principle I have just explained—that is to say, along those parts on which the web is to be fuller coarser inelastic warp-threads are introduced—and to produce progressive increase of fullness a graduated series of such threads is employed, the finest of the inelastic warp-threads or binders being placed where the fabric is to be flattest and the coarsest where it is to be fullest. In addition to or as an alternative to using the inelastic warp-threads of varying degrees of thickness, as hereinbefore described, I find that a great improvement is made by using varying thicknesses of the elastic warp-threads and by putting these elastic warp-threads in the loom under varying degrees of tension, according to the bias or fullness and flatness required in the material. Thus where the material requires to be fuller I use elastic threads of fine diameter, and where the material requires to be contracted and flatter I use elastic threads of thicker diameter, and I may graduate these thicknesses as required and may instead of merely graduating the thickness of each elastic thread use two or more elastic threads in combination or stranded together, so as to form threads having very great contractive power. It is obvious that in putting these elastic warp-threads into the loom in the ordinary way necessary variations of tension will have to be used, as the thinner threads will require less tension than the thicker threads. As a further alterna-

tive I may use elastic warp-threads of uniform thickness and stretch them to varying degrees of graduated tension. The regulation of the tension may be effected in the usual way by means of weights varied according to the amount of shrinking required in the elastic warp. The more each elastic thread or series of threads is stretched in the loom the greater shrinking power it will have, and the result of using these rubber warp-threads under varying tension in conjunction with the graduated inelastic warps or with inelastic warp-threads of uniform make is to enable me to provide a material which at any required point shall have greater or less powers of resistance and elasticity. If desired, each rubber thread may be put under a specially-adjusted degree of tension; but for ordinary purposes it will be found that it will be sufficient to vary the tension in groups of warp-threads—that is to say, a specified number of threads occupying some convenient breadth of the material may be under one tension and the necessary threads for the adjoining or other breadths may be under different tensions. In any case the necessary variations of tension may be obtained by suitably varying the weighting of the rolls from which the warp-threads are paid off in the loom.

When the elastic warp-threads used according to my invention are of varying degrees of thickness, it is desirable to use a reed or slay which has graduated spaces or dents corresponding with the varying thicknesses of the warp-threads employed.

In order that the invention may be the better understood, drawings are appended illustrating a form of the invention as applied to the production of webbing suitable for corsets, and in which—

Figure 1 shows approximately the appearance of a length of webbing for the purpose specified. Figs. 2 and 3 are diagrammatic views showing two arrangements of the warp-threads whereby the desired contour may be obtained.

Referring to the drawings, *a* indicates generally the webbing, which is fuller at the parts *b* and *c* than in the center *d*. The fullness of the parts *b* and *c* is obtained in Fig. 2 by arranging the inelastic threads *e* as shown in such figure, where the said threads are alternated with threads *f* of elastic material. The

threads *e* in Fig. 2 are of varying diameters, the largest being upon the outside, the successive threads being of gradually-decreasing diameter toward the center, where a comparatively broad band of fine threads is provided. From the center outward the threads increase in diameter. By this means a webbing is produced having the sides fuller than the center.

In Fig. 3 the elastic threads *f* are of varying diameters, the finest being series *f* in the instance shown on the right-hand side, a medium size *f'* being on the left-hand side, and the largest size *f''* being in the center. By this means a webbing is produced having the sides fuller than the center and having both sides of greater strength and elasticity than the center and also having one side *b* of greater strength and elasticity than the other side *c*.

By varying the disposition of the graduated threads the fullness can be disposed at any required point of breadth of the material.

Having now particularly ascertained and described the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. An elastic fabric adapted to fit bodies of irregular shape, composed of elastic warp-threads of different strength suitably disposed in series across the breadth of the fabric, and weft-threads interwoven therewith.

2. An elastic fabric adapted to fit bodies of irregular shape, consisting of elastic warp-threads of different diameters suitably disposed in series across the breadth of the fabric, and weft-threads interwoven therewith.

3. An elastic fabric adapted to fit bodies of irregular shape, consisting of elastic warp-threads of different diameters suitably disposed across the breadth of the fabric, and weft-threads interwoven therewith.

4. An elastic fabric adapted to fit bodies of irregular shape, consisting of elastic warp-threads of different strength, the elastic warp-threads being formed by varying the number of strands of elastic threads in the elastic warp-threads and weft-threads interwoven therewith.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

HARRY TATTON SYKES.

Witnesses:

F. A. S. G. WATKIN,
FREDK. J. NAYLOR.