

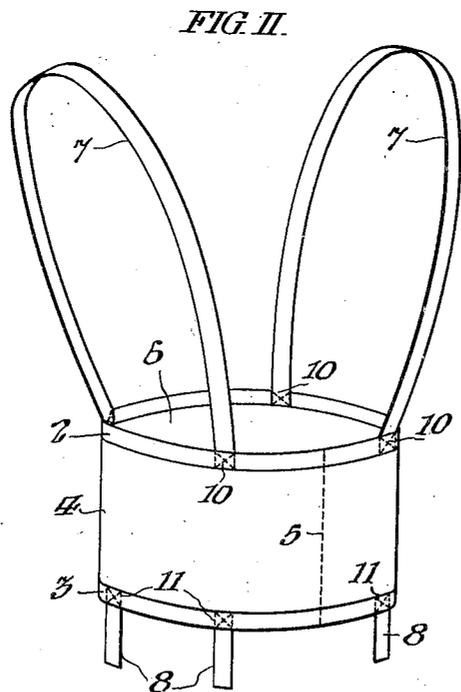
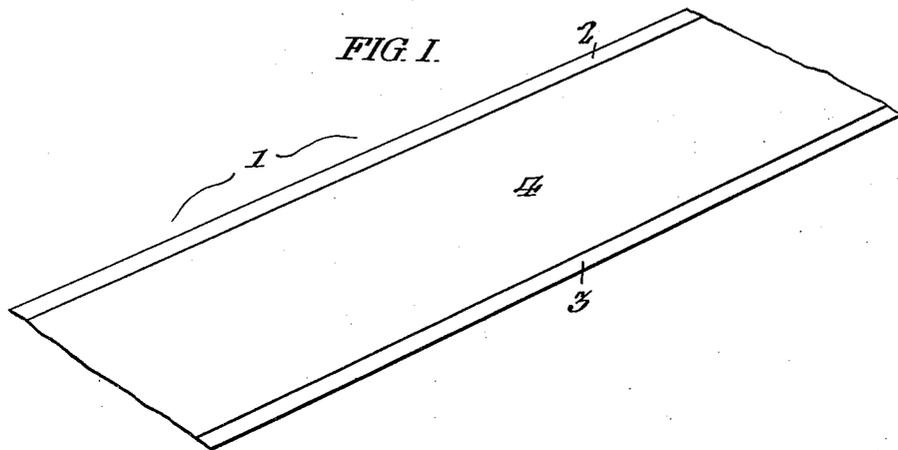
Feb. 14, 1939.

W. MENDEL ET AL
ELASTIC TEXTILE FABRIC

2,147,169

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. III.

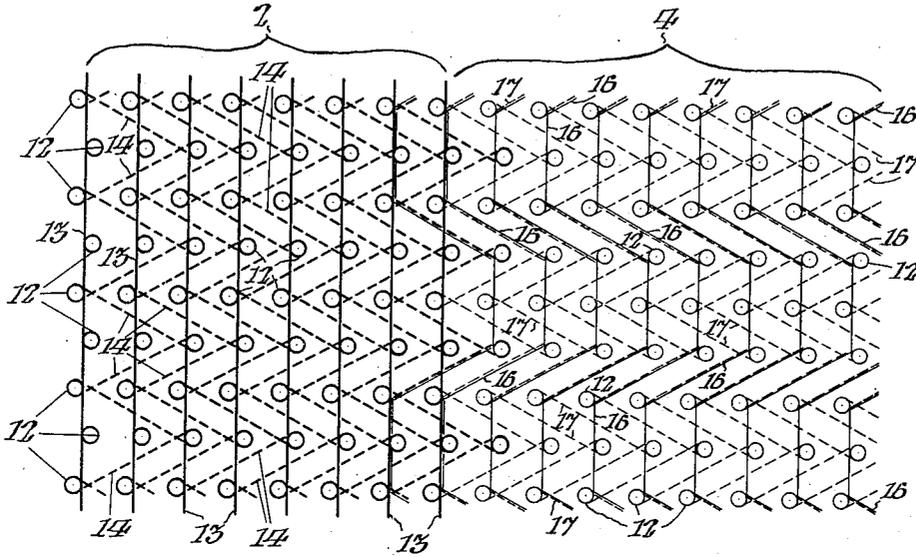
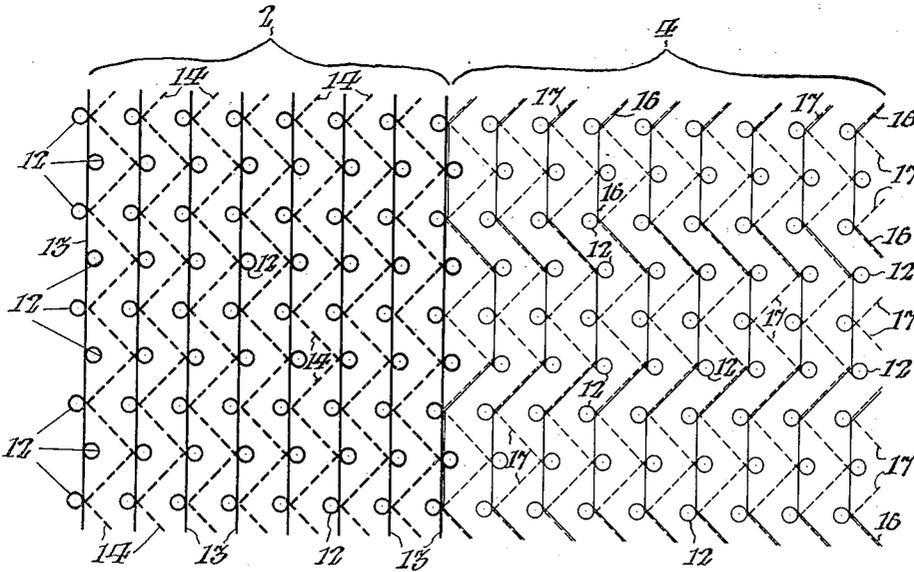


FIG. IV.



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ELASTIC TEXTILE FABRIC

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15 Claims. (Cl. 66—195)

Our improved fabric is a primarily flat web having borders at its opposite longitudinal edges in unitary relation with its body portion, and such web is for use in the manufacture of so-called foundation garments, such as corsets, girdles, etc. The essential feature thereof is that its body portion is elastic both longitudinally and transversely, whereas, said borders are elastic longitudinally but not transversely. That effect in the borders is attained by extending elastic threads longitudinally therein connected transversely by threads which are inelastic and tensed. The body portion of the web also includes elastic threads extending longitudinally and connected transversely by inelastic threads, but the elastic body threads are offset transversely, to and fro, at short intervals, so that they yield transversely. The ends of such a web may be joined to form a tubular zone to encircle the body of the wearer; which zone resiliently yields to fit the contours of the wearer's body and permits ease of movement of the latter in any direction, while the borders being inelastic transversely with respect to the fabric, to wit, vertically with respect to the body of the wearer, afford a firm foundation for the attachment of shoulder straps, garter hangers, etc.

As hereinafter described, our improved fabric is composed of threads which are elastic and inelastic per se. Such component threads may be of any kind but we prefer to use elastic threads which have a core of material which is elastic per se, spirally wrapped with inelastic thread. For instance, such cores may be strips, of rectangular cross section, cut from a sheet of vulcanized rubber or may be formed of extruded latex, vulcanized or otherwise congealed in cylindrical form.

In the two forms of our fabric hereinafter described, the elastic and the inelastic threads are in the proportion of approximately sixty per cent., of the former to forty per cent., of the latter, and those fabrics are adapted to be knit upon a flat knitting machine of ordinary construction including a single row of needles to which the threads extend through guides carried by a plurality of guide bars which are movable transversely with respect to the fabric. It is characteristic of both of those fabrics that the threads which connect the longitudinal threads transversely in the fabric extend obliquely back and forth with respect thereto, forming what may be termed "lock stitches".

Our invention includes the various novel features of construction, arrangement, and method

of operation hereinafter more definitely specified.

In said drawings, Fig. I is a perspective view of a portion of a primarily flat web embodying our invention.

Fig. II is a perspective view of a portion of such a web having its ends joined to form a tubular foundation garment.

Fig. III is a diagram showing a preferable pattern arrangement of the elastic and inelastic threads in cooperative relation in the fabric.

Fig. IV is a diagram similar to Fig. III but showing a modified pattern arrangement of the fabric threads.

Referring to Fig. I, the primarily flat web 1 has borders 2 and 3 at its opposite longitudinal edges in unitary relation with its body portion 4.

As shown in Fig. II, a portion of such a web as indicated in Fig. I has its ends joined, by any suitable suture 5, to form a tubular foundation garment 6. Although I have indicated in Fig. II a tube which is of the same diameter at each end, formed of a piece of web which has both ends cut at right angles to its longitudinal edges; of course, such a zone or girdle may be made larger at one end than the other, in accordance with the contours of the form to be fitted.

As indicated in Fig. II, such a tubular garment 6 may be provided with shoulder straps 7 and garter hangers 8; said straps 7 being firmly secured at their ends to the border 2, as indicated at 10. Similarly, the upper ends of the garter hangers 8 may be firmly secured to the border 3, as indicated at 11.

Fig. III diagrammatically indicates a typical pattern arrangement of the threads in the fabric web 1 which may be formed upon a flat knitting machine having a single row of needles extending transversely with respect to the fabric and a plurality of guide bars carrying guides for the respective threads; said bars being movable transversely with respect to the fabric. In Fig. III the circles 12 indicate loops formed by respective knitting needles in said single series. The fabric includes in the border 2 (which is similar to the border 3 not shown in Fig. III) a plurality of heavy elastic threads 13 in which are formed respective chains of loops 12 extending straight longitudinally in the fabric. Although we have indicated but eight of such heavy elastic thread chains in the border 2 shown in Fig. III, it is to be understood that any desired number may be employed in accordance with the width of the border desired. Those elastic chains 13 are of course readily distensible in the direction of their length, but they are locked in

the fabric against transverse separation by inelastic threads 14 which extend obliquely in the fabric from the first to the third needle and back again; and from the second to the fourth needle and back again; and so on throughout the width of the border. We find it convenient to form said threads 14 of two ends or filaments of mercerized cotton to afford substantial resistance to any stress upon the borders transversely with respect to the fabric.

As indicated in Fig. III, the body portion 4 of the fabric 1 between the opposite edge borders 2 and 3 is formed of lighter elastic threads 16 in which chains of loops 12 are formed in series extending straight longitudinally in the fabric for three loops. Thereupon, said light elastic threads 16 are shifted, by their guides, to the same extent as the border threads, to wit, two needle spaces, so that they extend obliquely transversely with respect to the fabric between the third and fourth courses of loops. Thereupon, said light elastic threads 16 are formed in chains of three loops 12 in succession extending straight longitudinally in the fabric and then said threads 16 are guided back to their original position so as to extend obliquely transversely in the fabric between the sixth and seventh courses of loops, and so, on throughout the knitting operation, the chains formed by the threads 16 being offset transversely first in one direction and then in the other after the formation of a succession of loops in each position.

Said light elastic threads 16 in the body 4 of the fabric 1 indicated in Fig. III are connected transversely by light inelastic threads 17 which are respectively guided from the first to the third needle and back again at each successive looping operation of the machine, so that they extend obliquely back and forth in the fabric. Both borders 2 and 3 and the body 4 are transversely connected in unitary relation in accordance with Fig. III, both by the heavy inelastic threads 14 which extend obliquely transversely in the web 1 from the borders into the body 4, and by the light elastic threads 16 and light inelastic threads 17 which extend obliquely transversely in said web body into the borders.

The arrangement above described with reference to Fig. III firmly connects the body portion 4 of the fabric 1 with the borders 2 and 3 at its opposite edges, in unitary relation, and permits said body portion to readily stretch both longitudinally and transversely and permits the borders 2 and 3 to stretch longitudinally with the body 4, or independently thereof, but prevents said borders stretching transversely with respect to the body and thus affords a firm connection for the shoulder straps 7 and the garter hangers 8 or any other desired attachments to the web 1.

Fig. IV diagrammatically indicates a modified pattern arrangement of the threads in the fabric 1 which may be formed upon a flat knitting machine of the character above described. In Fig. IV the fabric differs from that in Fig. III in that the inelastic threads 14 in the border and the inelastic threads 17 in the body extend obliquely in the fabric only to the extent of one needle space and back again instead of two needle spaces as in Fig. III.

It is characteristic of fabric of both patterns indicated in Figs. III and IV that although the body portion 4 is elastic both longitudinally and transversely, it is more elastic transversely, so that a girdle formed therefrom yields readily to

bending movements of the body. However, it may be made equally elastic both longitudinally and transversely or more elastic longitudinally than transversely, in accordance with the relative positions and tension of the threads.

Therefore, we do not desire to limit ourselves to the precise details of construction, arrangement, or method of operation herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of our invention, as defined in the appended claims.

We claim:

1. A lockstitch knit textile fabric which is a primarily flat web having borders at two of its opposite edges in unitary relation therewith; said borders being elastic longitudinally but inelastic transversely with respect to the fabric; and the body of the fabric between said borders being elastic both longitudinally and transversely, the body portion and borders being formed throughout of knitted elastic and inelastic threads, the elastic threads extending alternately longitudinally of and then obliquely transversely to other longitudinal rows in the fabric in said body portion and only longitudinally of the fabric in said borders.
2. A fabric as in claim 1, wherein the body of the fabric is more elastic transversely than longitudinally.
3. A fabric as in claim 1, composed of threads which are respectively elastic and inelastic per se.
4. A fabric as in claim 1, composed of threads which are respectively elastic and inelastic per se, the elastic threads forming more than fifty per cent., of the fabric.
5. A fabric as in claim 1, composed of threads which are respectively elastic and inelastic per se, the elastic threads forming sixty per cent., of the fabric.
6. A lockstitch knit textile fabric including a web having its ends joined to form a tube; said fabric having borders respectively at opposite ends of said tube in unitary relation with the body of fabric between said borders; the body portion of said tube being elastic both axially and circumferentially; said borders being elastic circumferentially with respect to the tube but inelastic axially with respect to the tube.
7. A fabric as in claim 6, wherein the borders and body portion are formed of loops of thread which are interknit in unitary relation.
8. A fabric as in claim 6, wherein the borders and body portion are formed of loops of respectively elastic and inelastic threads which are interknit in unitary relation.
9. A textile fabric as in claim 1, wherein the inelastic threads extend obliquely back and forth in the fabric and connect the longitudinal threads.
10. A textile fabric as in claim 1, wherein the inelastic threads extend obliquely back and forth in the fabric to connect the longitudinal threads and are respectively local to small groups of the longitudinal threads.
11. A textile fabric as in claim 1, wherein the elastic threads in the borders are heavier than the elastic threads in the body.
12. A knitted textile fabric formed throughout of elastic and inelastic thread and in which all of the threads extending longitudinally in the fabric and the adjoining threads extending therebetween are interknit, interlooped, and lockstitched transversely with respect to the length of the fabric and form a primarily flat web having

borders at two of its opposite edges in unitary relation therewith; said borders being elastic longitudinally but inelastic transversely with respect to the fabric; and the body of the fabric between
5 said borders being elastic both longitudinally and transversely, the elastic threads being arranged to extend alternately longitudinally of and then obliquely transversely to other longitudinal rows
10 in the fabric in said body portion and only longitudinally of the fabric in said borders.

13. A knitted textile fabric formed throughout of elastic and inelastic thread and in which all of the threads extending longitudinally in the fabric and the adjoining threads extending there-
15 between are interknit, interlooped, and lock-stitched transversely with respect to the length of the fabric and form a primarily flat web having borders at two of its opposite edges in unitary
20 relation therewith; said borders being elastic longitudinally but inelastic transversely with respect to the fabric; and the body of the fabric between said borders being elastic both longitudinally and transversely, but more elastic transversely than
25 longitudinally, the elastic threads being arranged to extend alternately longitudinally of and then obliquely transversely to other longitudinal rows in the fabric in said body portion and only longitudinally of the fabric in said borders.

14. A knitted textile fabric comprising a primarily flat body portion that is elastic both longitudinally and transversely and a border in unitary relation therewith which is elastic longitudinally but inelastic transversely; said body portion
5 and border being formed throughout of knitted elastic and inelastic threads, the elastic threads extending only longitudinally of the fabric in the border and arranged in the body to extend longitudinally of the fabric in adjacent rows for a
10 plurality of loops and then shift to extend longitudinally of the fabric in other rows.

15. A knitted textile fabric comprising a body portion that is elastic both longitudinally and transversely and a border in unitary relation
15 therewith which is elastic longitudinally but inelastic transversely; said body portion and border being formed throughout of knitted elastic and inelastic threads, the elastic threads extending
20 alternately longitudinally of and then obliquely transversely to other longitudinal rows in the fabric in said body portion and only longitudinally of the fabric in said border.

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