

Nov. 15, 1932.

O. E. HUBER

1,887,643

LACE BRAID AND METHOD OF MANUFACTURING SAME

Filed April 2, 1932

2 Sheets-Sheet 1

FIG. 1.

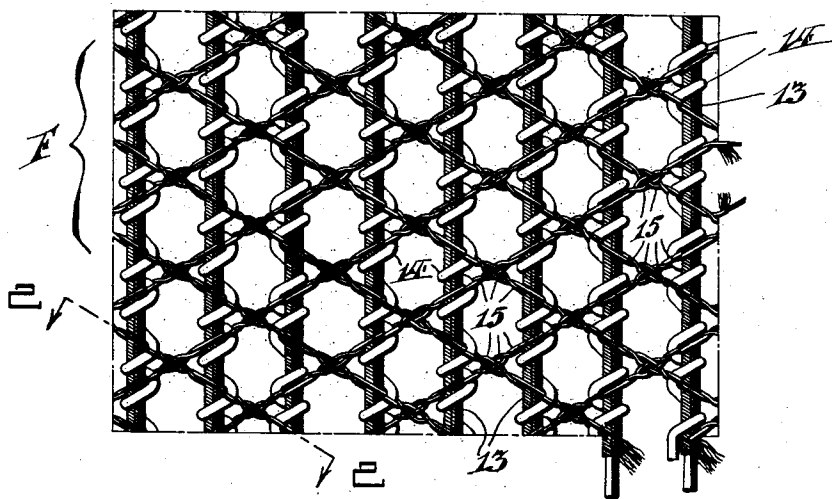


FIG. 2.



FIG. 3.

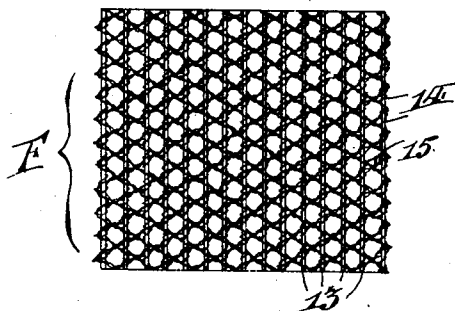


FIG. 4.

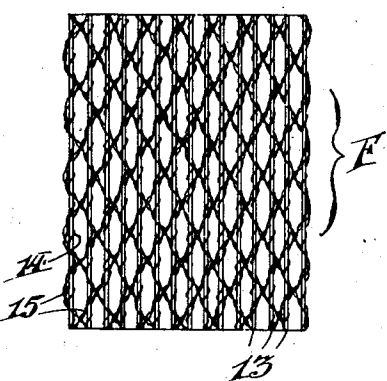
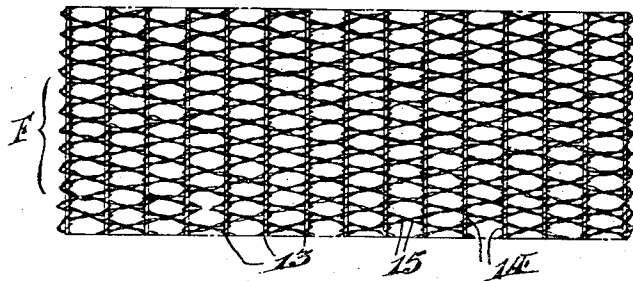


FIG. 5.



INVENTOR:
Otto Eugene Huber,
BY *Alfred E. Lockinger,*
ATTORNEY.

Nov. 15, 1932.

O. E. HUBER

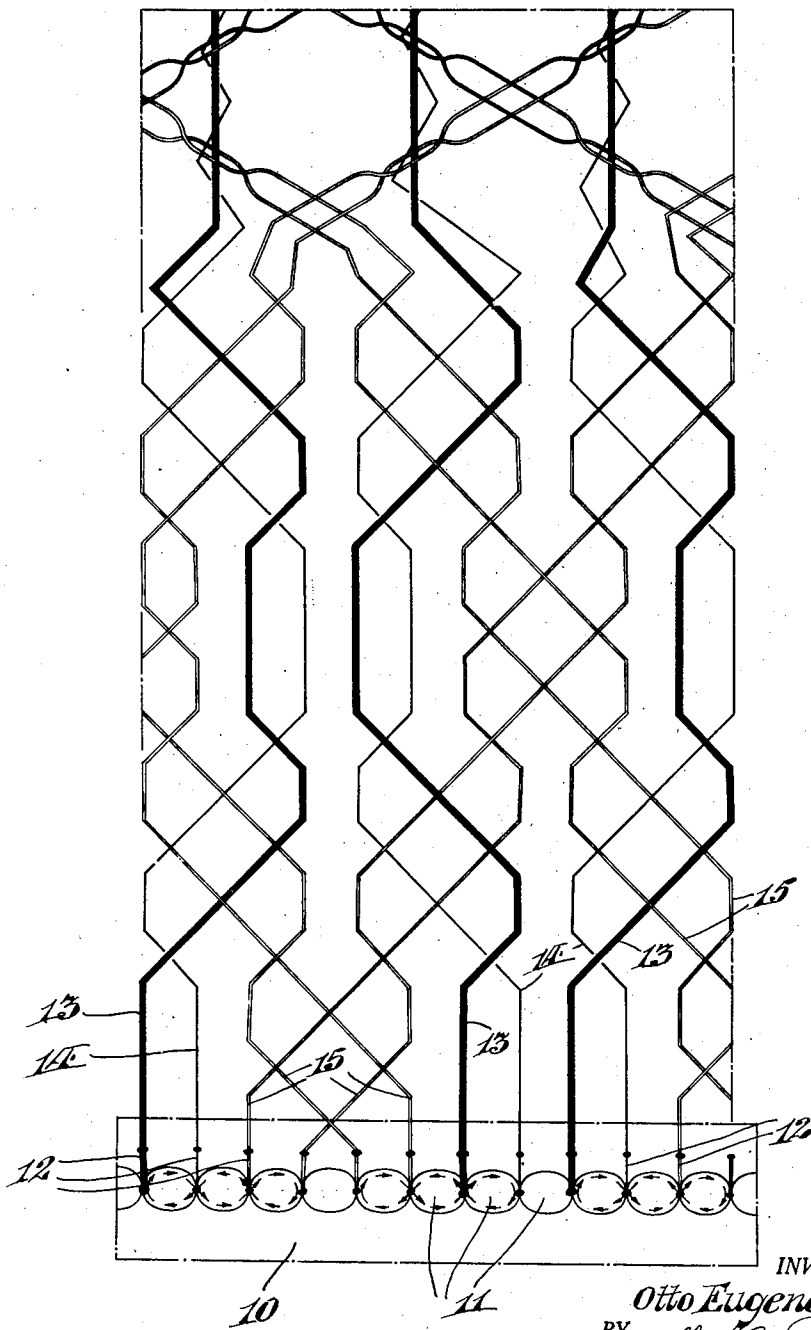
1,887,643

LACE BRAID AND METHOD OF MANUFACTURING SAME

Filed April 2, 1932.

2 Sheets-Sheet 2

Fig. 5.



INVENTOR:
Otto Eugene Huber,
BY *Alfred E. Schinger,*
ATTORNEY

UNITED STATES PATENT OFFICE

OTTO EUGENE HUBER, OF READING, PENNSYLVANIA, ASSIGNOR TO NARROW FABRIC COMPANY, OF WEST READING, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

LACE BRAID AND METHOD OF MANUFACTURING SAME

Application filed April 2, 1932. Serial No. 602,696.

This invention relates to elastic lace-braid fabrics, and more particularly to the type disclosed in my Patent No. 1,717,215 issued June 11, 1929; the present invention being an improvement on the subject matter covered by said patent and therefore more or less coextensive therewith.

Elastic lace-braid, or so called pore-elastic braided fabrics, as heretofore produced, are expansible lengthwise only; such fabrics generally comprising inter-lace-braided longitudinally extending elastic and transversely extending inelastic strands. Lace-braid of this type is not only useful as garter and belt-elastic, but is particularly adapted for embodiment in ladies' undergarments in the form of ornamental expansibility-imparting inserts. Obviously, where such inserts of greater length than the necessarily limited width of this elastic lace-braid were heretofore required these had to be made up by edgewise joining of two or more pieces.

One object of my invention is to provide a novel elastic lace-braid fabric which is laterally as well as longitudinally expansible, thereby making it possible to produce therefrom single-piece universally expansible inserts of any desired length.

Another object is the provision of such an elastic lace-braid by an improved method and to embody in the braid, binder strands adapted to fixedly join certain longitudinally and transversely extending elastic strands against movement or creeping relative to each other without affecting the universal expansibility of the fabric; said binder strands also giving the fabric the desired amount of "body", as well as enhancing its appearance.

Other objects and attendant advantages will become more readily apparent from the following detailed description of one illustrative embodiment of my invention, reference being had to the accompanying drawings in which:

Fig. 1 is a greatly enlarged face view of my novel elastic lace-braid fabric, more or less diagrammatically represented, and particularly shows the arrangement of the various strands comprising the same.

Fig. 2 is a sectional view through the fabric shown in Fig. 1; taken substantially as indicated by the arrows 2-2 on said figure.

Fig. 3 is a face view of the fabric similar to Fig. 1, but approximately to normal scale.

Figs. 4 and 5 are similar diagrammatic face views of the fabric and respectively illustrate the same expanded longitudinally and transversely.

Fig. 6 is a diagrammatic composite view, illustrating, at the top, the manner in which the various strands are inter-lace-braided; in the center, the course of the bobbins which carry the various strands of which the fabric is formed; and at the bottom a portion of the raceway circle course in which the bobbins travel.

My improved method of producing the novel elastic lace-braid is carried out with the aid of a well known jacquard controlled single thread lace braiding machine of the type referred to in my above mentioned patent and in which the different bobbins or yarn carriers travel about one or more tellers or quoits, to form a finished fabric of closed or open lace-like mesh as determined by pattern directed jacquard mechanism. While such a machine is perhaps best suited for this purpose, it will be understood that other lace machines, well known, may be utilized for this purpose. For example the "two thread", "three thread" and like machines, are also suitable.

Referring to the schematic illustration of Fig. 6, 10 represents the top plate of such a known lace braiding machine, 11 the tellers or quoits which are intermittently rotated under the control of the usual jacquard mechanism, (not shown) to traverse the bobbins or yarn carriers, diagrammatically indicated at 12, some of which are adapted to remain, at times, on one teller and merely rotate therewith, while others pass to adjacent tellers and back again, and still others traverse the whole series of tellers, all in well known manner and in accordance with the selected pattern directing the jacquard mechanism.

In carrying out the production of the present illustrative lace-braid fabric F of my invention, three different kinds of strands in-

dedicated at 13, 14, 15, are employed and these are carried by the various bobbins 12. Strands 13 are elastic and especially tensioned so as to increase their length during the braiding operation in order to maintain them in a straight taut line from the carriers to the braiding point.

Strands 14 are inelastic and preferably, but not necessarily, glossy. They may be of any desired material as linen, silk, cotton, or the like and in the present instance function as binder strands. When these are united with the others, as hereinafter explained, they impart to the fabric the desired amount of body and generally enhance its appearance. Of course, the strands 14 can also be elastic if desired.

Strands 15 are also elastic but of a comparatively finer gauge than elastic strands 13.

The strands 13, 14 and 15 may be of any desired color or combination of colors, and are traversed, as heretofore, to form the braid pattern illustrated. In producing this pattern, the bobbins 12 carrying the comparatively fine elastic strands 15, interbraid their strands with the coarser elastic strands 13, as clearly shown in Fig. 6. During this procedure strands 13 and 14 are unitedly traversed, in groups, in the limited portion of the race circle course; their path of travel being indicated by the arrows or quoits 11 in said figure.

This united movement of strands 13 and 14 causes the latter to be wound around the former throughout their entire length, as clearly shown, to thereby lock or fixedly join the elastic strands 13 and 15 against movement or creeping relatively to each other without affecting the elasticity of the finished fabric. To insure the maximum longitudinal as well as lateral elasticity in the fabric thus produced, the elastic strands 13 are especially tensioned so as to increase their length during the braiding operation and thereby maintain them in a substantially straight line from the carriers to the braiding point; the elastic strands 15 and inelastic strands 14 being under slight or normal braiding tension during the inter-braiding action.

It will be noted that, depending on the gauge of the inelastic strands 14, more or less body will be imparted to the fabric and that these strands are present in the fabric in substantial quantity so that they also materially affect the appearance or surface effect of the latter.

As in the case of my above mentioned patented lace braid, when the braided fabric is removed from the machine the elastic strands 13 at once retract to their normal unstretched length, reducing the length of the finished fabric and causing the strands 14 and 15 to assume relaxed positions between or about the strands 13, which latter maintain their longitudinal positions as there is no distort-

ing strain thereon. This is clearly illustrated in Figs. 1 and 3.

Due to the presence of elastic strands 15, the fabric thus produced is not only expandible in a longitudinal direction as shown in Fig. 4, but is also expandible laterally as shown in Fig. 5; the inelastic strands 14 permitting stretching in either direction without distortion of the lay of the braided strands and maintaining a firm union at all points between the strands 13 and 15. Of course, the design shown, or other designs, may be so arranged that while distorted in the braiding, they will assume the desired pleasing configuration and arrangement in the unstretched finished fabric.

While I have indicated a preferred lace-like open mesh fabric, it will be apparent that the jacquard mechanism referred to may be operated so that other pleasing pattern designs can be obtained, and that a closed mesh solid fabric, or a combination open and closed fabric can be produced in similar manner.

I claim:

1. An elastic lace-braid fabric comprising in combination, longitudinally extending elastic strands, transversely extending elastic strands inter-lace-braided therewith, and one or more binder yarns on said longitudinally extending elastic strands adapted to join certain of said inter-lace-braided longitudinally and transversely extending elastic strands against movement relative to each other.

2. An elastic lace-braid fabric comprising in combination, longitudinally extending elastic strands, transversely extending elastic strands inter-lace-braided therewith, and one or more glossy binder yarns on said longitudinally extending elastic strands adapted to join certain of said inter-lace-braided longitudinally and transversely extending elastic strands against movement relative to each other.

3. An elastic lace-braid fabric comprising in combination, longitudinally extending elastic strands, transversely extending elastic strands inter-lace-braided therewith, and one or more inelastic binder yarns on said longitudinally extending strands adapted to join certain of said inter-lace-braided longitudinally and transversely extending elastic strands against movement relative to each other.

4. An elastic lace-braid fabric comprising in combination, longitudinally extending elastic strands, relatively thinner transversely extending elastic strands inter-lace-braided therewith, and an inelastic binder yarn on each of said longitudinally extending elastic strands adapted to join said inter-lace-braided longitudinally and transversely extending elastic strands against movement relative to each other.

5. The method of making an elastic lace

braid fabric which comprises feeding to a braiding point longitudinally extending elastic strands in predetermined spaced relation with respect to each other, maintaining tension on said strands to elongate the same, at said braiding point interbraiding elastic strands with said longitudinally extending strands in a transverse direction relative thereto to produce a lace-like fabric, and simultaneously applying at said braiding point a binder strand to one or more of said longitudinally extending strands in such manner as to maintain the interbraided strands in predetermined position relative to said longitudinally extending strands.

6. The method of making an elastic lace braid fabric which comprises feeding to a braiding point longitudinally extending elastic strands in predetermined spaced relation with respect to each other, maintaining tension on said strands, to elongate the same, at said braiding point interbraiding elastic strands with said longitudinally extending strands in a transverse direction relative thereto to produce a lace-like fabric, and simultaneously applying at said braiding point a binder strand to one or more of said longitudinally extending strands in such manner as to engage said strand or strands between adjacent interbraided strands to maintain the same in predetermined position relative to the longitudinally extending strands.

7. The improved method of manufacturing elastic lace-braid fabric which consists in unitedly traversing a series of bobbins in groups of two in limited portions of a race-circle course, one bobbin from each group carrying an elastic yarn to form a straight lengthwise strand and the other carrying a binder strand which is wound around said elastic yarn during traverse of said bobbins, maintaining tension on said lengthwise strand to elongate the same and hold it taut, and feeding limitedly tensioned elastic strands from other bobbins freely traversed in the course so as to lace-braid their strands transversely with the taut longitudinal strands in such manner as to be fixedly joined therewith by the binder strands; whereby during formation a stretched elastic fabric is produced adapted when released to relax to substantially the original length of the longitudinally extending elastic strands to form a finished elastic lace-braid fabric whose longitudinal and transversely extending elastic strands are fixed against movement relative to each other.

8. The improved method of manufacturing elastic lace-braid fabric which consists in unitedly traversing a series of bobbins in groups of two in limited portions of a race-circle, one bobbin from each group carrying an elastic yarn to form a straight lengthwise strand and the other carrying an

inelastic binder strand which is wound around said elastic yarn during traverse of said bobbins, maintaining tension on said lengthwise strand to elongate the same and hold it taut, and feeding limitedly tensioned elastic strands from other bobbins freely traversed in the course so as to lace-braid their strands transversely with the taut longitudinal strands in such manner as to be fixedly joined therewith by the inelastic binder strands; whereby during formation a stretched elastic fabric is produced adapted when released to relax to substantially the original length of the longitudinally extending elastic strands to form a finished elastic lace-braid fabric whose longitudinal and transversely extending elastic strands are fixed against movement relative to each other by said inelastic strands.

In testimony whereof I affix my signature.

OTTO EUGENE HUBER.

90

95

100

105

110

115

120

125

130