March 30, 1926. 1,578,643

G. E. CLAUSS

ELASTIC WEBBING

Filed July 22, 1925 2 Sheets-Sheet 1

Fig. 1.

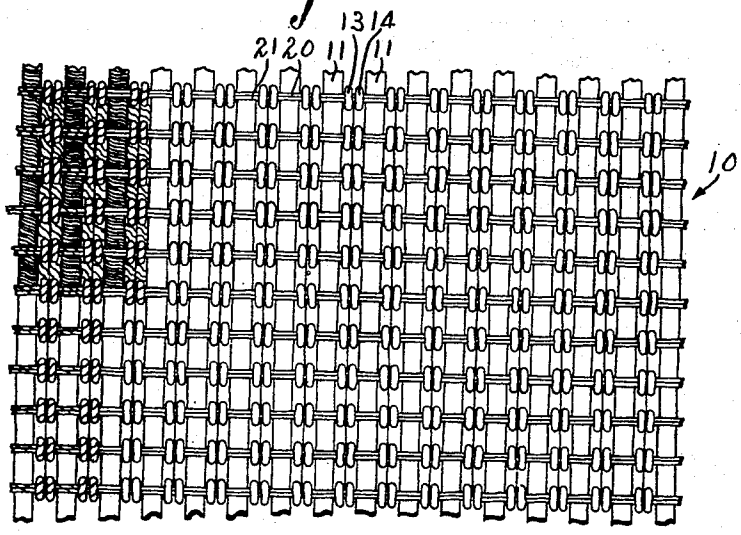
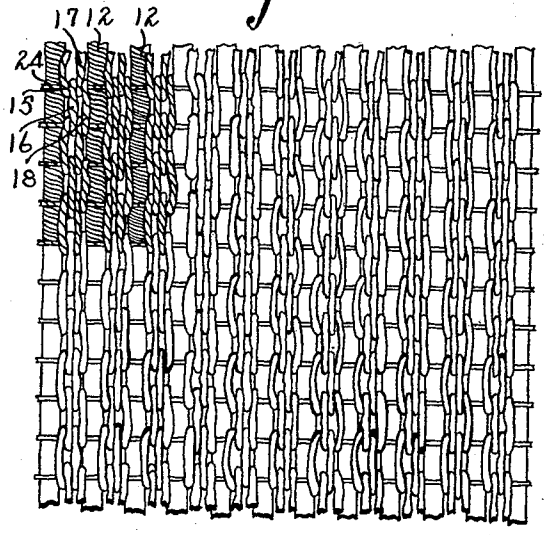


Fig. 2.



Inventor

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Fig. 3.



Fig. 4.

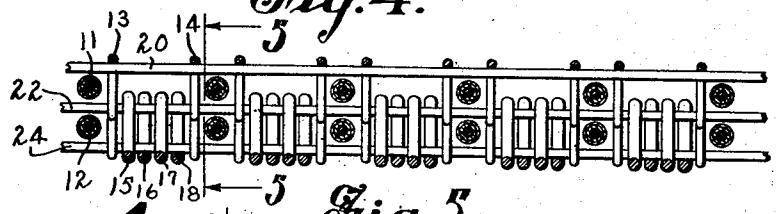


Fig. 5.

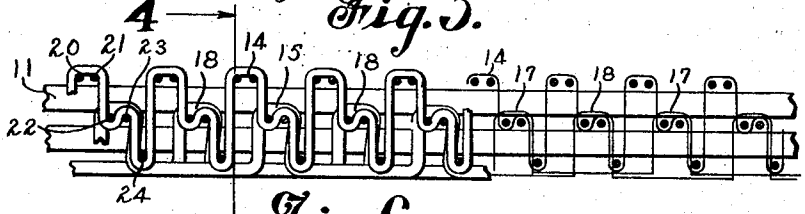
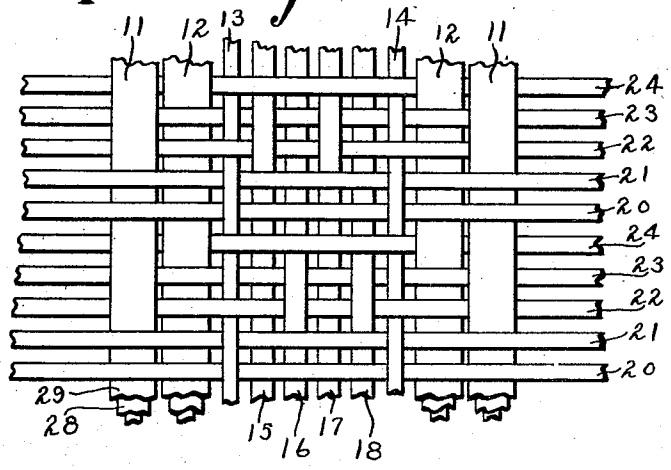


Fig. 6.



Inventor

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Patented Mar. 30, 1926. 1,578,643

UNITED STATES PATENT OFFICE.

GEORGE E. CLAUSS, OF ANSONIA, CONNECTICUT, ASSIGNOR TO THE ANSONIA O & C COMPANY, OF ANSONIA, CONNECTICUT.

ELASTIC WEBBING.

Application filed July 22, 1925. Serial No. 45,391.

To all whom it may concern:

Be it known that I, GEORGE E. CLAUSS, a citizen of the United States, residing in Ansonia, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Elastic Webbing, of which the following is a full, clear, and exact description.

This invention relates to woven fabric material, and more particularly to a woven elastic fabric or elastic webbing, so termed because of the fact that it may be stretched to a considerable extent when under tension, and resume its natural form when the tension is released. This quality arises from the fact that the fabric contains elastic or rubber thread, and in practice this rubber thread is usually covered with one or more layers of textile yarn to provide what is commonly called covered rubber. In the preferred construction of the webbing which is shown in the accompanying drawings, two such layers of cotton thread are used and the resulting warp cord, together with textile warp and textile filling thread, constitute the fabric, the textile material referred to usually being cotton thread, although other material may be used if desired.

My improved webbing is provided with a relatively hard face surface of attractive and pleasing appearance, and a back surface extremely soft in texture so that the fabric is especially desirable for use in connection with the manufacture of corsets or the like, where the back surface of the material is designed to rest against the body, and the front or outer surface is preferably ornamental in appearance. Moreover, the webbing as constituted is particularly strong and durable, and while it may be advantageously used in corset manufacture as stated, it will of course also be suitable for use in other relations wherein an elastic webbing is desired.

The front surface of the webbing is reticulated or composed of a number of reticules which in the form shown are substantially square, or at least rectangular in shape, and are arranged in orderly rows and columns across the fabric. Certain changes in this respect may be made however, without departing from the spirit of the invention for, as is well known to those skilled in the art, the shape and appearance of these reticules may be changed without departing from the novel principles employed in the construction of the fabric.

One object of my invention is to provide an elastic webbing suitable for use in corsets, such that the web may form the entire body of the corset or may be used merely as a section or gore between inelastic portions of the garment.

Another object of my invention is to provide an elastic webbing having a front surface of attractive and ornamental appearance, and a back surface of a relatively soft and yielding nature.

A still further object of my invention is to provide an elastic webbing of strong and durable character, the front surface of which shall be hard and firm and of a reticulated appearance, such as will be regarded as attractive, and a back surface of a soft and yielding nature which can be worn with comfort against the body.

A still further object of my invention is the provision of an elastic webbing of strong and durable character and provided with at least one surface which shall be relatively soft and yielding.

A still further object of the invention is the provision of a thick, strong and heavy woven elastic fabric which is at the same time pliable and flexible, and which may be folded or crumpled readily but which will not be easily creased, these properties being similar to those of a knitted fabric.

To these and other ends the invention consists in the novel features and combination of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is an enlarged plan view of the front face of the web;

Fig. 2 is an enlarged plan view of the back of the web;

Fig. 3 is a diagrammatic sectional view through the warp threads, showing the selvage edge;

Fig. 4 is a cross-sectional view through the warp threads showing the texture of the web between the selvage edges, taken on line 4—4 of Fig. 5;

Fig. 5 is a longitudinal sectional view taken on line 5—5 of Fig. 4;

Fig. 6 is an enlarged diagrammatic view of the face of the web.

The preferred embodiment of my inven-

tion which I have selected to illustrate and describe, consists of a web designated generally by the numeral 10, the face of which as shown in Fig. 1, is of a reticulated appearance, the reticules being substantially rectangular in shape, and formed by the crossing of the textile filler picks and the elastic warp cords, as will be described more particularly hereinafter. It will be understood that the precise steps described in the weaving of the material may be varied to a considerable extent without changing, except in the matter of degree, the character of the resulting fabric, and without departing from the basic principle employed in its construction.

The web may be regarded as made up of certain units, the warp threads of which as shown in Fig. 3, consist of two covered rubber warp cords, 11 and 12, two fine warp or binder threads, 13 and 14, and four large warp threads, 15, 16, 17, and 18, the unit repeating itself many times across the garment. These warp threads are crossed by ten filling picks within the unit referred to, these filling picks crossing the warp threads in a certain manner which will be more particularly described later, ten of these crossings forming a cycle which is thereafter repeated throughout the length of the fabric.

As shown in Fig. 3, the rubber warp cords, 11 and 12, are placed one above the other. On each side of such a pair of cords is placed one of the fine binder threads, 13 or 14, the coarser warp threads, 15, 16, 17, and 18, lying between the fine or binder threads. A pair of filling picks, 20 and 21, are arranged across the top of the upper rubber cords, 11, another pair, 22 and 23, being arranged between the upper and lower cords, and a single filler thread, 24, is arranged below the lower rubber cords. That is, the fabric may be considered as constituted in part by two layers or tiers of elastic warp cords crossed by a top layer of filler threads arranged in pairs, an intermediate layer of filler threads similarly arranged in pairs and staggered with relation to the filling threads of the top layer, and a bottom layer of filling threads arranged singly and staggered with relation to the threads of the two upper layers. In such a series, there are five crossings of filler threads and it may be observed that in one of the units referred to, there are two such series, making ten such threads in all within the unit.

The rubber warp cords and the filling threads are bound together by the binder warp threads, 13 and 14, arranged as shown in Figs. 3 and 4, adjacent the rubber cords. These binder threads, as will be obvious from reference to Fig. 5, pass over the two upper filling picks, 20 and 21, below one of the intermediate filling picks, 22, and over the other, 23, and then pass below the lower filling pick, 24, the two binder threads being similarly arranged. These binder threads serve to bind together the rubber cords and the filling threads to make a firm and durable fabric.

The coarser warp threads 15, 16, 17 and 18 serve as a stuffing for the fabric and are so crossed by the filling threads 20, 21, 22, 23, and 24, that the greater part of the length of these warp threads is exposed at the back of the web, these threads being loosely woven so that the back of the garment will be relatively soft and yielding. The weave is perhaps best shown by Fig. 6, which is distorted, however, so that the lower rubber cord 12 lies to one side of instead of directly below the upper cord 11. As shown in this figure, the alternate warp threads 15 and 17, and 16 and 18, are arranged in pairs, the threads 15 and 17 being crossed by the filling threads in a similar manner, which is also true of the threads 16 and 18. The two upper filling threads 20 and 21, while as previously explained, pass below the two binder threads 13 and 14, pass above all of the coarser warp threads 15, 16, 17 and 18. The two intermediate filling picks 22 and 23 pass below one pair of warp threads 16 and 18, and above the other pair 15 and 17, thus alternately passing above and below alternate warp threads of the group, and the filler thread 24 passes above all of the back warp threads, and above the binder warp threads.

Or, expressing this in another way, the pair of warp threads 15 and 17 pass above one pair of filling threads 22 and 23, then turn downwardly to pass below the next adjacent intermediate pair of filling threads, then upwardly to pass above the next pair of intermediate filling threads, and so on. The warp threads 16 and 18 are woven in like manner to pass above and below alternate pairs of intermediate filling threads, except that they are staggered with relation to the other pair 15 and 17, so that they pass over the filling threads which are passed beneath by the other pair. Referring to Fig. 5, it will be observed that when one of these coarser warp threads, 15 for example, passes over a pair of intermediate filling threads 22 and 23, and then passes downwardly to go below the next pair, it likewise passes below all of the top and bottom filling threads 20, 21 and 24, and likewise below the next pair of intermediate filling threads so that while each of these warp threads passes above two of the filling threads, it passes below eight such threads within the unit.

These four warp threads 15 to 18 constitute the back of the fabric, for, as will be observed, they are not exposed on the face thereof but merely extend upwardly to a sufficient extent to pass around the interme-

diate filler threads and then again downwardly where they are exposed at the back of the web for the greater portion of their length passing below two of the lower filler threads 24, before they are again directed upwardly. These threads are relatively large and numerous and preferably of soft texture and act as soft stuffing for the body of the web constituted by the warp cords the filling picks and binders, so that a thick and strong fabric is produced which is at the same time soft and flexible.

It has previously been stated that each weaving cycle consists of ten crossings of filling picks, and it will now be observed that each of the warp threads 15 to 18 crosses above two of such filling picks and below eight thereof, adjacent threads passing above alternate pairs of the intermediate filling picks so that within a unit each pair of such picks is crossed by one pair of the warp threads. The reticules upon the front surface of the fabric are bounded by the elastic cords 11 on two sides, and adjacent pairs of the upper filling picks 20 and 21 upon the other two sides. As there are two pairs of such filling picks to each cycle, it will be seen that there are twice as many reticules as units in the fabric.

The selvage edge of my improved fabric may be made in the usual or any preferred manner. As shown in the drawings, it consists of a single outer rubber warp cord 26, between which and the body of the fabric are placed a number of warp threads. These warp threads are traversed by the filling threads in the ordinary way, the latter passing around the cord 26.

Disregarding for a moment the selvage edges, the web may be said to consist of three layers: the face layer consisting essentially of the upper rubber cords 11 with the face turns of filling 20 and 21; the middle layer consisting of the lower rubber cords 12, and the middle turns of filling 22 and 23; and the back layer comprising the back warp threads 15, 16, 17 and 18 and the back turns of filling 24. A piece of such fabric 14″ wide and 1 yard in length, for example, will be made up of a large number of the units previously referred to, all essentially alike subject to certain exceptional details which will be shortly noted. In such a piece of web there will be when made according to a very desirable design, 304 covered warp cords in the body of the web, 302 binder warp threads 13 and 14, and 604 back warp threads 15, 16, 17 and 18. In addition, there will be in each selvage edge one covered warp cord 26 and a number of edge warp threads 27, six of which are shown in the accompanying drawings. It will be noted that while in each unit there are two rubber cords and two binder warp threads 13 and 14, there will be in a piece of fabric of given width, two more rubber cords than binder threads, the additional two forming the sides of the last row of units. In addition to the rubber cords, the binder, and back warp threads, there will be a length of filling in one piece passing from edge to edge of the web ten times in each unit and constituting the face filling turns 20 and 21, the intermediate turns 22 and 23 and the back filling turns 24. Each unit of such a piece comprises two covered rubber cords, two binder warp threads, four back warp threads, and ten picks or turns of filling, four of which are above, four between, and two below the rubber cords.

The covered rubber cords 11 and 12 may preferably consist of a thread of #36 rubber, covered with two layers 28 and 29 of cotton yarn. For the binder warp threads 13 and 14 cotton yarn of size 40/2 has been found desirable, and likewise I prefer to use 19/2 cotton yarn for the back warp threads 15 to 18, and 19/2 cotton yarn for the filling. It will be understood that without departing from the spirit of the invention, the construction of the web may be materially varied. For instance, the face reticules may be made larger or smaller, may be perfectly square or decidedly rectangular or oblong, the size and number of the threads used may be varied, and lastly, to some extent, the character of the weave may be changed. For instance, it will be observed that the back warp threads pass under or back of two adjacent back filling picks 24, in one step. In some instances, it may be desirable to arrange these threads so that they cross over three such picks in one step before turning upwardly to pass over the intermediate picks. Such an arrangement would result in making the web looser and perhaps even softer. If these threads cross only one of the back filling picks in a step, it would result in a hard short turn of the warp therads, and would sacrifice to some extent, the softness of the back of the web.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all the details shown but is capable of modification and variation within the spirit of the invention and the scope of the appended claims.

What I claim is:

1. A web containing two layers of elastic warp cords, filling picks crossing above said cords and constituting face picks, middle filling picks between the two layers of cords, additional filling picks below the cords constituting back filling picks, warp threads binding all the aforesaid cords and filling picks together, and other warp threads held by certain of the middle filling picks and passing outside and across certain of the

back filling picks in steps, each step comprising a plurality of back filling picks.

2. Elastic webbing having two layers of elastic warp cords, upper filling picks crossing above said cords and forming therewith a hard reticulated face for the web, middle filling picks between said layers of warp cords, lower filling picks below said cords, means for binding the aforesaid elements together and stuffing warp threads exposed for the greater portion of their lengths on the back of the web to form a soft back surface therefor.

3. An elastic web comprising a plurality of elastic cords, picks of filling on one side of all of said cords, picks of filling on the other side of said cords, and middle picks of filling separating said cords into different groups, binder warp threads for binding the foregoing elements together and other warp threads exposed on one side of the web for the greater part of their lengths and held in the web by certain of the middle filling picks and crossing all the back picks.

4. A web containing two layers of elastic warp cords, filling picks crossing above said cords and constituting face picks, middle filling picks between the two layers of cords, and additional filling picks below the cords constituting back filling picks, warp threads binding all the aforesaid cords and filling picks together, and other warp threads held at regular intervals by the middle filling picks between the two layers of cords and passing outside and across all the back filling picks.

5. A web containing two layers of elastic warp cords, filling picks crossing above said cords and constituting face picks, middle filling picks between the two layers of cords, and additional filling picks below the cords constituting back filling picks, warp threads binding all the aforesaid cords and filling picks together, and other warp threads held at regular intervals by the middle filling picks between the two layers of cords and passing outside and across certain of the back filling picks in steps, each step comprising a plurality of back filling picks.

6. Elastic web, containing two layers of elastic warp cords, upper filling picks above said cords, middle filling picks between the two layers of cords, and back filling picks below said cords, warp threads for binding the aforesaid cords and picks together, and other warp threads forming the back surface of the web and exposed thereon for the major portion of their lengths.

7. An elastic web comprising two layers of elastic warp cords, face, middle and back filling picks crossing said cords, binder warp threads to bind the foregoing elements together and back warp threads held by the middle filling picks and crossing all the back picks on the outside thereof.

8. An elastic web containing a plurality of elastic warp cords arranged in groups, picks of filling on one side of the web, picks of filling on the other side of the web, middle picks of filling separating one group of warp cords from the other, and binder warp threads for binding the foregoing elements together, said binder warp threads engaging certain of the middle filling picks.

9. An elastic web having a plurality of elastic warp cords arranged in groups, picks of filling on one side of the web, picks of filling on the other side of the web, middle picks of filling separating one group of said elastic warp cords from the other, binder warp threads engaging face picks, middle picks and back picks of filling to bind them to the elastic cords, and other warp threads each engaging fewer filling threads than each binder warp thread.

10. A web having elastic warp cords and face and back filling picks crossing said cords, binder warp threads of relatively fine yarn on each side of, and closely adjacent to, the elastic cords to bind them to the filling picks, and back warp threads arranged between said binder threads, said back warp threads being exposed on the back of the web to form the extreme back surface thereof and passing all of the back filling picks on the outside thereof.

11. A web having elastic warp cords and face and back filling picks crossing said cords, binder warp threads of relatively fine yarn on each side of, and closely adjacent to, the elastic cords to bind them to the filling picks, and back warp threads arranged between said binder threads, said back warp threads passing on the outside of all of the back filling picks and being exposed on the back of the web to form the extreme back surface thereof, and being of coarser yarn than the binder warp threads.

12. A web having elastic warp cords arranged in two horizontal groups or series, upper, lower and middle filling picks crossing said warp cords and binder warp threads passing over and under the upper and lower filling picks respectively, and under and over adjacent middle filling picks respectively.

13. A web having elastic warp cords arranged in two horizontal groups or series, upper, lower and middle filling picks crossing said warp cords, and binder warp threads passing over and under the upper and lower filling picks respectively, and said binder threads passing below certain of the middle filling picks and above others thereof.

14. A web having elastic warp cords, and face and back filling picks, binder warp threads of relatively fine yarn to bind the aforesaid members together, and back warp threads passing entirely below the upper

filling picks and exposed on the back or lower face of the web to form the back surface thereof, said binder threads being arranged on each side of and adjacent to the elastic cords and said back warp threads lying between said binder threads and being of coarser yarn than said binder threads and passing on the outside of all of the back filling picks.

15. Elastic webbing having two layers of elastic warp cords, upper filling picks crossing above said cords and forming therewith a hard reticulated face for the web, middle filling picks between said layers of warp cords, lower filling picks below said cords, and stuffing warp threads held by the middle filling picks and exposed for the greater portion of their length on the back of the web to form a soft back surface therefor.

16. An elastic web containing a plurality of elastic cords, picks of filling on one side of all said cords, picks of filling on the other side of said cords, middle filling picks separating said cords into different groups, binder warp threads for binding the foregoing elements together, and other warp threads exposed on one side of the web for the greater part of their lengths and held in the web by said middle filling picks and crossing all the back picks.

17. An elastic web containing a pluarlity of elastic warp cords arranged in groups, picks of filling on one side of the web, picks of filling on the other side of the web, middle picks of filling in pairs separating one group of said warp cords from the other, and binder warp threads for binding the foregoing elements together, said binder threads engaging said pairs of middle filling picks by passing under one pick and over the next.

18. An elastic woven fabric having elastic warp cords and a firm reticulated face surface formed by face filling picks crossing said cords, back filling picks below said cords and a soft back surface formed by stuffing warp threads, said stuffing warp threads passing on the outside of all of the back filling picks.

19. An elastic web having two layers of covered rubber warp cords, upper filling picks above said cords and forming therewith a hard reticulated surface for the web, middle filling picks between said layers, lower filling picks below said layers, binder warp threads to bind the above elements together engaging the middle filling picks, stuffing warp threads exposed at the other surface of the web for the greater portion of their lengths, said threads being of relatively great aggregate cross section to form a soft surface.

20. An elastic web having a hard reticulated face and a soft smooth back surface, said web comprising two horizontal series of elastic cords crossed by upper, lower and middle filling picks, the face of the web being formed by the crossed cords and upper filling picks, binder warp threads to bind the cords and filling picks together, and back warp threads passing all of the back filler picks on the outside thereof and forming the back surface of the web.

21. An elastic web having an ornamental reticulated hard face surface and a soft and smooth back surface, said web containing two layers of elastic cords crossed by upper, lower, and middle filling picks, and means for binding said elements together.

22. An elastic web having two layers of covered rubber cords, upper filling picks above said cords, middle filling picks between said layers of cords, lower filling picks below said layers, binder warp threads in pairs to bind the above elements together and engaging the middle filling picks, and other warp threads arranged in groups between the pairs of binder warp threads, and exposed at the outer surface of the web for the greater part of their lengths.

23. An elastic web having a hard reticulated face and a soft smooth back surface, said web comprising two horizontal series of elastic cords crossed by upper, lower and middle filling picks, the face of the web being formed by the crossed cords and upper filling picks, binder warp threads to bind the cords and filling picks together, engaging certain of the middle filling picks and back warp threads also engaging certain of the middle filling picks and exposed on the back of the web for a greater part of their lengths.

24. A web containing two layers of elastic warp cords, filling picks crossing above said cords and constituting face picks, middle filling picks between the two layers of cords, filling picks below the cords and constituting back picks, binder warp threads serving to bind the foregoing together and engaging certain of the face picks, middle picks and back picks of filling, and other warp threads engaging certain of the back filling picks.

25. A web containing two layers of elastic warp cords, filling picks crossing above said cords and constituting face picks, middle filling picks between the two layers of cords, filling picks below the cords and constituting back picks, binder warp threads serving to bind the foregoing together and engaging certain of the face picks, middle picks and back picks of filling, and other warp threads engaging certain of the back and middle filling picks.

26. A web containing two layers of elastic warp cords, filling picks crossing above said cords and constituting face picks, mid-

dle filling picks between the two layers of cords, filling picks below the cords and constituting back picks, binder warp threads serving to bind the foregoing together and engaging certain of the face picks, middle picks and back picks of filling, and other warp threads in groups, each group being located between two binder warp threads and immediately adjacent thereto.

27. A web containing two layers of elastic warp cords arranged in pairs with one cord of a pair above the other, face picks of filling over the cords, back picks of filling under the cords, middle pairs of filling separating the cords of each pair, and binder warp threads engaging middle picks of filling and binding all the foregoing together, each of said binder warp threads being located in the web immediately adjacent to an aforesaid pair of elastic warp cords.

28. A web containing two layers of elastic warp cords, three layers of filling, face, middle and back, binder warp threads which engage middle filling picks and bind all the foregoing together, back warp threads passing over back filling picks in steps of two adjacent picks each, which are located between and immediately adjacent to two of the said binder warp threads.

29. An elastic web having a body portion comprising a plurality of elastic warp cords arranged in groups, picks of filling on one side of the web, picks of filling on the other side of the web, middle picks of filling separating one group of warp cords from the other, binder warp threads for binding the foregoing elements together, said binder warp threads engaging certain of the middle filling picks, and a selvage edge including a single elastic warp cord and a series of selvage warp threads between said cord and the body of the web.

30. Elastic webbing having two layers of elastic warp cords, upper filling picks crossing above said cords and forming therewith a hard reticulated face for the web, middle filling picks between said layers of warp cords, lower filling picks below said cords, binder warp threads engaging upper, middle and lower filling picks and other warp threads between the binder threads.

In witness whereof, I have hereunto set my hand this 21st day of July, 1925.

GEORGE E. CLAUSS.