

E. J. VOGEL.

FABRIC.

APPLICATION FILED OCT. 30, 1908.

898,941.

Patented Sept. 15, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

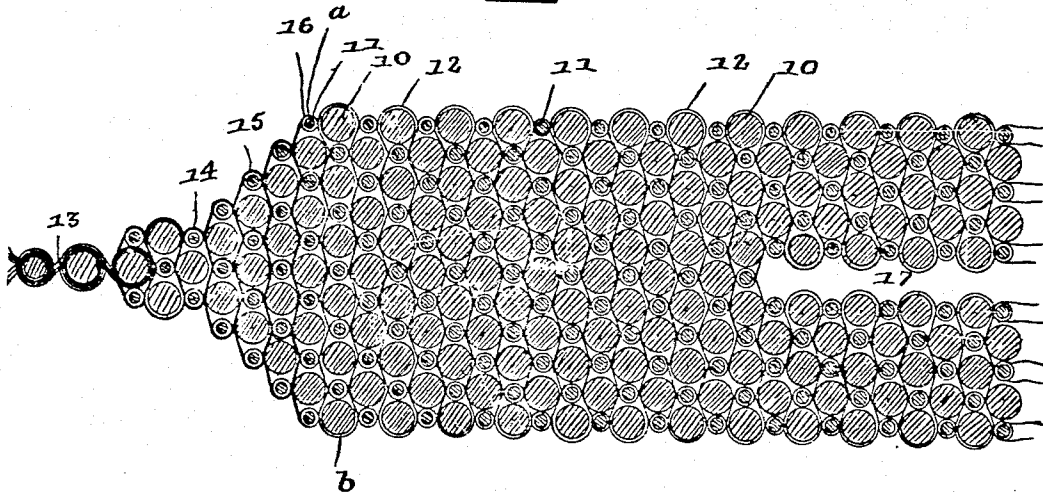
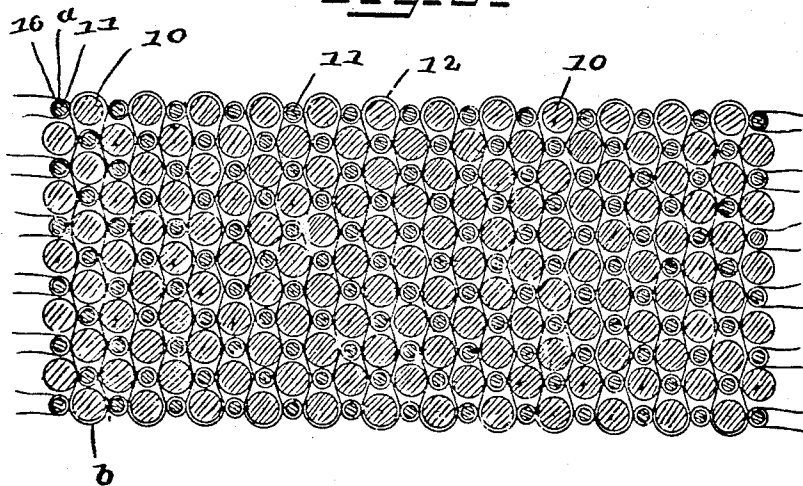


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

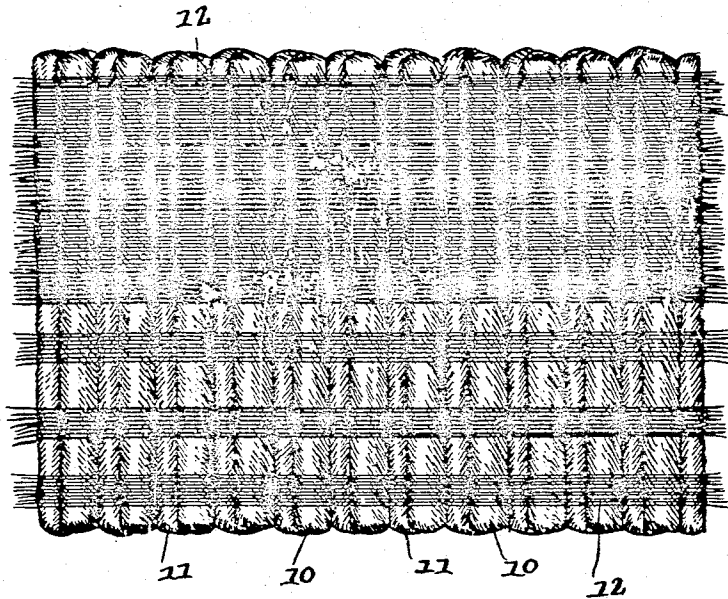
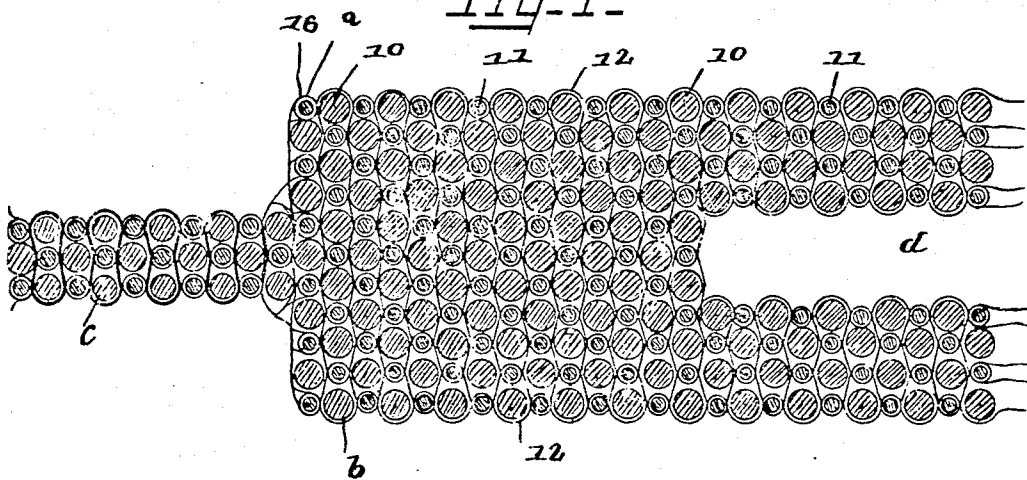


Fig. 4.



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UNITED STATES PATENT OFFICE.

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FABRIC.

No. 898,941.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed October 30, 1906. Serial No. 341,218.

To all whom it may concern:

Be it known that I, EMIL J. VOGEL, a citizen of the United States, residing at Lawrence, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Fabrics; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has relation to woven fabrics of a thick and solid structure for use where a thinner fabric or several plies of a fabric would not answer the purpose.

The nature of the invention consists of a fabric composed of relatively fine and hard-twisted warps, and large and loosely twisted wefts, the wefts being woven one on top of the other to the extent of the thickness of the cloth, by weaving up and down as well as forward.

The structural characteristics of my improved fabric are clearly shown in the annexed drawings, forming a part of this specification, in view of which the mode of producing the fabric and its general structural characteristics throughout will first be described, and the invention then pointed out succinctly in the subjoined claims.

Of the said drawings—Figure 1 is a diagram showing a way of beginning the weaving of my improved fabric, as also some of its structural characteristics. Fig. 2 is a sectional view in the plane of the warps of the improved fabric. Fig. 3 is a plan of the same. Fig. 4 is a diagram showing a sectional view of a narrow fabric formed with a groove on one side and a tongue on the opposite side.

Similar numerals of reference designate similar parts, things, or features, as the case may be, wherever they occur.

In the production of my improved fabric I may employ as many harness or sets of harness (not shown) as is practicable or necessary, according to the thickness, structure or design of the fabric that it is proposed to produce. For the purpose of this specification, I show a fabric produced by the use of twelve harness which are operated in various ways, well known to those skilled in the art, to tie in the warps in proper order in the fabric to effect its solidity as well as to produce varying designs on the face from the different colors of warps used. I also con-

trol the shuttle-boxes (not shown) so as to effect the picks of weft in the proper order and plane.

For most purposes I employ relatively fine and hard-twisted warps, and in nearly all instances I use relatively quite large and loosely or softly twisted wefts, one-half of the weft being substantially but half of the diameter of the other half, and the large and small wefts being employed alternately.

In the drawings, 10 designates the large or thick wefts; 11, the smaller wefts; and, 12, the warps running on irregular lines through the fabric.

Turning again to Fig. 1 of the drawings, it will be noted that in beginning the weaving of a piece, in order that it may not fray or fret, and to establish a base or abutment against which to work to form a fully-thick fabric, I operate the harness so as to produce a common weave for two picks, one in advance of the other, as at 13, and then begin with three picks, one on top of the other, advancing forward two picks, as at 14; then with seven picks vertically, advancing two picks forward, as at 15, and then beginning the regular weave at the point 16, for eleven picks vertically with alternate relatively thick and thin wefts advancing in length one pick in each vertical eleven. In other words, let it be supposed that I begin at the top *a*, at the line 16, where the harness are operated to form a shed for the pick of a large weft 10, which is beaten up by the reed in the lay; then a shed is formed and a smaller weft 11 is picked through and beaten up in place below the first weft mentioned; then a third shed is formed and the larger weft is picked through, and beaten up in place below the fine or smaller weft, and so on—a finer or smaller weft and a larger are woven in until eleven picks have been thus woven one below the other, terminating with a pick of a large weft 10, when a return operation upward is begun. The commencement of weaving upward, as at *b*, will be by a pick of a smaller weft 11 which will be beaten up theoretically in advance of the last weft 10 in weaving downward, and then a larger weft will be picked through in advance of the smaller weft, lying next to the last in the downward weave, and so on until the top of the upward weave is reached when a small weft will have been picked through and beaten up, so that while twenty-two picks will have been woven—eleven *a*, down and

eleven *b*, up—the length of the fabric will have been advanced but two picks, and the warp will have been operated accordingly, so as to tie in the divers wefts.

5 With the description thus far given it will be seen that I can readily weave a fabric twice, three times or four times, or even more, as thick as that produced in accordance with the preceding explanation. In
10 producing a thicker fabric I may employ additional harness with a proper draw, and, of course include more picks downward and upward proceeding forward but two picks in each downward and upward operation, as
15 explained. Again, it is obvious that the fabric will be thickened by increase in the size of the wefts or warps, or both at the same time. By employing warps of different colors, it is obvious that by a proper draw of
20 the warps, and a corresponding proper operation of the harness, figures of varying design may be produced on the face of the fabric, as indicated in Fig. 3. In beating up the larger and smaller wefts, introduced alternately,
25 the latter will be forced into position so as practically to form chinks between the larger warps, and so enhance the solidity of the fabric, though in the drawings, for the sake of clearness of illustration the wefts and
30 "ends" are shown in normal form and in somewhat theoretical position in order to completely expose the invention.

In the diagram, Fig. 1, there is shown to be an omission of wefts and warps at, 17,
35 leaving a hollow if formed in the center of the width of a fabric, or a groove if formed at the edge. This is accomplished by the operation of the regular harness so that they will fail to cause the warps to tie in the wefts
40 along this line 17, though by the employment of four special harness the floating wefts can be tied in thereby so as not to leave any floating threads in the opening or
45 "groove". If the wefts are allowed to float they can easily be drawn out and cut off.

In Fig. 4 I have shown how a tongue *c* may be formed along one side of the cloth, so as to be entered in a groove *d* formed on the oppo-

site edge as explained. In this way two or more strips of the fabric may be joined some- 50 what similar to flooring boards and be stitched together or otherwise joined at their edges. It is obvious that two or more open spaces 17 may be formed in the body of the fabric as well as one. As before stated 55 the number of harness may be increased from that shown in which case there will be an increase in the number of picks *a* and *b* vertically. Were I to use twenty-four sets of harness instead of twelve with the same 60 size of wefts and warps, a fabric would be produced twice as thick as that made by twelve sets of harness and a correspondingly increased number of warps.

What is claimed is:—

1. A fabric consisting of wefts and warps comprising two sets of wefts disposed in vertical order from top to bottom of the fabric and of relatively quite thick and soft twist each alternate weft being of but substan- 70 tially half the thickness of the other wefts in each pick forward in the construction of the fabric, the wefts being tied in by the sheds formed by the various warps from the top to the bottom of the fabric. 75

2. A fabric consisting of wefts and warps comprising a series of wefts of quite thick and soft twist woven in vertical order each alternate weft being but half the thickness of the other weft in each pick forward in the 80 construction of the fabric, the wefts being tied in by regularly formed sheds in the warp, the similar wefts being beaten into the chinks between the larger wefts and warps.

3. A thick woven fabric comprising a 85 series of fine hard twisted warps, a series of soft twisted wefts, and a second series of larger soft twisted wefts, the wefts being disposed alternately and vertically in each pick forward in the formation of the fabric. 90

In testimony whereof, I affix my signature, in presence of two witnesses.

EMIL J. VOGEL.

Witnesses:

HERMAN C. BLASER,
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