(No Model.) 3 Sheets—Sheet 1.

J. W. GREEN, Jr., & A. SMITH.

ELASTIC OR CORD FABRIC.

No. 283,100. Patented Aug. 14, 1883.

Fig. 1.

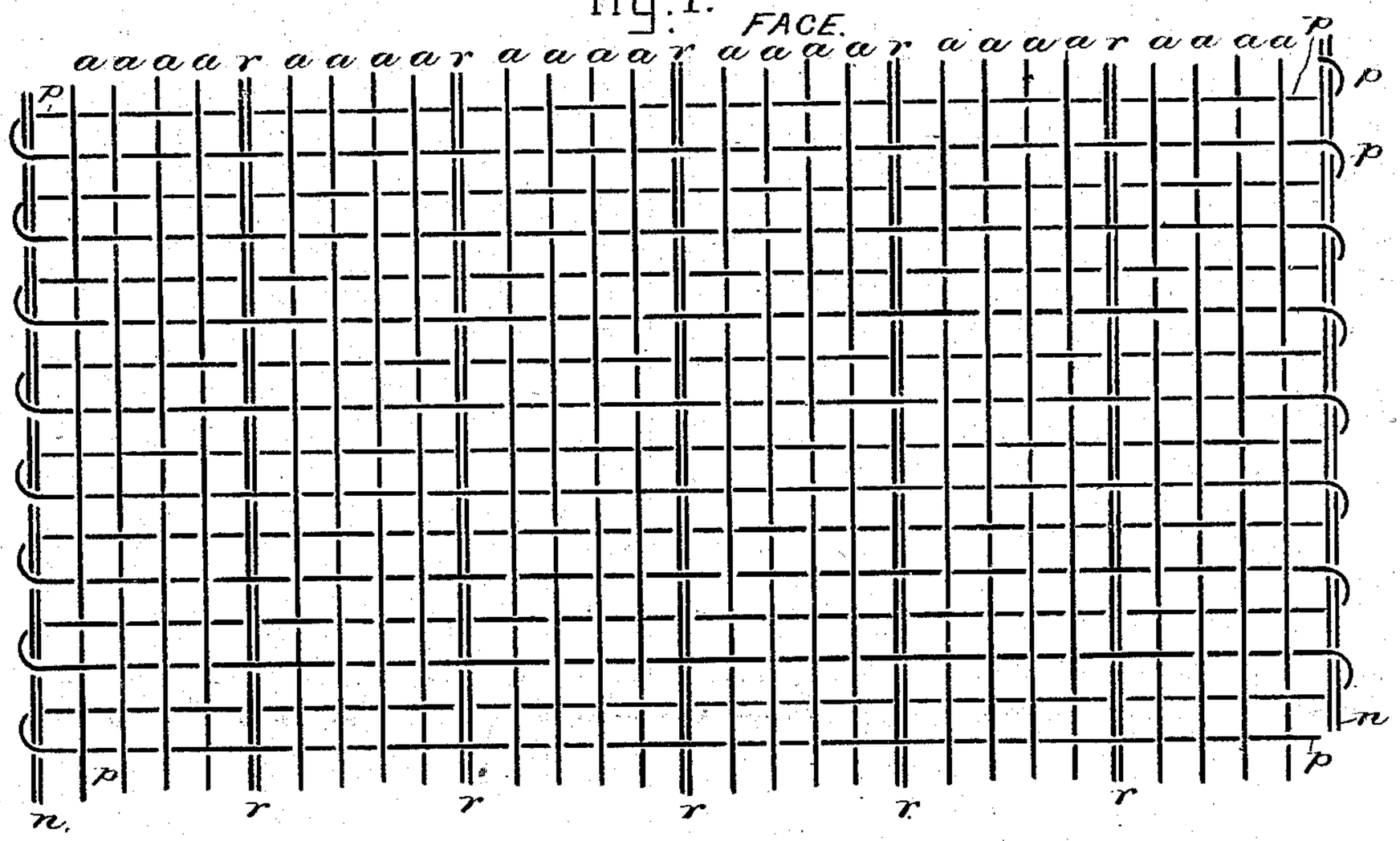
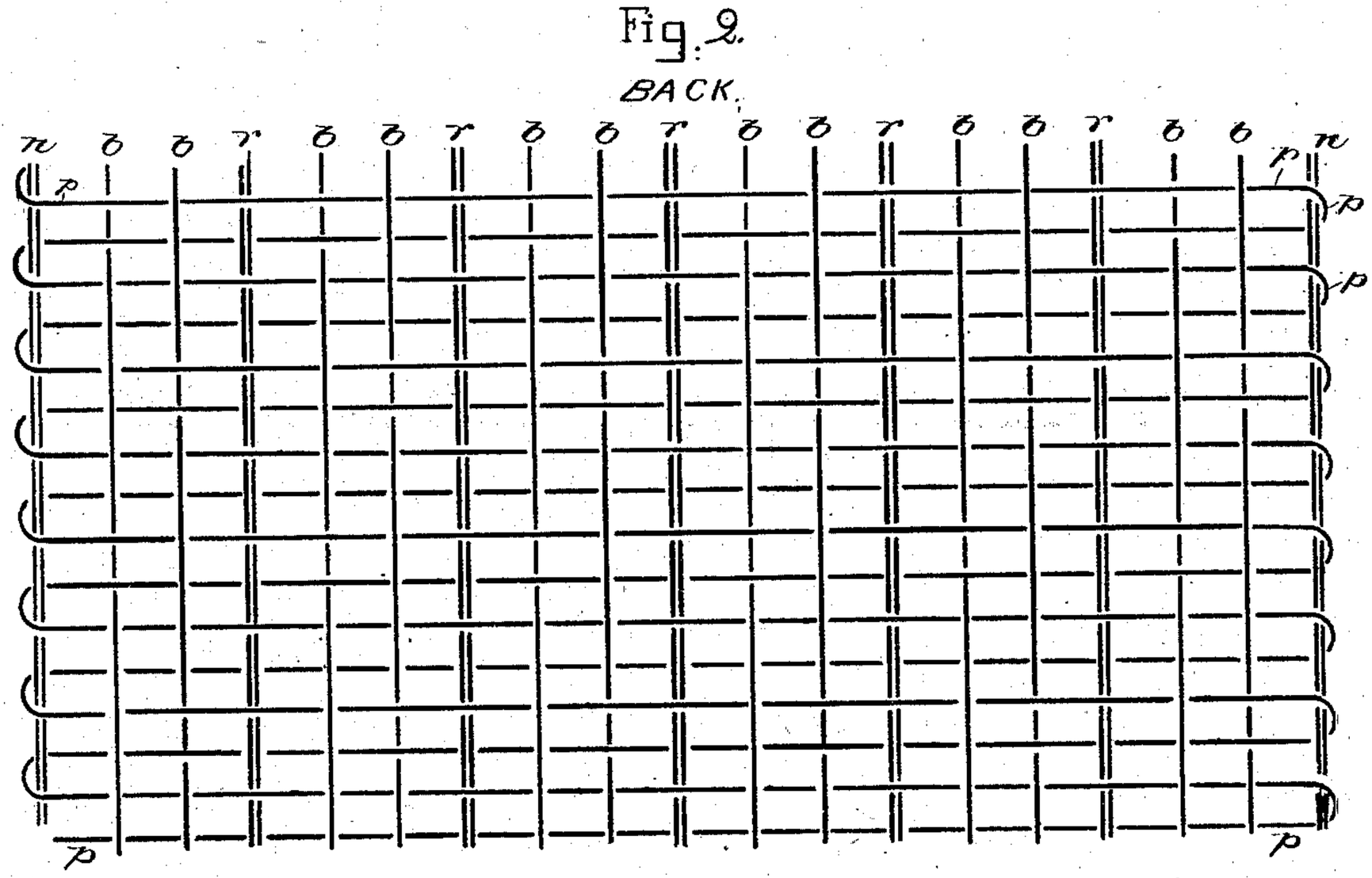


Fig. 2.



Witnesses.

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Fig. 4.

	a.	a.	a.	a.	b.	b.	r.	
e.	1.	2.	3.					1st. pick.
f.	1.	2.	3				7	2d. "
g.	1	2		4	5			3d. "
h.	1	2		4	5		7	4th. "
i.	1.		3	4				5th "
j	1.		3	4			7	6th "
k.		2	3	4		6		7th. "
m.		2	3	4		6	7	8th "
e.	1.	2	3					1st. "
f	1.	2	3				7	2d. "
g	1.	2		4	5.			3d. "
h.	1.	2		4	5.		7	4th. "
i	1.		3	4				5th. "
j	1.		3	4			7	6th "
k.		2	3	4		6.		7th "
m.		2	3	4		6	7	8th "
	H.F. No 1.	H.F. No 2.	H.F. No 3.	H.F. No 4.	H.F. No 5.	H.F. No 6.	H.F. No 7.	

Fig. 3.

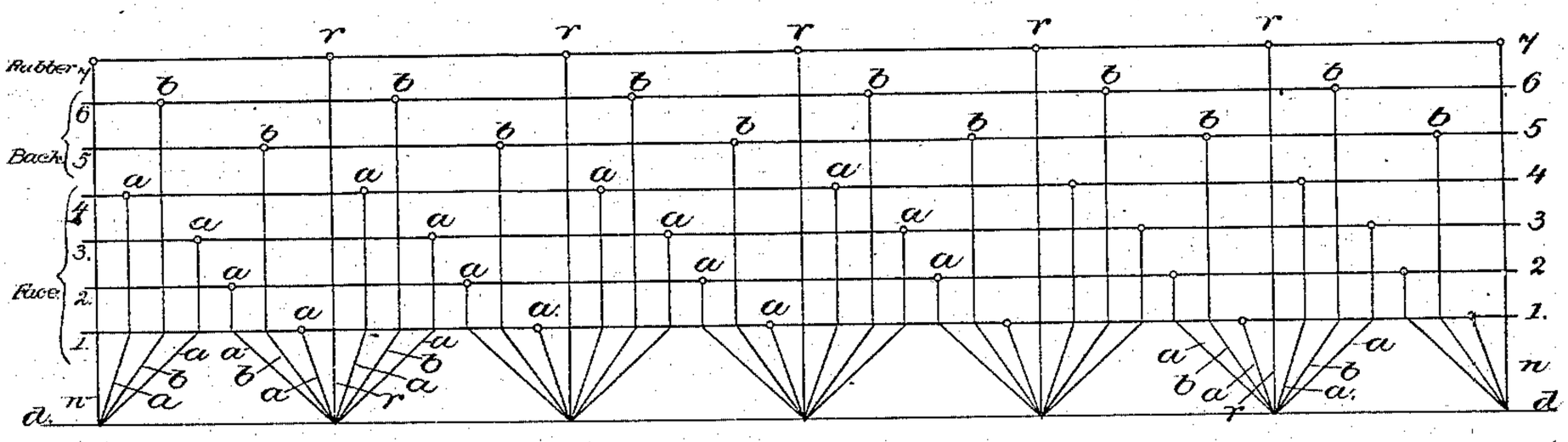

Fig. 5.

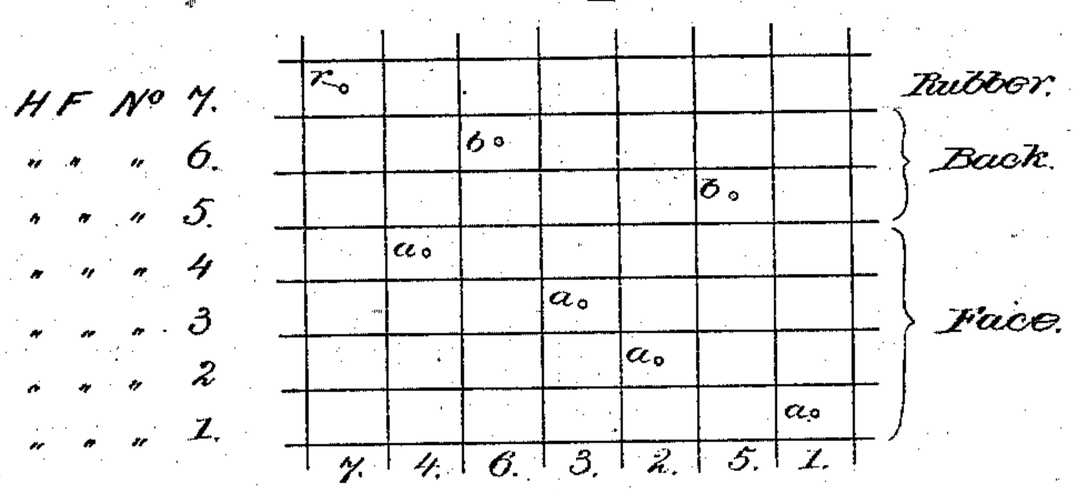

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Fig: 6.

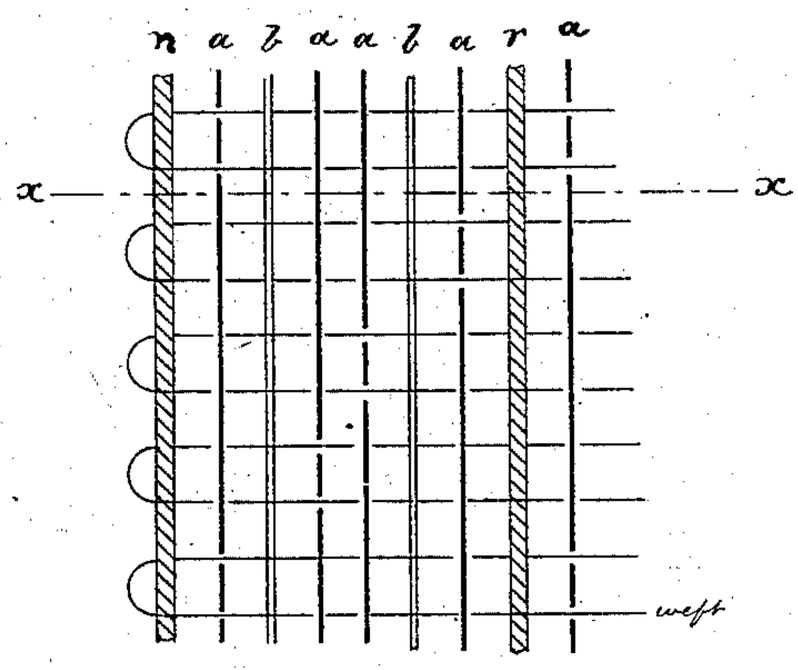
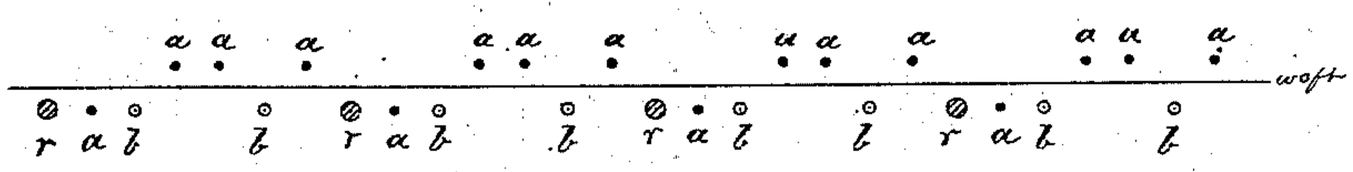


Fig: 7.



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Archibald Smith
by Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

JOSEPH W. GREEN, JR., AND ARCHIBALD SMITH, OF EAST HAMPTON, MASSACHUSETTS, ASSIGNORS TO THE GLENDALE ELASTIC FABRIC COMPANY, OF SAME PLACE.

ELASTIC OR CORD FABRIC.

SPECIFICATION forming part of Letters Patent No. 283,100, dated August 14, 1883.

Application filed November 3, 1882. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH W. GREEN, Jr., and ARCHIBALD SMITH, of East Hampton, county of Hampshire, State of Massachusetts, have invented an Improvement in Elastic or Cord Fabrics, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

Heretofore in the construction of elastic fabrics known as "terry" fabrics, they having independent sets of warp-threads of different material or color for the face and back, it has always been customary to employ binder-threads to unite the fabric of the face and back to form parallel pockets for the elastic warps, and in such fabric the same weft-thread has been employed to unite the warp-threads of the face to form the face fabric, and also the warp-threads of the back to form the back fabric. This kind of fabric is objectionable, because the elastic warps are not held with sufficient closeness to prevent them from shortening or drawing into the fabric when the fabric is cut up and in use.

A class of elastic fabric known as "goring" for shoes, &c., has been produced from sets of warps which have been made to appear at and to form part of both the back and face of the fabric, the said warps being held together and made to confine the elastic warps by means of a filling-thread of the same color. In this class of fabric the face and back must be alike in material and color, and consequently cheaper warps cannot be used at the back than at the face, and if the face is black, as customary in shoe-goring, it follows that the back must also be black, which is undesirable next the stocking, and precludes the possibility of a light color for the back and another color for the face.

Our invention consists in a fabric having elastic or cord warps held firmly against possibility of slipping between the threads of a set of face and a set of back warp-threads united only by a filling-thread, which interlocks with the threads of the set of face and of the set of back warp-threads at intervals, as hereinafter described, all binder-threads which have heretofore been used in elastic fabrics having face and back of different color or material being omitted. We have discovered that a fabric woven as hereinafter described binds and holds the elastic or cord warps more closely and incorporates the same more intimately with the warp and weft forming the woven body of the fabric than has heretofore been done, so far as we are aware.

Figure 1 illustrates in face view a piece of our improved fabric, the same being represented as woven open in order to show the crossings of the various threads to be referred to; Fig. 2, a like view of the back of the fabric. Fig. 3 is a diagram showing in top view the different sets of harness-frames employed for the different warp-threads, the threads being shown as extended forward into the spaces of the reed, as in practice. Fig. 4 is a diagram representing the changes of the harness-frames and warp-threads for each pass of the shuttle through two changes or repeats of the pattern. Fig. 5 is another form of diagram to show the order in which the different warps are drawn through the harnesses. Fig. 6 is a view of a piece of fabric embodying our invention, showing the face, back, and rubber warps, and the weft as separated or spread apart to better show their crossings; and Fig. 7 is a cross-section of Fig. 6 along dotted line *x*, but showing more warp-threads, the section being made after the insertion of the weft at the fifth pick. (See diagram Fig. 4.) The spaces between the horizontal lines represent the harness-frames, and the dots the order in which the different warps are drawn through them.

Referring to Fig. 3, it will be seen that we employ seven harness-frames, (marked 1, 2, 3, 4, 5, 6, and 7.) The harness-frames 1 2 3 4 carry the face warps, *a*, the harness-frames 5 6 the back warps, *b*, and the harness-frame 7 the rubber warp *r*. These warp-threads are drawn through the heddles of the harness-frames and through the space between the usual dents of the reed indicated by the line *d*, there being in each of said spaces seven threads, including the rubber.

Referring to Fig. 4, the line of squares *e* represents the positions of the harness-frames designated by the letters H F for the first shed in commencing the pattern, the figures in the squares representing the harness-frames which

are raised for the first pick. The line of squares *f g h i j k m* show the successive changes of the harness-frames for the eight sheds which complete the pattern. After the eighth pick the pattern is repeated, and the harness-frames are again brought into the positions designated by line *e*. During each repeat of the pattern it will be noticed that the harness-frame 7, carrying the elastic (or it might be a cord) warp *r*, is raised for one and lowered for the nex pick; that the harness-frame No. 1 for the face warp remains up for six picks and down for the two succeeding picks; the harness-frame No. 2 remains up for four picks, then down for two picks, and then up for two picks; the frame No. 3 remains up for two picks, down for two picks, and up for four picks, and the harness-frame No. 4 remains down for two picks and up for six picks, the general order of the face warps thus being six up and two down, throwing the face warps well out and producing a six-leaf twill. The harness-frame No. 5 for the back warp, which may and preferably will be of a different material and color, remains down for two picks, up for two picks, and down for four picks; and the harness-frame No. 6 remains down for six picks and up for two picks, the general order of the back warps being two up and six down, or the reverse of the face warps, thus making a two-leaf twill for the back.

In this our fabric it will be seen that the rubber or cord warp is crossed by the filling or weft *p*, it being above the rubber at one pick and below it at the next pick, the weft being kept against the rubber by the face and back warps, which, co-operating with the weft, act to bind and hold the rubber or cord warp firmly and securely in the fabric, without liability of the rubber or cord being drawn out of place, or "running in," as it is called.

In the manufacture of our improved fabric the outermost dent-spaces of the reed, or the spaces next to the spaces in which are placed the six warp-threads and rubber thread, as above described, will contain only one india-rubber or cord warp, *n*, which is shown in Figs. 1 and 3. These single warp-threads *n* will be wrapped by the filling, and the edge of our improved fabric will be as represented in United States Patent No. 170,572, to which reference may be had. The drawings, Figs. 1 and 2, show the face warps, *a*, the back warps, *b*, the rubber warps *r*, selvage rubbers or cords *n*, and weft-thread *p* as they will appear upon the face and upon the back of the fabric, the said threads being spread out. The rubber warps are represented by a heavier line than the face and back warps, and the filling-thread *p*, which binds and locks the warp-threads *a*, *b*, and *r* in the normal contracted condition of the fabric, do not show upon either the face or back of the fabric. This weft should be of the same color as the face warps.

The fabric produced by the method of weaving herein described, should the rubber or cord warps be entirely withdrawn, would present a complete or solid fabric; and it will be understood that we do not use a binder-warp.

We claim—

An elastic or cord warp fabric having independent sets of face and back warp-threads, a set of elastic or cord warps, and a filling or weft thread to unite together the face and back warps, the face warps and the independent back warps being reversed each, respectively, at every sixth pick, and the rubber warp being reversed at every pick, whereby the rubber or cord warp is interlocked between the threads of the independent face and back warps, which appear each only upon its own side of the fabric, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOS. W. GREEN, JR.
ARCHIBALD SMITH.

Witnesses:
GEO. M. JOHNSON,
E. C. KOENIG.