

(No Model.)

A. D. EMERY.  
WOVEN FABRIC.

No. 415,140.

Patented Nov. 12, 1889.

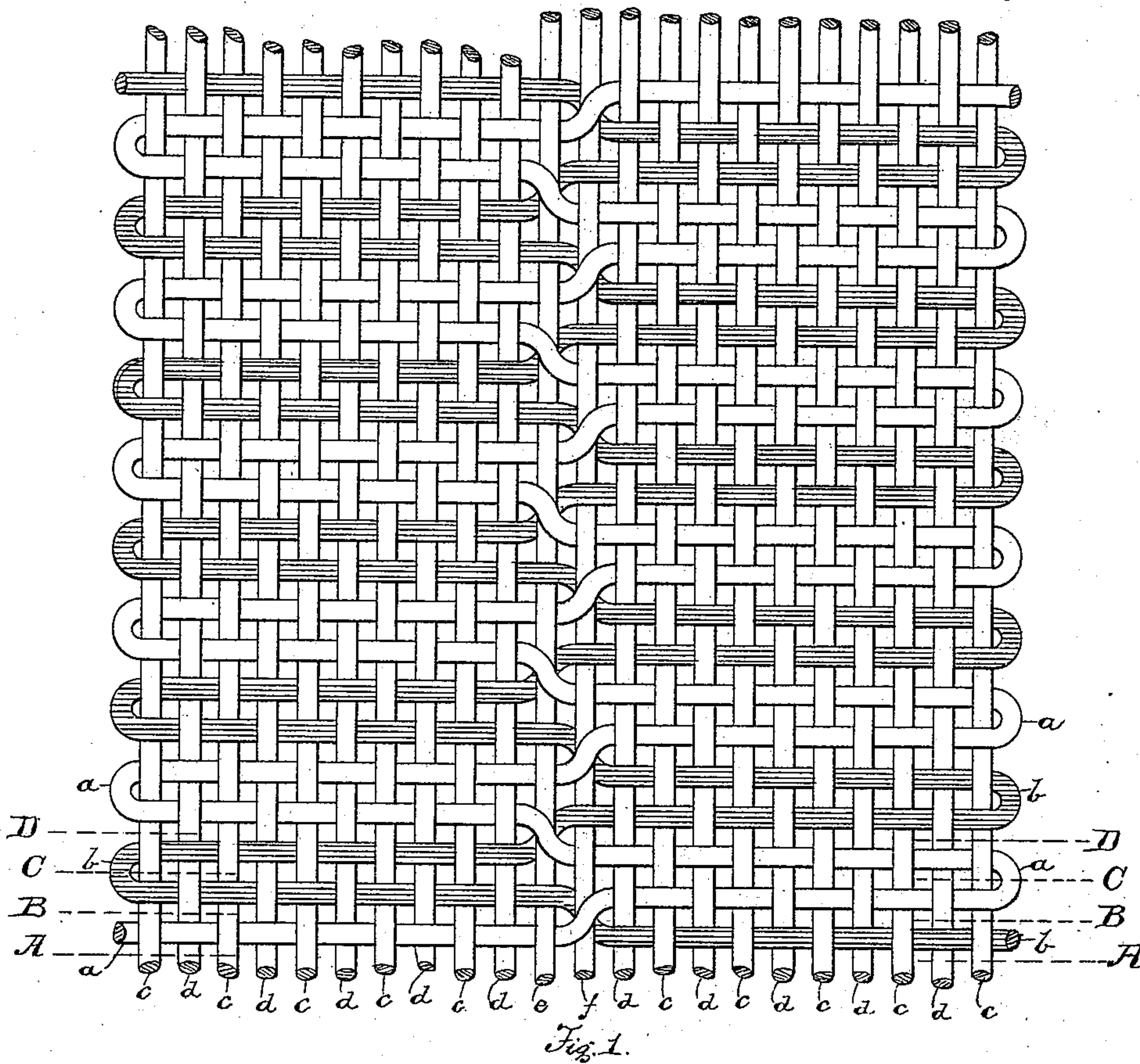


Fig. 1.

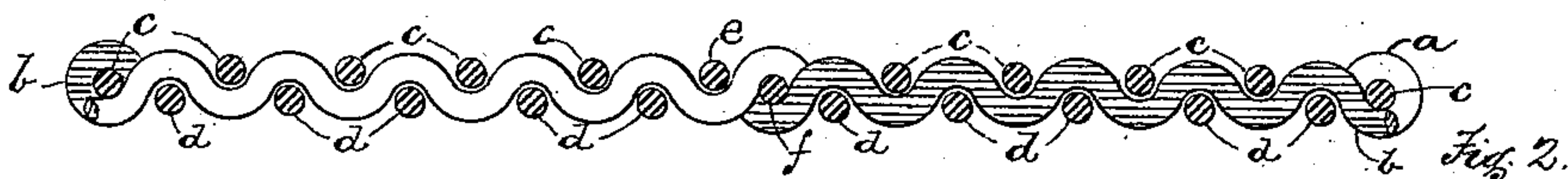


Fig. 2.

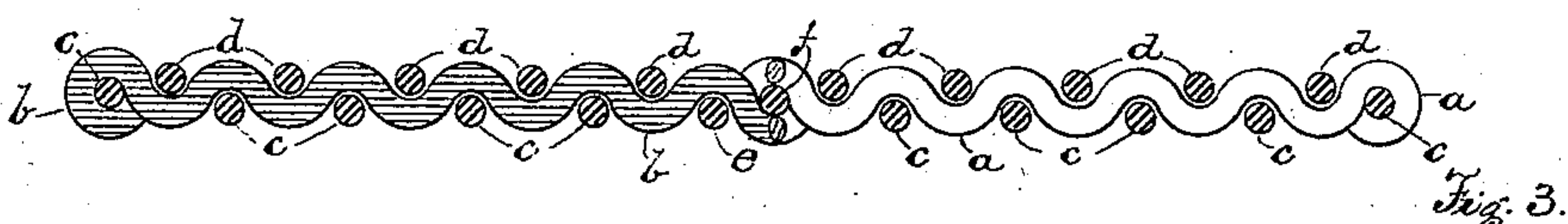


Fig. 3.



Fig. 4.

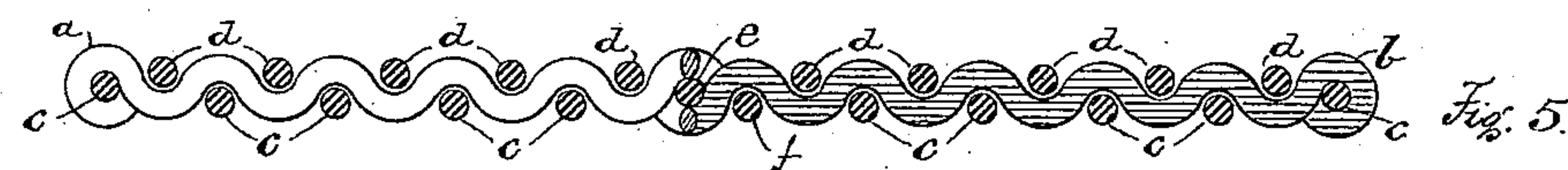


Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## WOVEN FABRIC.

SPECIFICATION forming part of Letters Patent No. 415,140, dated November 12, 1889.

Application filed May 18, 1888. Serial No. 274,255. (No specimens.)

*To all whom it may concern:*

Be it known that I, ABRAM D. EMERY, a citizen of the United States, and a resident of Taunton, in the county of Bristol and State of Massachusetts, have invented a certain new and useful Improved Woven Fabric, of which the following is a specification.

My invention relates to plain one-ply woven fabrics composed of a single set of chain-threads and two distinct weft-threads, which cross the chain-threads in such a manner that each weft-thread occupies only a portion of each shedding, and which are transferred to the next succeeding shedding at or near the center of the fabric, as more broadly set forth and claimed in an application filed by me February 28, 1888, Serial No. 265,581. In that application my invention was illustrated specifically by a fabric in which the weft-threads were transferred about a given chain-thread at or near the center of the fabric, crossing each other one over and one under that chain-thread in alternate sequence—that is to say, one weft-thread passed over the given chain-thread at one transfer and under it at the next transfer, and the position of the other weft-thread was correspondingly and oppositely reversed at each transfer.

According to my present invention, which is a modification of the general invention in respect only to the relation of the weft-threads to the chain-threads at the center of the fabric, the weft-threads are transferred at the center about two adjoining chain-threads, crossing each other first over and under one of the adjoining chain-threads and then over and under the other, and then over and under the first one mentioned, and so on. In this transfer and crossing, furthermore, the same weft-thread always passes over the chain-threads and the other weft-thread always passes under.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a fabric embodying my present invention, with the threads separated and enlarged. Fig. 2 is a vertical cross-section on the line A A, Fig. 1. Fig. 3 is a vertical cross-section on the line B B, Fig. 1. Fig. 4 is a vertical cross-section on the line C C, Fig. 1. Fig. 5 is a vertical cross-section on the line D D, Fig. 1.

*a* indicates one of the weft-threads, which is shown as plain in color, to facilitate the description. *b* indicates the other weft-thread, which is shown as shaded, for the same purpose.

*e* and *f* indicate the two adjoining warp-threads at or near the center of the fabric, over and under which the weft-threads alternately pass in transferring and crossing.

*c* and *d* indicate the general body of chain-threads, which pass in regular sequence over and under the weft-threads.

The fabric thus illustrated corresponds in all respects, except in the particulars hereinbefore mentioned, with the fabric illustrated and described in the application referred to.

The threads are disposed, generally speaking, according to the following system: Each pick is made up of two distinct weft-threads, one of which fills one half the path in any given shedding, and the other the other half. Thus the first pick (shown in the lower half of Fig. 1, section in Fig. 2) is composed of the shaded thread *b* on the right-hand side of the adjoining chain-threads at the center, and of the plain thread *a* on the left-hand side of those chain-threads. The next pick (section in Fig. 3) is composed of the same two threads occupying adjoining portions of the shedding, as before, but placed in opposite parts of the fabric by reason of having passed by each other at the center. The third pick (section in Fig. 4) is likewise made up of the same two threads placed in the same parts of the fabric as in the second pick. In the fourth pick (section in Fig. 5) the threads pass each other again at the center and cross over to opposite parts of the fabric and are in the same positions in the fabric as in the first pick described. In other words, the fabric is made up of a set of chain-threads and two weft-threads, which occupy contiguous parts of each shedding in opposite parts of the fabric, and in which, furthermore, the threads occupy the same relative positions in the fabric for two successive picks—that is to say, the two weft-threads will lie on the right and left hand side respectively of the center of the fabric for two sheddings or picks, and will then exchange positions for two successive picks, and then exchange back into their original position in the fabric



for two successive picks, and so on. Each weft-thread will thus make two passages through one-half of the fabric and then two passages through the opposite half of the fabric, and then two passages through the first half of the fabric and so on, each passage being through a succeeding shedding. From this description it will be apparent that the weft-threads are arranged in sequences of four—that is to say, each weft-thread will return to its original position every fifth shedding, and the weft-threads are always oppositely placed, so that when one is on the left of the center the other is on the right of the center, and the threads reverse their relative positions in this respect every two picks. Furthermore, the threads in passing by each other at the center in their passage into opposite halves of the fabric and into a succeeding shedding cross each other one above and one below one of two adjoining chain-threads *e* or *f*, and then at the next transfer cross each other one above and one below the other of these two adjoining chain-threads. Thus at the first transfer (shown in the lower half of Fig. 1) the weft-threads cross over and under the chain-thread *f*. At the next transfer the threads cross over and under the chain-thread *e*. At the next transfer the threads cross over and under the chain-thread *f*, and so on, the reversal of position taking place every third pick, and the threads being returned to their original position at the fifth pick, completing the sequence. It will be noticed, also, that in all the transfers the plain thread *a* will cross over the chain-thread and the shaded thread *b*, and the shaded thread always passes under the chain-thread and the plain thread *a*. Of course it will be understood that the position of the threads may be reversed in this respect, so that the thread which is shown in the drawing as shaded might be made to

uniformly pass over the other thread in crossing, the fabric remaining in all essential respects the same. The chain-threads follow in sequences of two throughout the fabric, passing over and under the weft-threads in the usual manner.

It will of course be understood that my invention is not limited to fabrics in which the weft-threads are transferred and crossed about the center chain-threads. This is the usual and convenient form, made by running the loom to its full capacity; but, as explained in the application heretofore filed by me February 28, 1888, Serial No. 265,639, the two parts of the fabric may be of unequal breadth, my invention in this respect consisting, as described, of transferring the weft-threads into a succeeding shedding at a point between the two selvage-edges.

The fabric herein described and claimed is made by the method of manufacture which is the subject of the aforesaid application filed by me February 28, 1888, Serial No. 265,639, and I make no claim in this application to such method of manufacture.

What I claim as my invention is—

As a new article of manufacture, a plain one-ply fabric composed of a single set of chain-threads and two distinct weft-threads transferred at or near the center of the fabric from one pick into a succeeding pick and into opposite positions in the fabric, crossing each other—one above and one below—uniformly, with one of two adjoining chain-threads alternately between them.

Signed at Taunton, in the county of Bristol and State of Massachusetts, this 12th day of March, A. D. 1888.

ABRAM D. EMERY.

Witnesses:

HENRY J. FULLER,  
WALTER T. EMERY.