

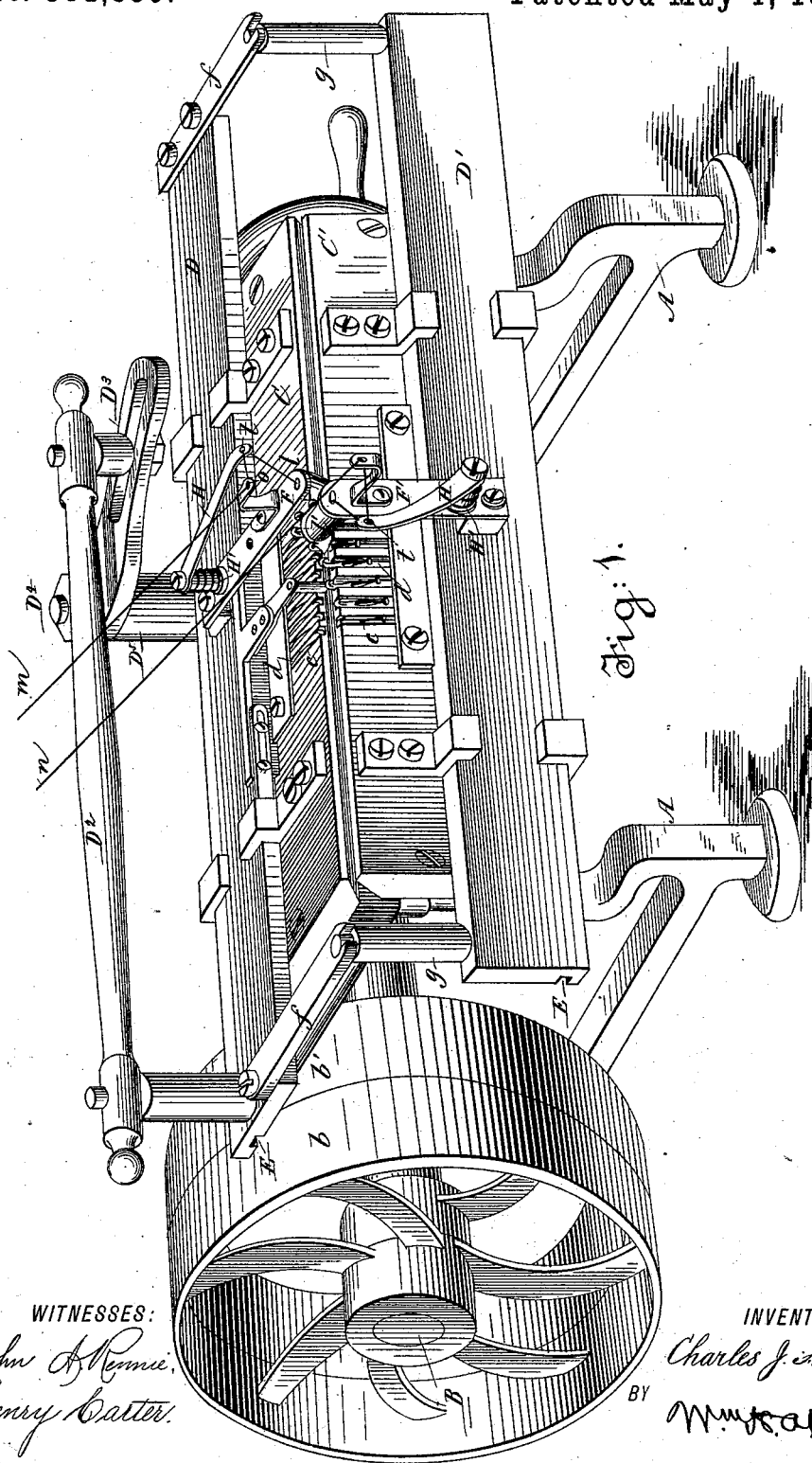
(Specimens.)

2 Sheets—Sheet 1.

C. J. APPLETON.
KNITTED FABRIC.

No. 381,899.

Patented May 1, 1888.



WITNESSES:

John A. Remie.
Henry Carter.

INVENTOR.

Charles J. Appleton.

BY

Wm. Appleton.

ATTORNEY.

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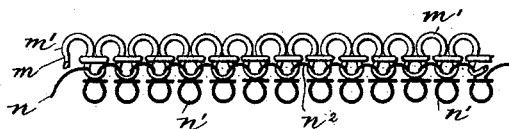


Fig: 2.

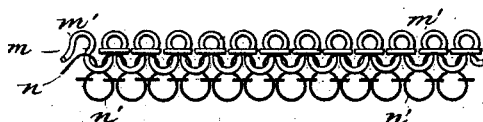


Fig: 3.

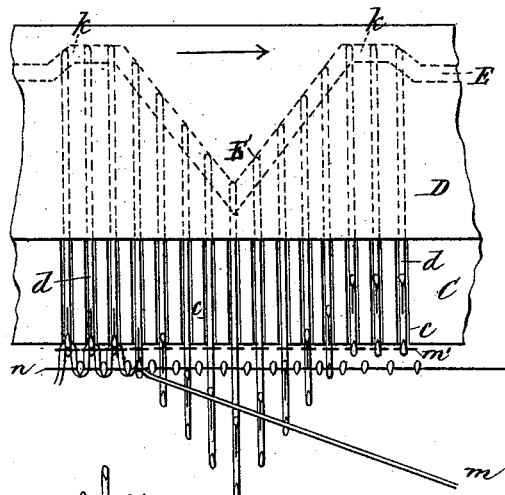


Fig: 4.

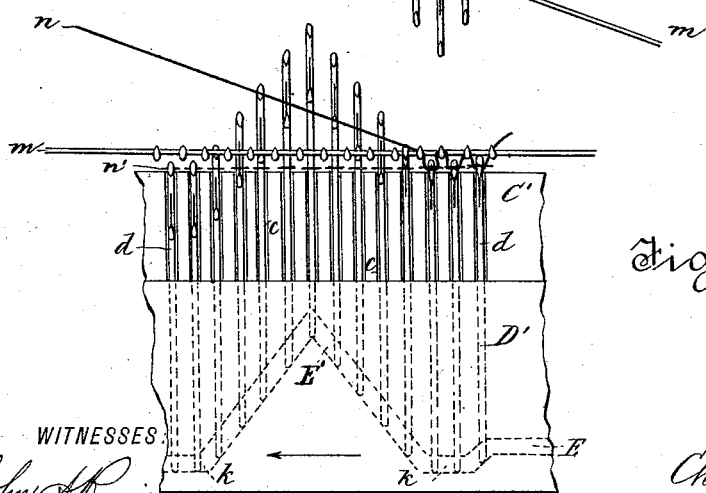


Fig: 5.

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UNITED STATES PATENT OFFICE.

CHARLES J. APPLETON, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO LUDWIG SUTRO, OF NEW YORK, N. Y.

KNITTED FABRIC.

SPECIFICATION forming part of Letters Patent No. 381,899, dated May 1, 1888.

Application filed July 16, 1887. Serial No. 241,445. (Specimens.)

To all whom it may concern:

Be it known that I, CHARLES J. APPLETON, a citizen of the United States, and a resident of the city of Elizabeth, county of Union, and State of New Jersey, have invented certain new and useful Improvements in Knitted Fabrics, of which the following is a specification.

My invention relates to that class of knitted fabrics which are known in the art as "flat fabrics," as contradistinguished from those which are knitted in circular or tubular form, and especially to that class which are knitted double or from two distinct threads, its object being to produce a fabric of this character, which shall be adapted for use as a braid or otherwise for ornamental and other purposes. The fabric which I have designed for this use, and which forms the subject of the present application, is characterized by being composed of two independent yarns, each of which is interlooped with itself and interlocked with the other in such a manner as to form a firm and homogeneous fabric, with the loops of one yarn lying wholly upon one face and the loops of the other yarn appearing wholly upon the other face thereof.

To enable others to understand and use my invention, I shall describe, briefly, the machinery which I prefer to employ for the manufacture of my improved fabric, and will then describe the method of making and the structure of said fabric. I would remark, however, at this time that this application for patent is directed only to the fabric itself. The machine for making it, while here described in so far as necessary to explain my invention, is the subject of a separate application in my name for Letters Patent of even date herewith.

Referring to the accompanying drawings, wherein the nature of my invention will more fully appear, Figure 1 is an isometric projection of a straight-knitting machine, upon which my improved fabric may be produced; Figs. 2 and 3, edge views of my improved fabric, showing the formation thereof and the manner in which the loops formed by the two yarns are interlocked, the first of these figures illustrating the loops after the cam-bars have moved to the right in Figs. 1 and 2, and the other showing the arrangement thereof after the said bars have moved to the left; and Figs. 4 and 5, dia-

grams illustrating the operation of the needles in the formation of the fabric, Fig. 4 showing such operation as the cam-bars are moving to the right in Figs. 1 and 2, and Fig. 5 said operation when moving toward the left therein. These two figures also show the relative arrangement of the V-shaped portions of the needle-actuating grooves in the cam-bars with respect to each other.

In all the figures like letters designate corresponding parts.

A A are brackets or standards, to which are secured the horizontal and vertical needle-bars C C'; and B is the main driving-shaft provided with the fast and loose pulleys *b b*, through which the various parts of the machine are operated.

c c are the grooves for the reception of the needles *d d*, which are fitted to the slide therein; and D D' are the cam-bars, by means of which such needles are operated, the same being connected by the arms *f f* and posts *g g*, and provided in their under side with the needle-actuating grooves E, which are constructed with the usual V-shaped portions E' E' and knockover depressions *k k*. These V-shaped portions, instead of being so disposed as to bring their apices in the same vertical lines, are arranged upon opposite sides thereof, as shown in dotted lines in Figs. 4 and 5, in order that the set of horizontal and the set of vertical needles may each form the yarn supplied to it into plain loops and interlock such loops with the loops of the other set, as will more fully hereinafter appear.

F F' are the carriers for delivering the yarn to the horizontal and vertical needles, respectively, the same being provided with the guide-eyes *o* and *l*, and H H are the take-up levers for taking up and controlling the slack of such yarn. These levers are each constructed with an orifice, *t*, in its end for engaging with the yarn, and each is caused to exert a strain thereon through the operation of the coiled spring H'.

I' are the latch-openers, (one only being shown,) by means of which the latches of the needles are thrown back as said needles are advanced in the operation of knitting.

D² is a rod for connecting the cam-bar D to the crank D³, secured to the upper end of the

vertical shaft D^4 , which in turn is supported in a stand or hanger, D^5 , and is actuated from the main driving-shaft B through appropriate gearing, so that as this shaft is rotated the 5 cam-bars and the other moving members of the machine will be actuated therefrom.

The parts as thus described are or may be of the form illustrated in the application for Letters Patent hereinbefore referred to, and 10 require no further description herein.

My improved fabric is shown in Figs. 2 and 3, and is composed of the two sets of loops m' and n' , which are interlocked, as shown at n^2 . These two sets of loops are each formed by 15 separately interlooping each of the yarns m and n in such a manner as to form the same into a plain fabric, and interlocking each set of loops to the other by carrying the yarn out of which its loops are formed around the loops 20 of the other set, forming thereby a double fabric, in which the two single fabrics are united, with the loops of one yarn appearing wholly upon one face and the loops of the other yarn appearing wholly upon the other face 25 thereof.

The manner of forming this fabric is as follows: Starting with the cam-bars at the left in Fig. 1, with proper loops upon the needles, and the yarns m and n threaded through the 30 appropriate guide-eyes o and l and orifices t , the movement of such cam bars to the right in said figure will cause the advancement and retraction of both sets of needles, and the consequent formation of a row of loops upon each 35 set thereof. These movements of the needles, instead of taking place simultaneously in the two sets, are so timed that during the movement of the cam-bars to the right the needles of the horizontal set are thrust forward and 40 retracted before the needles of the vertical set are similarly operated, the retracting movement of the horizontal needles occurring at the same time that the advancing movement of the vertical needles is effected. As a result of this, the yarn m , taken by the horizontal 45 needles during their advancing movement, is drawn around the shanks of the vertical needles as the former are retracted to draw the new loops through the old loops upon their 50 shanks, as shown more clearly to the left in Fig. 4. The advancing movement of the vertical needles, which takes place at this time, carries their latches above the yarn m , thus drawn around them, so that when such needles are retracted to draw the yarn n , taken 55 by them through the old loops n' upon their

shanks, the yarn m will be cast off upon the new loops thus formed, thereby interlocking the two rows of loops m' and n' together, as illustrated at n^2 in Fig. 2. The movement of 60 the cam-bars to the left reverses these operations, the vertical needles being advanced and retracted before the horizontal needles, and the yarn n , taken by them, being drawn around the shanks of the horizontal needles, as shown 65 at the right in Fig. 5, which yarn, as such horizontal needles are retracted, will be cast off upon the new loops formed by them, interlocking the two sets of loops together, as in their preceding operation, and so on, the advancing and retracting movements of the two 70 sets of needles successively forming rows of loops and interlocking them together, as shown in Figs. 3 and 4.

By thus employing two distinct yarns and 75 combining them as above described the yarn forming one side of the fabric never appears upon the other side, and I am enabled to employ a yarn of one material or color for one face thereof and a yarn of a different material 80 or color for the other face, thereby producing a fabric which is not only ornamental in appearance, but at the same time is well suited for use in many places where braid is ordinarily employed, as well as in various other 85 locations.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A fabric formed from two distinct yarns, 90 each of which is interlooped with itself and interlocked with the other by extending around such other at points intermediate adjacent loops of the same, substantially as described, whereby the loops composing one face thereof 95 never appear upon the other face, as set forth.

2. A double-faced fabric formed from two distinct yarns, each of which is interlooped with itself to form its respective side of the fabric, and is interlocked with the other by 100 extending around it at points intermediate adjacent loops of the same, substantially as described, whereby the loops composing one face thereof never appear upon the other face, as 105 set forth.

In testimony whereof I have hereunto set my hand this 5th day of July, 1887.

CHARLES J. APPLETON.

Witnesses:

THEODORE SUTRO,
ALBERT I. SIRE.