

No. 855,153.

PATENTED MAY 28, 1907.

J. ZIMMERMAN.
PILE FABRIC.

APPLICATION FILED MAY 5, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

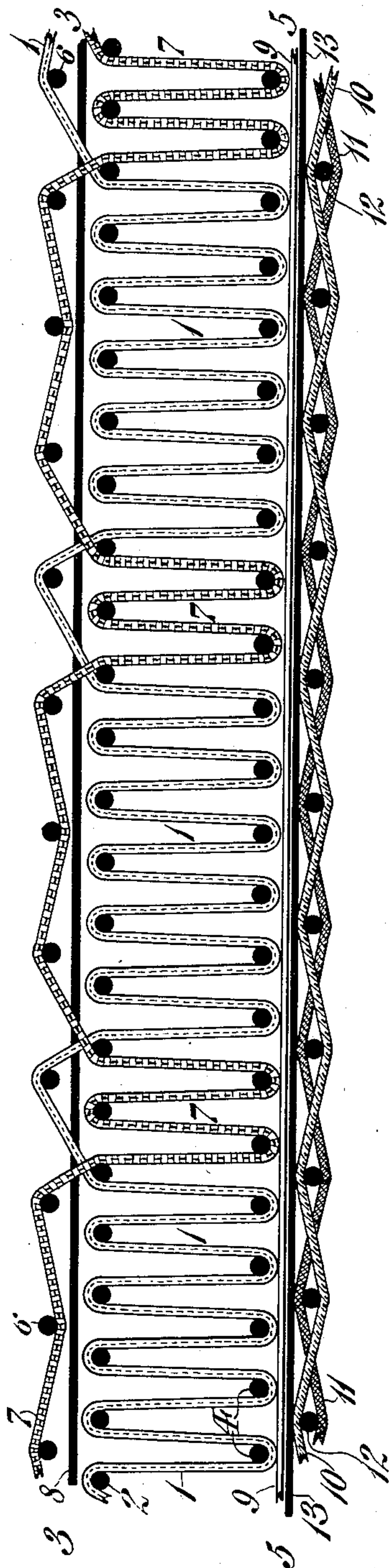
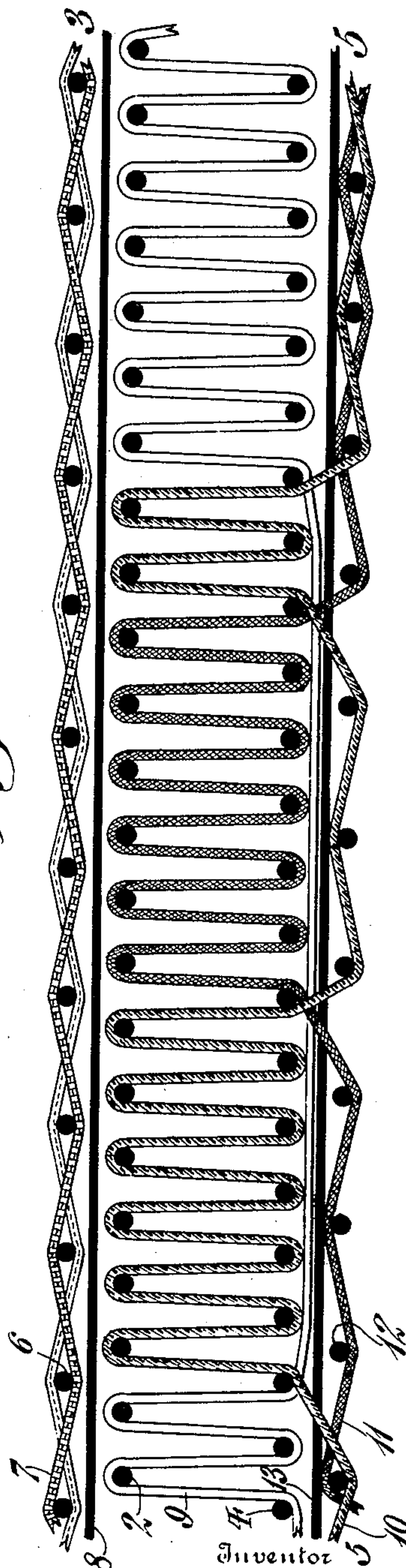


Fig. 2.



Witnesses

*L. Couville,
P. F. Nagle.*

John Zimmerman
By *Biedersheim & Fairbanks,*
Attorneys

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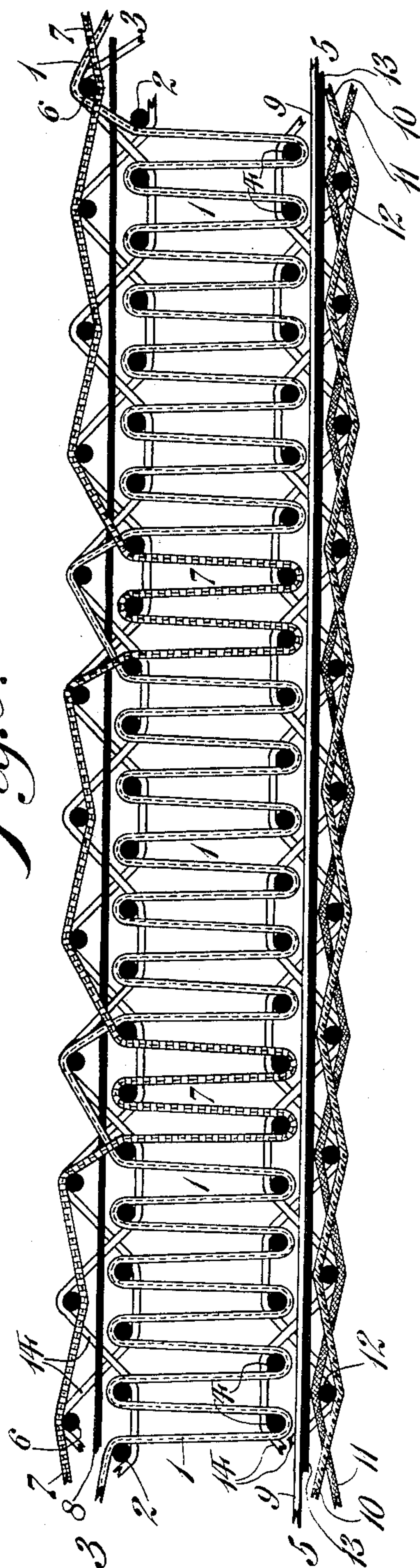
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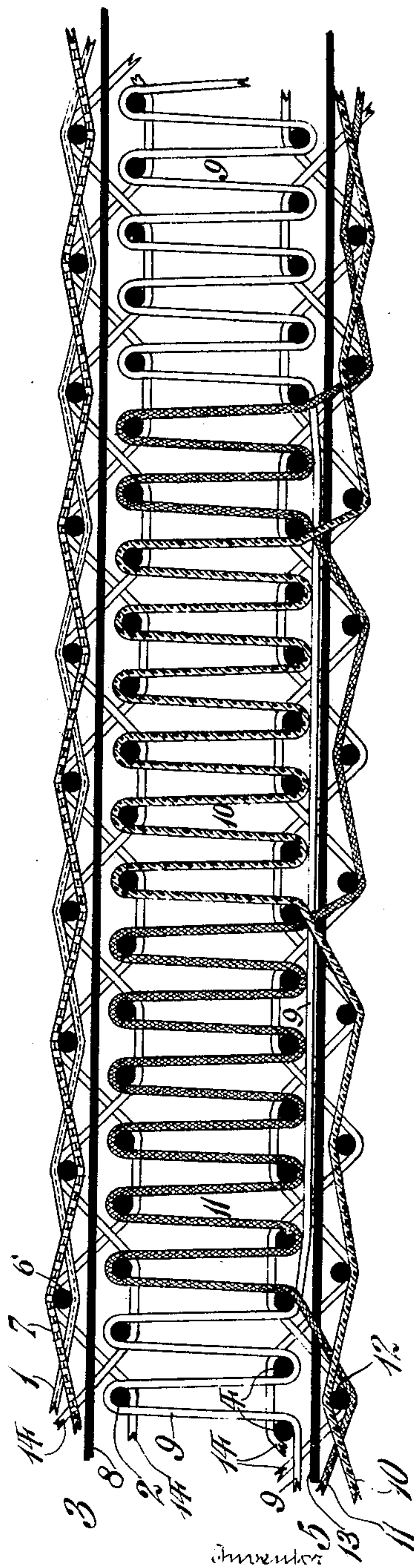
2 SHEETS—SHEET 2.

Fig. 3.



Witnesses
L. Douville,
P. F. Nagle

Fig. 4.



Inventor
John Zimmerman
By
Wiederheim & Fairbanks.
Attorneys

UNITED STATES PATENT OFFICE.

JOHN ZIMMERMAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
PHILADELPHIA TAPESTRY MILLS, A CORPORATION OF PENNSYLVANIA.

PILE FABRIC.

No. 855,153.

Specification of Letters Patent.

Patented May 28, 1907.

Application filed May 5, 1906. Serial No. 315,336.

To all whom it may concern:

Be it known that I, JOHN ZIMMERMAN, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Pile Fabric, of which the following is a specification.

In my prior patent No. 813,131, patented February 20, 1906, I have described and claimed a novel construction of a pile fabric in which the combined pile and binding warp thread is employed and in which the pile warp at stated intervals, while forming pile, passes around one of the wefts of the outer plane before it passes to the inner weft of the opposite plane.

My invention consists of a novel construction of woven pile fabric in which the combined pile and binding warp is employed in such a manner that when making pile it is passed around the inner weft only of the different cloths and is passed around the wefts of the outer plane only when a different pile warp is employed in forming the pile.

Figures 1 and 2 represent longitudinal sections of a pile fabric embodying my invention with the binding warps omitted for clearness of illustration. Figs. 3 and 4 represent longitudinal sections of the completed fabric as respectively shown incomplete in Figs. 1 and 2.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates a pile warp, which when used for making pile, is passed over the wefts 2 in the upper cloth 3 and under the weft 4 in the lower cloth 5. This operation may be repeated during any desired number of picks.

When the pile warp 1 is no longer employed in making pile it is passed over one of the wefts 6 in the outer plane and another pile warp as 7 is brought to the inner wefts and passes around the same in order to form the pile. It will of course be understood that these operations may be repeated during any desired number of picks and in Fig. 1, I have shown the pile warp 7 after it is employed for making pile, as being passed alternately over and under the weft 6 in the outer plane, it thus being seen that in each instance the warp when making pile is never employed as a binding warp and never passes

beyond the inner weft until another pile warp is employed and begins making pile, at which time the first mentioned pile warp is passed to the outer weft and serves as a binder warp and figuring warp, being returned, when desired, to make pile and passed around the inner wefts. When the pile warp 1 is not to be used as a pile warp for any number of picks it is passed alternately above and below the wefts 6, as seen in Figs. 2 and 4. It will, of course, be understood, when this operation is taking place with respect to the pile warp 1 or the warp 7 that other warps are being employed for making pile. When employed in this manner the warps 1 or 7 act as a figure and binder warp for the outer weft plane or the back of the cloths and adds to the artistic finish of the fabric. It will be seen further that by reason of the employment of the pile warp to make the pile only when so desired, in lieu of serving as a binder and figuring warp at the same time, the back of the fabric will show a pattern which is desirable.

8 designates a stuffer or body warp which lies between the wefts 2 and 6, in the upper cloth 3, and 13 designates the stuffer or body warp which lies between the wefts 4 and 12 in the lower cloth 5. The object of using the stuffer warp is to form two weft planes for the purpose of not only giving stability to the fabric but since the said stuffer warps in each of the upper and lower cloths pass in a straight line through the same in the finished article, it will prevent stretching, which might otherwise occur, since the other binding threads pass through the weft planes at an angle.

In Fig. 2 the pile warps 9, 10 and 11, when making pile, are passed over the wefts 2 in the upper cloth and under the wefts 4 in the lower cloth during any desired number of picks, but when any are not used for making pile they are passed alternately over and under the outer weft 12 and thus serve as a binding and figuring warp for the outer weft planes, the same as already described with respect to the warps 1 and 7.

It will be observed that the threads 1 and 7 are shown in Fig. 1 as being combined pile, binding and figuring warps passing over and under the weft threads 6 and extending through the fabric as piles in such a manner that when the fabric is cut their extremities

will form pile ends from threads 10 and 11, being there binding and figuring warps for outer wefts 12, while in Fig. 2, showing another section of the fabric, these warps 1 and 7 form binding and figuring warps, uniting the wefts of the outer plane, while the pile warps for both sides of the double pile fabric are in this case furnished from the opposite side by warp threads 10 and 11. The piles are thus woven from either side at will while the inner and outer planes of wefts are united by additional warp threads in groups of two and one, the relation borne by the number of wefts in the inner plane to the wefts in the outer plane. Thus portions of the pile fabric upon each side are or may be united as to their inner and outer planes of weft threads by this additional binding warp or series of binding warps alone or by both the binding warp and the combined pile, binding and figuring warp.

It is evident that, if desired, any of the warps 9, 10 and 11 may be retained between the wefts 4 and 12 for any desired number of picks, so that said warps will appear neither in the pile warp nor on the back of the fabric, as will be apparent with regard to the warp 9 in Figs. 1 and 3 and it is evident that when desired said warp 9 may be caused to answer both as a pile warp and as binding and figuring warp in a manner similar to that described in connection with the other pile warps herein referred to.

14 designates the binding warps which are employed to tie or bind the weft and warp together, said binding warps passing over two of the inner weft threads and one of the outer weft threads, whereby in each shed are two inner weft threads and one outer weft thread, the pile warp being passed around a single inner weft thread and the binding warp serving to draw the two inner weft threads together with the outer weft threads in conjunction with these inner weft threads, so that three weft threads are tightly bound together in each shed of the binding warp, the object of this construction being to pinch the pile warps, between the three wefts between each crossing of the binder warps, so that the pile when cut will be firmly bound in the back, preventing the pulling out. When the pile warps 10 and 11 are not to appear in the pile during several consecutive picks, said warps are passed alternately above and below the weft 12, as seen in Figs. 1 and 3.

The pile is cut in the usual way during the process of weaving or this may be done out of the loom with a machine specially constructed for this purpose, so that two distinct fabrics are produced when the cutting is effected.

It will now be apparent to those skilled in the art that I have in the present instance produced a novel and useful construction of

woven pile fabric which differs from my prior patent heretofore referred to in the manner in which the combined pile and binding warp is employed, said warp in my present construction making pile passing around the inner wefts 2 and 4 only and passing around the weft of the outer plane only when a different pile warp is employed in forming the pile, thus forming a figure at the back of the cloth.

It will be apparent that a great saving in material is brought about by the use of my present invention, since the pile warp when used in making pile simply passes around the inner weft threads of each cloth and does not pass around a weft thread of the outer cloth during the forming of the pile, as in my prior patent, and furthermore I am enabled to have the design produced on the back of the cloth.

It will be further apparent from the foregoing that I have produced a novel and useful construction of a pile fabric and while I have in the present instance shown and described the preferred embodiment thereof, it is to be understood that it is susceptible of modification in various particulars without departing from the spirit and scope of my invention or sacrificing any of its advantages.

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

1. In a double pile fabric, outer and inner weft planes in each fabric, and a combined pile, binding and figuring warp engaging only the inner row of wefts in each fabric when making pile.

2. In a double pile fabric, a plurality of rows of weft threads forming an upper and lower cloth in combination with a pile warp passing from one cloth to the other and engaging only each weft of the inner rows of wefts of the upper and lower cloth when forming the pile, and the outer rows of wefts upon one side only of one of the cloths to act as a binding and figuring warp.

3. In a double pile fabric, upper and lower weft planes, body warps between the wefts in said planes and pile and figuring warps serving both as figure warps and binding warps by engaging with the outer wefts of one plane when not making pile and engaging only the inner wefts of both planes when forming pile.

4. In a double pile fabric, a plurality of inner and outer planes of weft threads and a warp continuously binding the threads of an outer plane of wefts together when not making pile and engaging only the inner rows of wefts when making pile.

5. In a double pile fabric, a plurality of inner and outer planes of weft threads and a warp continuously binding the threads of an outer plane of wefts together when not making pile and engaging only the inner rows of

wefts when making pile and independent binding warps uniting the inner and outer weft threads.

5 6. In a double pile fabric, inner and outer planes of wefts and combined pile and binding warps each engaging only each weft of the inner rows of wefts to form a plurality of

double passages of pile, and acting as a binding and figuring warp when different warps are forming the pile.

JOHN ZIMMERMAN.

Witnesses:

JOHN T. McDADE,
ISAAC WASSERMAN.