

(Specimens.)

2 Sheets—Sheet 1.

T. B. DORNAN.
CARPET FABRIC.

No. 574,023.

Patented Dec. 29, 1896.

Fig. 2.

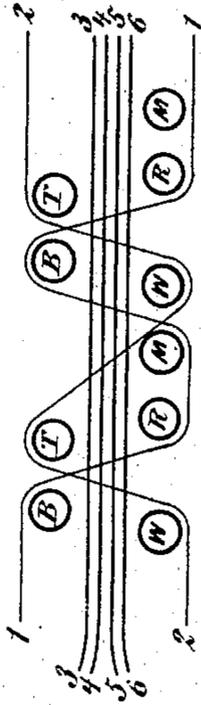


Fig. 4.

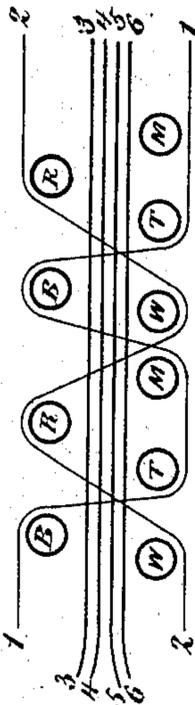


Fig. 6.

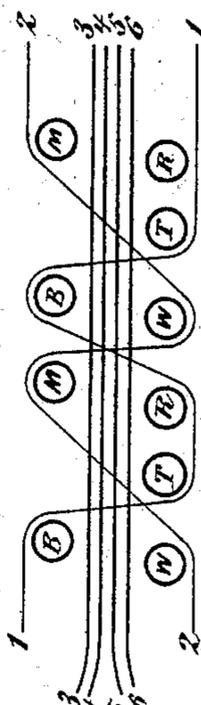


Fig. 1.

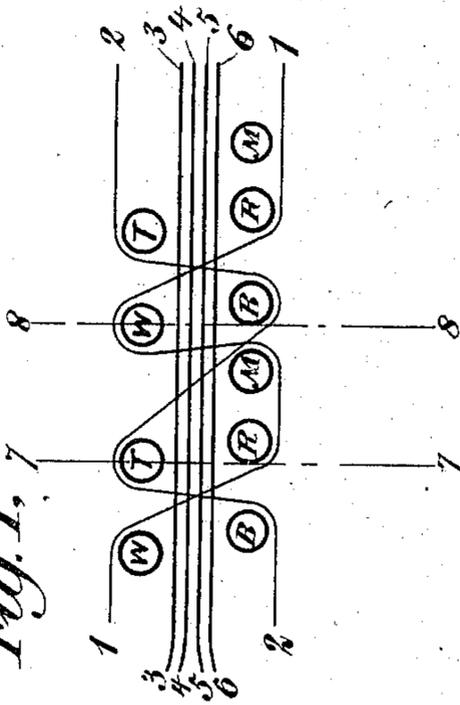


Fig. 3.

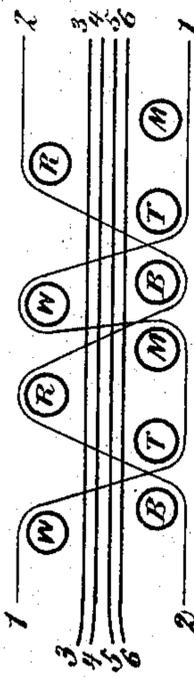
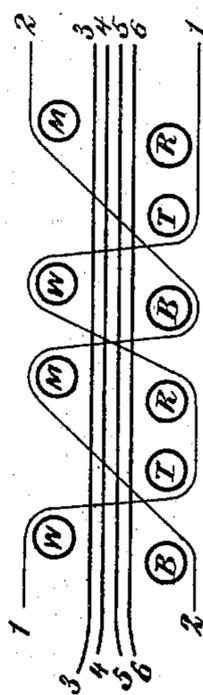


Fig. 5.



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Fig. 7.

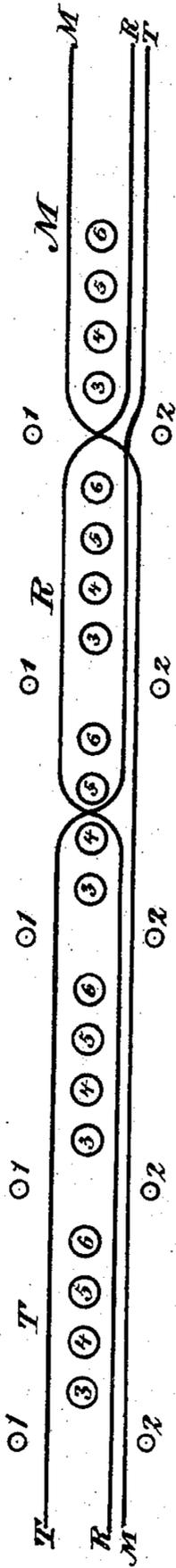


Fig. 8.

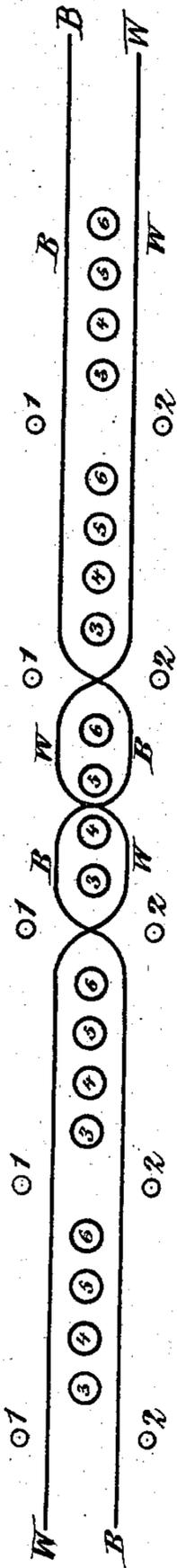
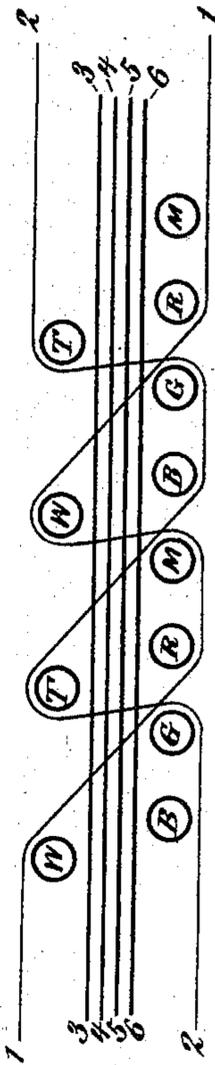


Fig. 9.



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UNITED STATES PATENT OFFICE.

THOMAS BENTON DORNAN, OF PHILADELPHIA, PENNSYLVANIA.

CARPET FABRIC.

SPECIFICATION forming part of Letters Patent No. 574,023, dated December 29, 1896.

Application filed September 10, 1896. Serial No. 605,391. (Specimens.)

To all whom it may concern:

Be it known that I, THOMAS BENTON DORNAN, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Carpet Fabrics, of which the following is a specification.

This invention relates to carpet fabrics of the class employing the same character of pattern-producing weft-threads, as an ingrain carpet fabric, and which may be woven upon an ordinary ingrain loom, but resembling in body and appearance the more expensive Brussels carpet.

My invention has for its objects the attainment of a large number of color effects in such a fabric without materially increasing the expense of the fabric and the production of a homogeneous fabric and a fabric having a uniform wearing-surface, and in which changes of color effect may take place at short intervals, and thus finely-divided patterns and patterns employing numerous colors may be employed and a strong and durable fabric may be produced.

According to my invention the stuffer-warp threads are arranged in one plane, this plane or layer of stuffer-warp threads intervening between two planes or layers of weft-threads forming the outer faces of the fabric, and a plurality of stuffer-warp threads intervenes between the binder-warp threads, so as to form a substantially flat stiffening or stuffer body concealed within the fabric, the stuffer-warp threads being usually of cheap, heavy, and stiff material. In each set of weft-threads there is a greater number in one face or plane than in the other face or plane, the face having the less number of weft-threads being the upper face of the fabric, and the additional weft-threads of the lower face being all capable of being brought separately to the upper face of the fabric, so that a large number of color and pattern effects are capable of production on the upper face of the fabric, and the fabric thus has a very handsome and acceptable upper face, which is highly desirable, while at the same time the lower face of the fabric, although not perhaps so clear and clean in its pattern and color effects, is sufficiently so to be capable of fulfilling the re-

quirements of the back of a double-faced fabric.

The accompanying drawings, forming part hereof, illustrate embodiments of my invention.

Figures 1 to 6, inclusive, are diagrammatic views illustrating sections taken longitudinally of a fabric and showing separately the several color effects attainable in such a fabric. Fig. 7 is a diagrammatic view illustrating a section taken transversely of the fabric, the left-hand portion being a section on the line 7 7, Fig. 1, but other positions of wefts being illustrated at the right-hand portion. Fig. 8 is a diagrammatic view illustrating a section taken transversely of the fabric, the left-hand portion being a section on the line 8 8, Fig. 1, but other positions of wefts being illustrated at the right-hand portion. Fig. 9 is a view similar to Fig. 1, but illustrating a modified construction of fabric.

The weft-threads are designated in Figs. 1 to 8, inclusive, by the letters W, B, T, R, and M, which may be taken as indicating, respectively, weft-threads of the colors white, black, tan, red, and Moresque. In Fig. 9 an additional weft-thread is shown in each set, designated G, and which may indicate a weft-thread of gray color. The warp-threads are numbered in the order of sequence in each set, being designated by the numbers 1 to 6, inclusive, the warp-threads numbered 1 and 2 being the binder-warp threads and the warp-threads numbered 3, 4, 5, and 6 being the stuffer-warp threads. The binder-warp threads are preferably of small diameter and some neutral color or color which will harmonize well with all the colors of the weft-threads. The stuffer-warp threads are preferably of larger diameter than the binder-warp threads and need not be dyed or colored, although I prefer to use warp-threads dyed or colored to substantially the same color as the binder-warps. These stuffer-warps are preferably of some stiff and cheap material, as jute or cotton.

The drawings are diagrammatic and show, approximately, where threads are in cross-section, the true positions of the threads; but the four stuffer-warps, where illustrated longitudinally, are shown as disposed one above the other, or out of their proper positions, to

indicate more clearly the number of threads employed, and the two weft-threads of the lower face (shown in Fig. 7) are illustrated in that figure as disposed one above the other, whereas their proper positions are horizontally side by side.

As will be evident from Figs. 7 and 8, the sequence of warp-threads is such that all the stuffer-warps 3, 4, 5, and 6 are arranged in groups of four with the binder-warps 1 and 2 in pairs intervening between these groups of stuffer-warps. The stuffer-warps are arranged all in one plane between the upper and lower face planes of weft-threads, and thus a substantially flat body of stuffer-threads is obtained, forming a uniform backing to the weft-threads and providing an even and smooth wearing-surface and insuring great durability.

The weft-threads are arranged with a greater number in the lower face or plane than in the upper face or plane, and in each set of weft-threads two of the weft-threads are in the upper face or plane and the remaining weft-threads in the lower face or plane. The binder-warp threads 1 and 2 are woven in invariable succession throughout the fabric, being reversed in position at the ends and in the middle of every set of weft-threads, or, as shown in Figs. 1 to 6, inclusive, with five weft-threads to a set, before the first shot of weft-threads, between the second and third shots, and after the fifth shot and before the first shot of the next set, and, as shown in Fig. 9, in the same manner except that the middle change of binder-warp threads, by reason of the even number, six, of the weft-threads, may occur and is shown as occurring exactly at the middle of a set, or between the third and fourth shots of weft-threads. Each change of position of the binder-warp threads binds down one weft-thread on the upper face of the fabric; but by reason of the greater number of weft-threads in the lower face every set of weft-threads contains two weft-threads in one shed on the lower face of the fabric. In the five-weft fabric, Figs. 1 to 8, inclusive, this occurs once in every set and single and double sheds alternate on the lower face throughout the fabric, and in the six-weft fabric, Fig. 9, this occurs twice in every set and every shed on the lower face is a double shed. Double sheds are usually objectionable in weaving; but with my improved fabric, probably by reason of the flat stuffer or backing surface, the weft-threads in the double sheds appear evenly on the surface side by side and the surface of the fabric is substantially as smooth and uniform as where single sheds are employed. In tying up a loom to weave my improved fabric I prefer to pass the stuffer-warps through the mails in pairs, and thereby am enabled to employ the ordinary arrangement of an ingrain-carpet loom. The stuffer-warps should be controlled by a Jacquard mechanism where a patterned fabric is to be produced; but the binder-warps may

be worked by lifter-boards or other devices operating or operated in invariable succession. With the stuffer-warps controlled in pairs I am enabled to make changes of pattern transversely of the fabric either in the middle or at the end of each set of stuffer-warps, thus producing finely-divided patterns, as illustrated in Fig. 7, where in the middle of the third set from the left, or between the warp-threads 4 and 5, the tan weft-thread T goes to the lower surface and the red weft-thread R rises to the upper surface, and between the right-hand set and that next adjacent the red weft R goes to the lower surface and the Moresque weft-thread M rises to the upper surface, and, as also illustrated in Fig. 8, where in the middle set of warp-threads changes in the positions of the weft-threads take place at both ends of the set and also between the warps 4 and 5. With a loom having tail-cords so arranged that each stuffer-warp could be controlled independently a still greater fineness of pattern could be produced, as changes could take place between any two adjacent stuffer-warps or at the ends of each set of stuffer-warps and at three intervening places in each set of stuffer-warps.

The upper surface of my improved fabric may contain any suitable pattern and will be perfectly clear and distinct, and any weft-thread may be brought to the upper surface. The lower surface will necessarily contain the weft-threads that do not appear on the upper surface, and as changes will occur at the same points in the upper and lower surfaces the pattern of the upper surface will be reproduced upon the lower surface, but in different colors. The additional weft-thread in each set on the lower surface in the five-weft fabric will modify the colors and in some combinations of color may slightly blur the pattern, but the lower face of the fabric will be acceptable as a face that may be used after the fabric has become worn or faded on the upper face. In the six-weft fabric the lower face will be acceptable but not as clear and distinct as in the five-weft fabric, and the six-weft fabric, although having a greater number of color effects, will be a more expensive fabric than the five-weft fabric. I therefore specifically claim the five-weft fabric herein.

In weaving my improved fabric the stuffer-warps will be lifted or depressed according to the desired position of the weft-thread at any point. For example, in the color effect white and tan, as illustrated in Fig. 1, the binder-warp 1 being up and binder-warp 2 being down, the stuffer-warps will be depressed for the first shot (white) and raised for the second shot, (black.) After this shot the binder-warps will be reversed, warp 1 depressed and warp 2 raised, and the stuffer-warps will be depressed. The tan weft will then be shot. Thereafter the stuffer-warps will be raised and the red and Moresque wefts shot successively without alteration of the warps. The

binder-warps will then be reversed, warp 2 depressed and warp 1 raised, and the former operations repeated. The necessary operations for producing the other color effects will be understood without further description.

It is evident that in the various applications of my invention many modifications will be made in the constructions above described and particularly shown, and that various combinations and colorings will be employed. I do not therefore limit my invention to the particular construction shown; but

What I claim, and desire to secure by Letters Patent, is—

1. A carpet fabric having binder-warp threads and stuffer-warp threads, and having weft-threads arranged in two planes, with the stuffer-warp threads in an intervening plane between the two weft-planes and forming a substantially flat stiffening or stuffer body, with a plurality of stuffer-warps between the pairs of binder-warps and with weft-threads passing from one weft-plane to the other at points between stuffer-warps and binder-warps and also at points between stuffer-warps only, and having the weft-threads arranged with a greater number in one weft-plane than in the other weft-plane, substantially as set forth.

2. A carpet fabric having warp-threads arranged in sets of six warp-threads each, two being binder-warp threads and four stuffer-warp threads, with binder-warps adjacent and stuffer-warps in groups of four, and having weft-threads arranged in two planes with a greater number of weft-threads in one weft-plane than in the other weft-plane, and with the stuffer-warps in an intermediate plane between the weft-planes and forming a substantially flat stiffening or stuffer body, substantially as set forth.

3. A carpet fabric having warp-threads arranged in sets of six warp-threads each, two being binder-warp threads and four stuffer-warp threads, with binder-warps adjacent and stuffer-warps in groups of four, and having weft-threads arranged in two planes, the weft-threads in one weft-plane being arranged one in each shed and the other weft-plane containing weft-threads arranged two in a shed, with the stuffer-warps in an intermediate plane between the weft-planes and forming a substantially flat stiffening or stuffer body, and with weft-threads passing from one weft-plane to the other at points between stuffer-warps and binder-warps and also at points between stuffer-warps only, substantially as set forth.

4. A carpet fabric having warp-threads arranged in sets of six warp-threads each, two being binder-warp threads and four stuffer-warp threads, with binder-warps adjacent and stuffer-warps in groups of four, and having weft-threads arranged in two planes, with the stuffer-warps in an intermediate plane between the weft-planes and forming a substantially flat stiffening or stuffer body, the weft-threads being in sets of five weft-threads each, two in one weft-plane in separate sheds and three in the other weft-plane, one weft in one shed and two wefts in another shed, with weft-threads passing from one weft-plane to the other at points between stuffer-warps and binder-warps and also at points between stuffer-warps only, substantially as set forth.

Signed at Philadelphia, in the county of Philadelphia and State of Pennsylvania, this 7th day of September, A. D. 1896.

THOMAS BENTON DORNAN.

Witnesses:

PAUL C. SCHWEMMER,
W. O. HUMPHREYS.