UNITED STATES PATENT OFFICE.

FREDERICK W. READ, OF BRIDGEPORT, CONNECTICUT, AND HARTLEY KNIGHT, OF PROVIDENCE, RHODE ISLAND, ASSIGNORS TO THE READ CARPET COMPANY, OF BRIDGEPORT, CONNECTICUT.

METHOD OF PRODUCING DESIGN AND COLOR EFFECTS IN INGRAIN CARPETS.

SPECIFICATION forming part of Letters Patent No. 360,482, dated April 5, 1887.

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To all whom it may concern:

Be it known that we, FREDERICK W. READ, of Bridgeport, in the county of Fairfield and State of Connecticut, and HARTLEY KNIGHT, of Providence, in the county of Providence and State of Rhode Island, have invented a certain new and useful Improvement in the Method of Producing Design and Color Effects in Ingrain Carpets and the Product Thereof; and we hereby declare that the following is a full, clear, and exact description of the same.

The invention relates to ingrain carpets; and it consists of the improved method and product hereinafter described and claimed.

Two-ply and three-ply carpets being fabrics substantially alike, so far as concerns our invention, we will describe it specifically as applied to two-ply carpets.

Two-ply carpets are, as their name implies, made up of two separate and distinct fabrics, each fabric or ply having filling-threads, which are variable in number and color and are shot across the width of the carpet, and warp-threads, which are arranged half of them on one journal of the loom employed for weaving the carpet and half on another, the alternate up and down movements of the two journals under the control of the Jacquard mechanism, changing the shed after each shot of filling and so accomplishing the weaving. Thus in two-ply carpets there are four journals of warp-threads—that is, the warp-threads are arranged on four journals, of which two control the warp to weave the ground of the carpet and two control the warp to weave the figure, and are ordinarily, respectively, called "ground-journals" and "figure-journals." These two plies or fabrics are, by the operation of the Jacquard mechanism in producing the pattern, interwoven or ingrained, the one with the other, whence the name two-ply ingrain carpets. Ordinarily one of these warps is called the "figure-warp" and the other the "ground-warp," according as one belongs to the ply which chiefly forms the figure, and the other to the ply which chiefly forms the ground, as stated.

In this compound fabric the warp-threads are light in weight and the filling-threads are heavy, the filling-threads constituting the bulk of the body of the fabric; and the color effects and design effects on the face of the carpet are chiefly produced by the filling-threads, which are by the operation of the warp-threads (actuated by the Jacquard mechanism) throw up or down in the compound fabric, so that they appear on the face of the carpet or do not appear on the face of the carpet, as the case may be, with the result of producing a pattern. The purpose of the warp-threads heretofore has been by the operation of the Jacquard mechanism to throw the filling-threads up or down in the compound fabric, and thus at once weave a fabric and produce the pattern.

The present invention has reference to the use of the warp-threads for the additional purpose of directly modifying, shading, toning down, or otherwise changing the main design and color effects produced by the woven filling-thread. These warp-threads, being the threads which "weave" the fabric, do not appear on the face of the fabric for a greater distance than the thickness of one shot of filling-thread, disappearing from the face of the fabric down into the body of the fabric on each side of the shot of filling that they have woven in and reappearing again farther on. If such weaving-in warp-thread is colored, the effect upon a differently-colored filling-thread that it weaves in is as of a dot or very small bar of color on a mass or body of color; and if a number of adjacent warp-threads in the same ply are all colored alike, as, say, sixteen adjacent warp-threads of the figure-ply, (which would be the warp-threads of about an inch in width of the completed fabric,) the grouping of the dots of that color along the face of the portion of the fabric woven by those warp-threads would produce a marked toning or softening effect upon the general design and mass colors.

In the present invention we employ colored threads for the warp-threads of two-ply ingrain carpets of different colors from the filling to be woven in by such warp-threads, and we so arrange such colored warp-threads of one ply as that the several adjacent threads are of the same color, and the warp as a whole, therefore, presents the appearance of a series of bands or zones of solid color running the length of the warp, such bands or zones being of the width of half an inch, more or less, as desired, and preferably varying with the general size of the main figures of the design (produced by the filling threads) which it is desired to tone or shade, the bands being preferably of such narrowness that several of them will be required to weave the width of such figures of the main design.

The process of weaving the carpet will throw up upon the face of the goods these dots of color where the warp-threads show, and the arrangement in solid-color, bands described will cause such dots of color by their grouping, to have an appreciable toning effect in corresponding bands on the face of the carpet, and by the selection of suitable colors for adjacent bands of the warp, as, for instance, the selection of four shades of red, from dark red to light red, for four adjacent bands of the warp, a general shading effect may be produced on large figures of the design heretofore not obtained or obtainable in two-ply ingrain carpets, and similar to the color effects produced in Brussels and other expensive carpet fabrics.

We ordinarily employ our narrow bands of color in only one of the warps of the two-ply ingrain carpet, and preferably in the figure-warp, leaving the grounds plain and unshaded; but both warps, if desired, may be constituted, as we have described, of colored threads arranged in a series of narrow color-bands, or either warp may be so constituted.

We do not limit ourselves to bands of any particular width, so long as a series of adjacent bands are employed; but we prefer to employ bands of such a width, with respect to the general width of the figures of the main design, that several bands of color of the warp shall cross each of such figures, the shading being more gradual, and so more perfect, the narrower the bands are; but the bands must be wide enough so that the assembled dots of the same color appearing along that band on the face of the fabric shall produce an appreciable toning effect, due to their grouping.

In practicing our invention as applied to two-ply carpets, we build up, say, the figure-warp with colored threads, so arranged beside each other clear across the width of the warp as to produce parallel bands of solid color, and the threads of this warp going alternately to the two journals which control the warp, each journal when raised will show a warp of half the number of threads, but having the same arrangement of the threads in bands of solid color as the full original warp. The ground-warp in such case we would preferably leave without the arrangement in bands of color, and so each journal of that warp if raised would show a warp of thread having no bands of color, but all the threads similarly colored or tinted. In this way the grounds will appear plain, but upon the figures would appear various toning and shading effects at will, that add largely to the beauty of the fabric and increase its value. Our invention enables us to attain a large range of color effects never before attainable in that fabric—to wit, in two-ply and three-ply ingrain carpeting—and produces a fabric of greater value and beauty, and a fabric which, while only a two-ply or a three-ply ingrain, exhibits many of the peculiar design and color effects heretofore attainable only in more complicated and more expensive fabrics.

We do not limit ourselves to the application of the invention to two-ply carpets, for it may be in a precisely similar way applied to three-ply carpets, one or more of the warps being arranged in bands of solid color, as described.

We do not claim, broadly, the use of colored warps, nor do we claim the use of warps that are of one solid color across the width of the goods, nor the use of warps for the purpose and with the effect of forming the whole or any essential part of the main design or coloring.

What we claim as new, and desire to secure by Letters Patent, is—

1. The method of producing improved design and color effects in ingrain carpets, which consists in producing the main design and color effects by filling-threads and weaving such filling-threads by means of warps, one or more of which is made up of colored threads arranged in groups or narrow bands of solid color, whereby the main design and color effects are toned and shaded, substantially as described.

2. As a new article of manufacture, ingrain carpeting figured and colored by filling-threads, such figuring and coloring being toned and shaded by colored warp-threads arranged in one or more warps in groups or narrow bands of solid color, substantially as described.

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