

(Specimens.)

3 Sheets—Sheet 1.

H. HARDWICK.
INGRAIN CARPET FABRIC.

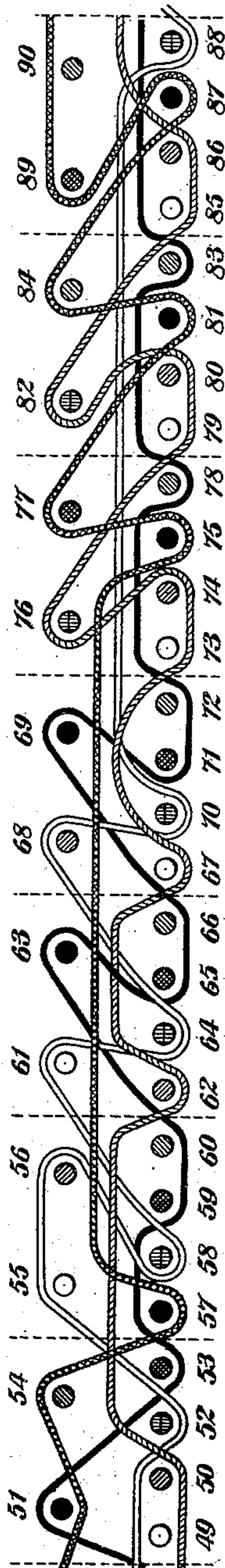
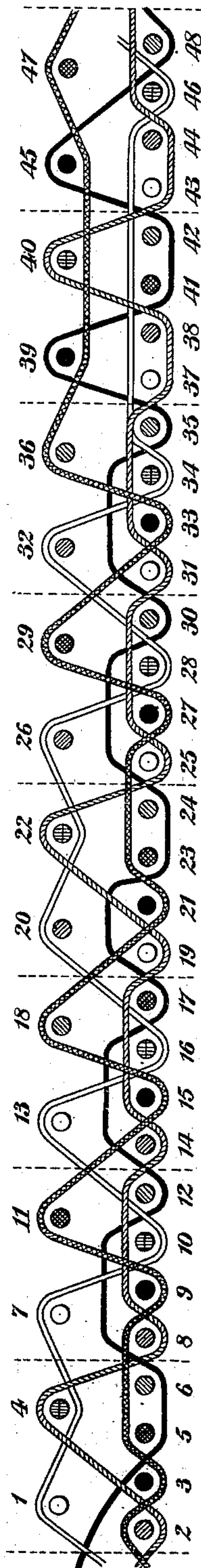
No. 505,788.

Patented Sept. 26, 1893.

Key Chart for Wefts.

○ White ● Black ● Orange ● Green ● Blue ● Red

Fig. 1



Key Chart for Warps.

White
Black
Blue
Red

Witnesses
C. E. Ashley
S. J. Macquack.

Inventor
Harry Hardwick.
By his Attorneys
Mitter & Kempner

(Specimens.)

3 Sheets—Sheet 2.

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Key Chart for Wefts.



White Black Orange Green Blue Red Pearl Slate Pink Olive

Fig. 2,

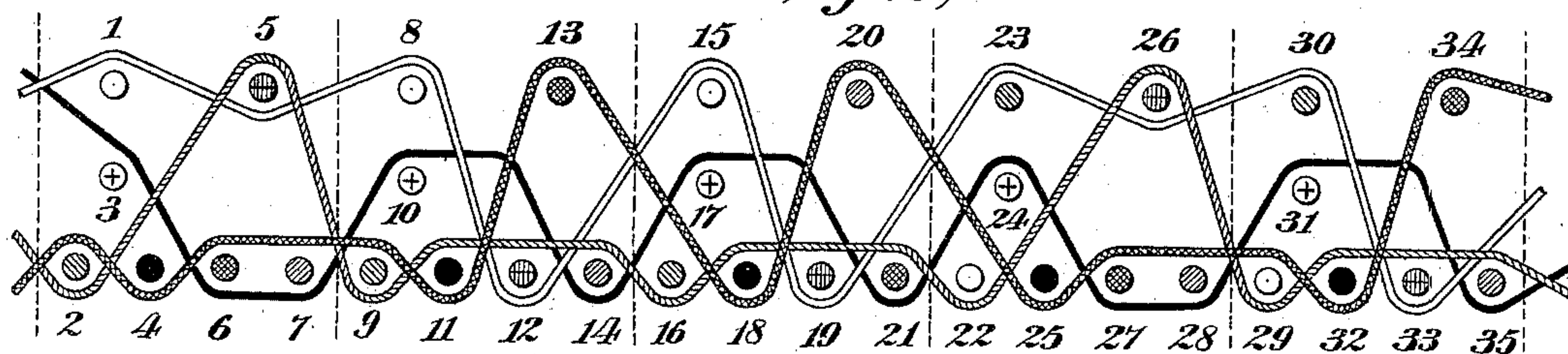


Fig. 3,

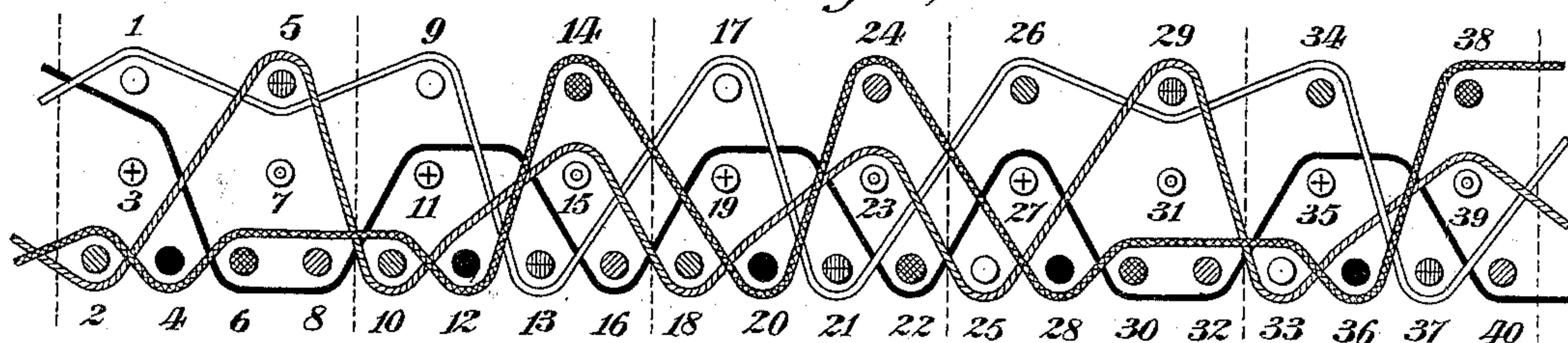


Fig. 4,

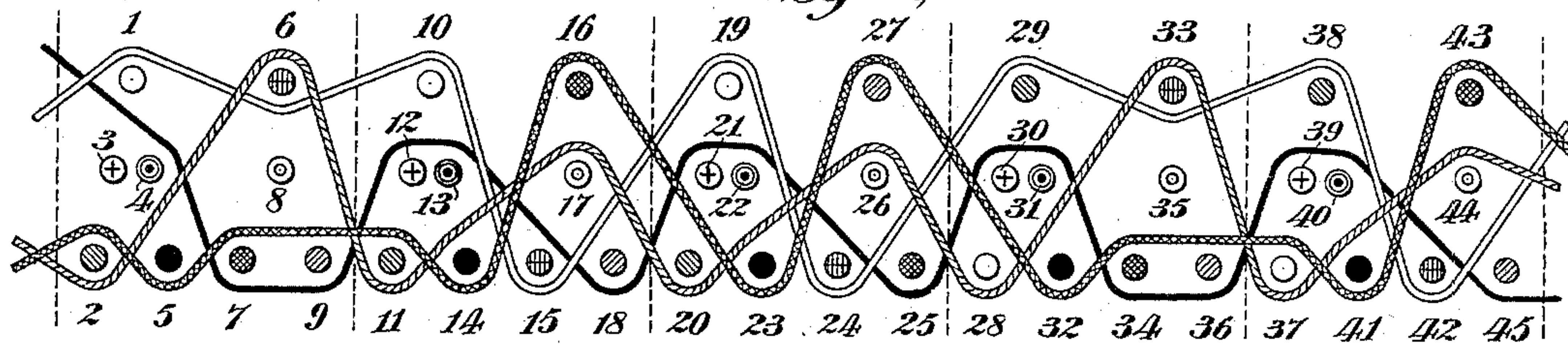
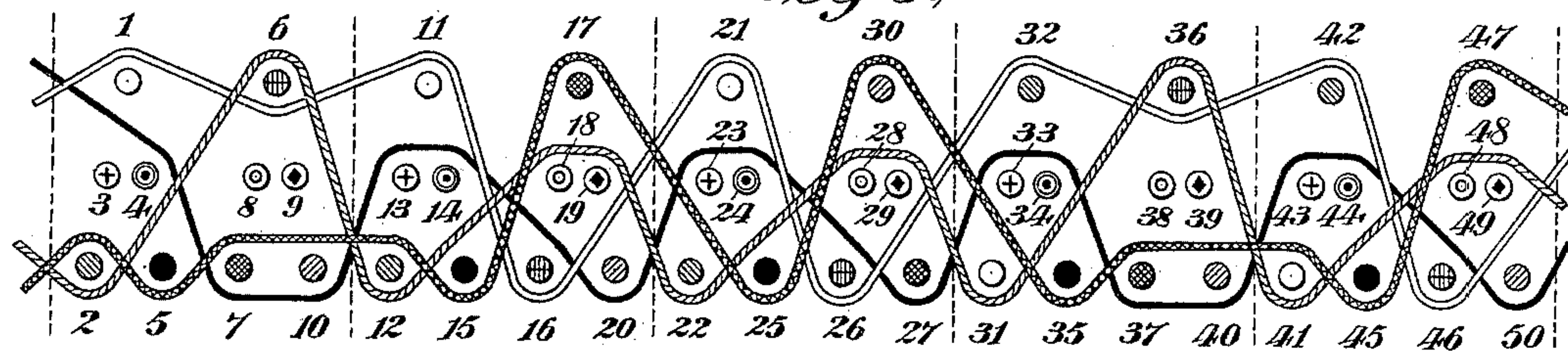
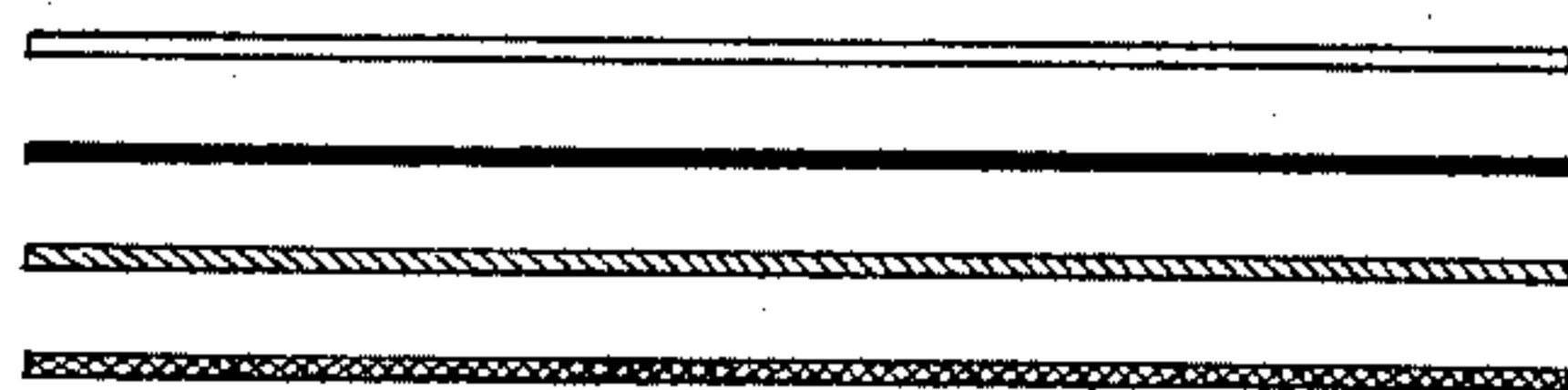


Fig. 5,



Key Chart for Warps.

White
Black
Blue
Red



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(Specimens.)

3 Sheets—Sheet 3.

H. HARDWICK.
INGRAIN CARPET FABRIC.

No. 505,788.

Patented Sept. 26, 1893.

Key Chart for Wefts.

○ ● ● ● ● ●
White Black Orange Green Blue Red

Fig. 6.

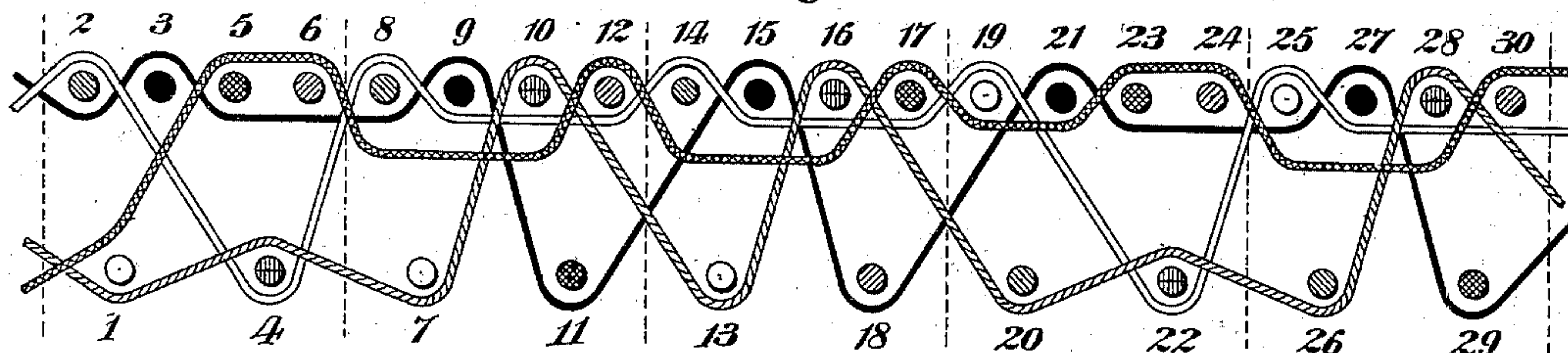
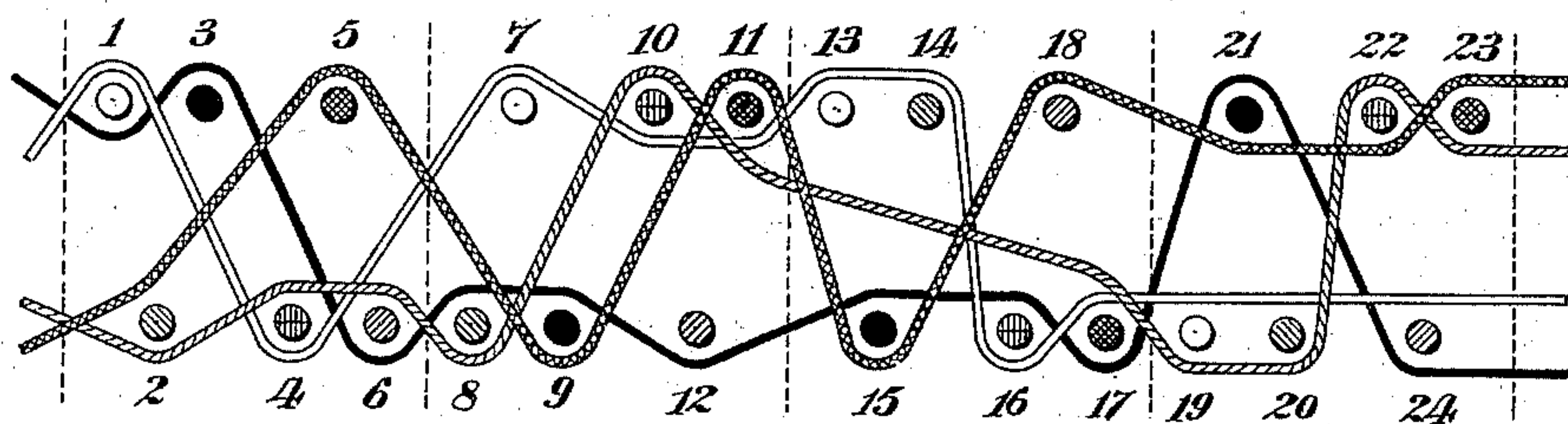


Fig. 7.



Key Chart for Warps.

White _____
Black _____
Blue _____
Red _____

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UNITED STATES PATENT OFFICE.

HARRY HARDWICK, OF THOMPSONVILLE, CONNECTICUT.

INGRAIN CARPET FABRIC.

SPECIFICATION forming part of Letters Patent No. 505,788, dated September 26, 1893.

Application filed May 21, 1891. Serial No. 393,555. (Specimens.)

To all whom it may concern:

Be it known that I, HARRY HARDWICK, a citizen of the United States, residing at Thompsonville, in the county of Hartford and State of Connecticut, have invented a certain new and useful Improvement in Ingrain Carpet Fabrics, which improvement is fully set forth in the following specification and accompanying drawings, which form a part hereof.

The invention relates to ingrain carpet fabrics and it has for its object to increase the range of design and color effects attainable on the face and back of such a carpet and at the same time to retain much of the economy and the close woven structure of two-ply ingrain carpets, associated, if desired, with the greater thickness of three ply ingrain carpets.

Three-ply ingrain carpets employ weft threads in sets of six weft threads in a set and employ warp threads in sets of six warp threads in a set and they interweave two of the weft threads of a set with two of the warp threads of a set to form one web or ply, two others of the weft threads with two others of the warp threads to form another distinct web or ply, and the remaining two weft threads of the set with the remaining two warp threads of the set to form a third distinct web or ply, which three webs or plies are maintained distinct and separable throughout the fabric although they continually cross and recross each other or are ingrained with each other to form the pattern and color effects called for on the face of the compound fabric. Accordingly in this fabric there are at every part of it three distinct interweavings of warp and weft threads forming in fact three distinct single-ply fabrics, one forming the upper web or face, one forming the under web or face and one forming a center web. The latter web or ply is just as much a woven fabric in and of itself as either of the former and in that interweaving it consumes two of the six warp threads.

Two-ply ingrain carpets employ weft threads in sets of four weft threads in a set and warp threads in sets of four warp threads

in a set, and they interweave two of the weft threads of a set with two of the warp threads of a set to form one web or ply and the remaining two weft threads of the set are interwoven with the remaining two warp threads to form a second web or ply, the one web forming one face and the other web forming the other face and the two webs crossing and recrossing or ingraining to produce the pattern and color effects on the face. In this fabric the weft threads are bound down more frequently in a given width of fabric than in three ply carpets and the carpet as a whole is more closely knit and more economical but the range of possible design and color effects is limited. Inventions have been made in loom mechanisms, in processes of weaving, and in fabrics intended to add to the capacity of two-ply ingrain fabrics in this direction, but the fabrics have remained essentially two-ply fabrics with two distinct and separable webs or plies running through them.

My invention is embodied in a fabric in which the warp threads are arranged in sets of four and the weft threads in sets of six or more and two or more of the weft threads of a set are interwoven with the warp threads to form one face of the fabric and two or more of the remaining weft threads of the set are interwoven with the warp threads to form the other face of the fabric, and the two faces are knit together by the warp or weft threads to form a solid and homogeneous fabric.

In my improved fabric I attain many of the distinctive advantages of each of these old fabrics and at the same time avoid many of the disadvantages peculiar to them respectively.

The accompanying drawings illustrate diagrammatically the interweaving of the threads in pieces of fabric embodying my invention, the fabrics being supposed to be cut lengthwise, to wit, parallel with the warp threads.

Figure 1 shows my invention in one of its simplest forms, employing weft threads in sets of six. Fig. 2 shows a fabric containing weft threads in sets of seven, Fig. 3 a fabric containing weft threads in sets of eight, Fig. 4 in sets of nine, and Fig. 5 in sets of ten.

Fig. 6 shows a fabric containing the weft threads in sets of six, four in the upper face and two in the lower face. Fig. 7 shows a fabric with the weft threads in sets of six, three in the upper face and three in the lower face.

In my improved fabric I employ figuring warp threads and figuring weft threads and I employ the warp threads in sets of four in a set, departing from the three ply ingrain fabric in that respect, and I employ the weft threads in sets of six or more in a set departing from the two-ply ingrain fabric in that respect.

Fig. 1 of the drawings represents a fabric in which the weft threads are arranged in sets of six in a set, but I have obtained satisfactory results with the weft threads arranged in sets of seven, eight, nine and ten in a set as shown in Figs. 2, 3, 4 and 5, respectively, always, however, maintaining the warp thread arrangement of four warp threads in a set.

Referring to the particular fabric illustrated in Fig. 1, the weft threads of the set may be white, orange, black, blue, red and green, as indicated in the key chart for wefts, the warp threads being white, black, blue and red, as indicated in the key chart for warps. It will therefore be seen that the red warp binds the red and green wefts in the face ply and the black weft in the back ply, the blue warp binding the white and orange wefts in the back ply and the blue weft in the face ply, the white warp binding the white and orange wefts in the face ply and the blue weft in the back ply, and the black warp binding the red and green wefts in the back ply and the black weft in the face ply.

In Figs. 2 to 5 inclusive the same arrangement of warp threads is shown, and the additional weft threads are shown at the point of section as buried within the fabric. It is of course evident that any wefts may be brought to either surface or buried within the fabric at the will of the weaver, according to the design required.

My present invention is not limited to the particular warping or method of interweaving the warp threads shown in the drawings, nor to the particular arrangement of the weft threads there shown, as these may be greatly varied without departing from my invention, so long as two or more of the weft threads of a set are interwoven with the warp threads to form one face of the fabric and two or more of the balance of the weft threads of the set are interwoven with the warp threads to form the other face of the fabric, and so long as the two faces are knit together by the warp or weft threads to form a solid and homogeneous fabric. Two of the weft threads of a set may be interwoven with the warp threads to form the face and four to form the back as shown in Fig. 1 or the reverse arrangement may be employed, as shown in Fig. 6 or three of the weft threads may be interwoven with

the warp threads for each face, as shown in Fig. 7 or one or more of the weft threads may not be interwoven with the warp threads at all but lie or float between the face and back webs in the center of the fabric as do the wefts numbered 7 and 31 in Fig. 3, the wefts numbered 8 and 35 in Fig. 4, and the wefts numbered 8, 9, 38, and 39 in Fig. 5.

In the diagrams the successive sets of threads are separated by dotted lines but it should be understood that the arrangement of threads in any set may be repeated in the pattern as often as desired; and my improved weave may be used in a portion or portions only of a piece of fabric if desired. It has not been deemed necessary in this specification to give a detailed description of the successive changes in the operation of the loom involved in the production of a fabric such as that described herein. The mechanism must be such as to operate the warp threads in the way desired to produce the fabric described and suitable forms of such mechanism will be evident on an understanding of the fabric.

My improvement secures a close woven single ply web or fabric for each face or exposed surface of the goods, and a solid and homogeneous structure as a whole, and has greater color and design possibilities than either two-ply or three-ply carpets.

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

1. An ingrain carpet fabric consisting of figuring warp threads and figuring weft threads, the warp threads being arranged in sets of four in a set and the weft threads being arranged in sets of six or more in a set, two or more of the weft threads of a set at one side of the fabric being interwoven with the warp threads to form one face of the fabric, and two or more of the remaining weft threads of the set at the other side of the fabric being interwoven with the warp threads to form the other face of the fabric, the two faces being knit together into a solid and homogeneous fabric, substantially as set forth.

2. An ingrain carpet fabric composed of warp threads and figuring weft threads, the warp threads being in sets of four warp threads each, and the weft threads being in sets of six weft threads each, the upper and lower faces of the fabric being bound together by the warp threads into a substantially solid and homogeneous fabric, all substantially as set forth.

3. An ingrain carpet fabric composed of warp threads and figuring weft threads and having two weft planes and having the weft threads arranged in sets of six weft threads each, one plane of the weft threads containing two weft threads of a set and the other plane containing the remaining four weft threads thereof, all substantially as set forth.

4. An ingrain carpet fabric composed of warp threads and figuring weft threads, and

having two weft planes, the warp threads being in sets of four warp threads each and the weft threads being in sets of six weft threads each, one plane of the weft threads containing two weft threads of a set and the other plane containing the remaining four weft threads thereof, and each of the warp threads

binding one weft thread in one plane and two weft threads in the other plane, all substantially as specified.

HARRY HARDWICK.

Witnesses:

WILLIS GOWDY,
H. L. VIETTS.