

(Specimens.)

I. McCALLUM.
WOVEN FABRIC.

No. 453,288.

Patented June 2, 1891.

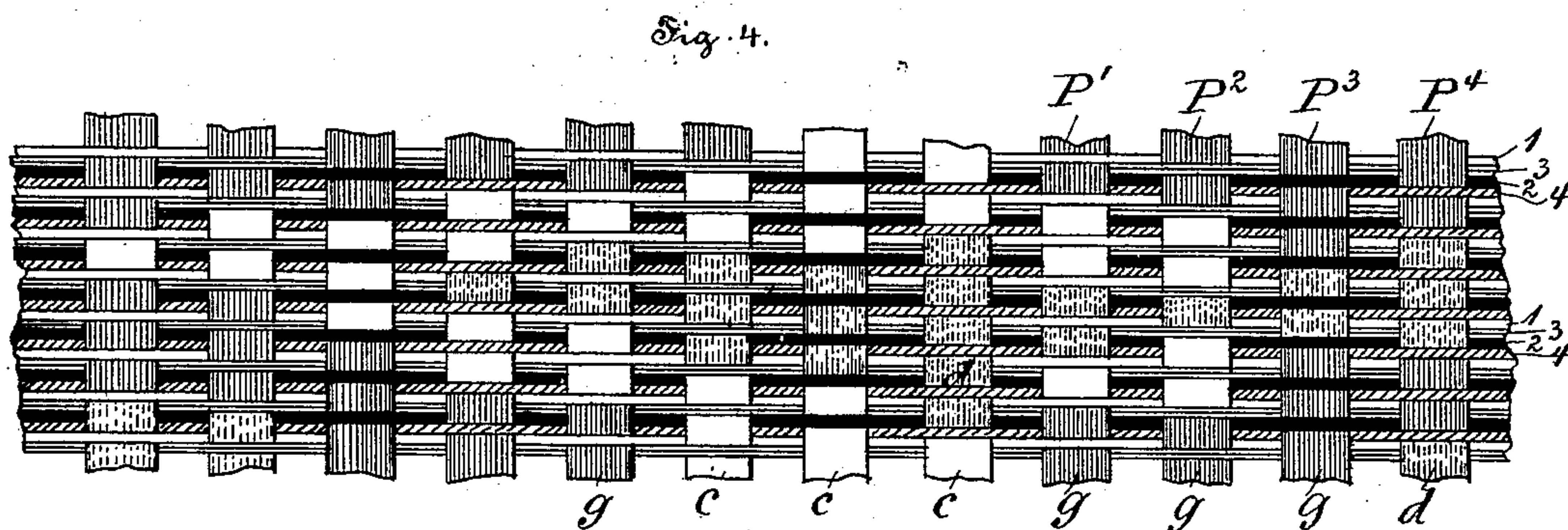
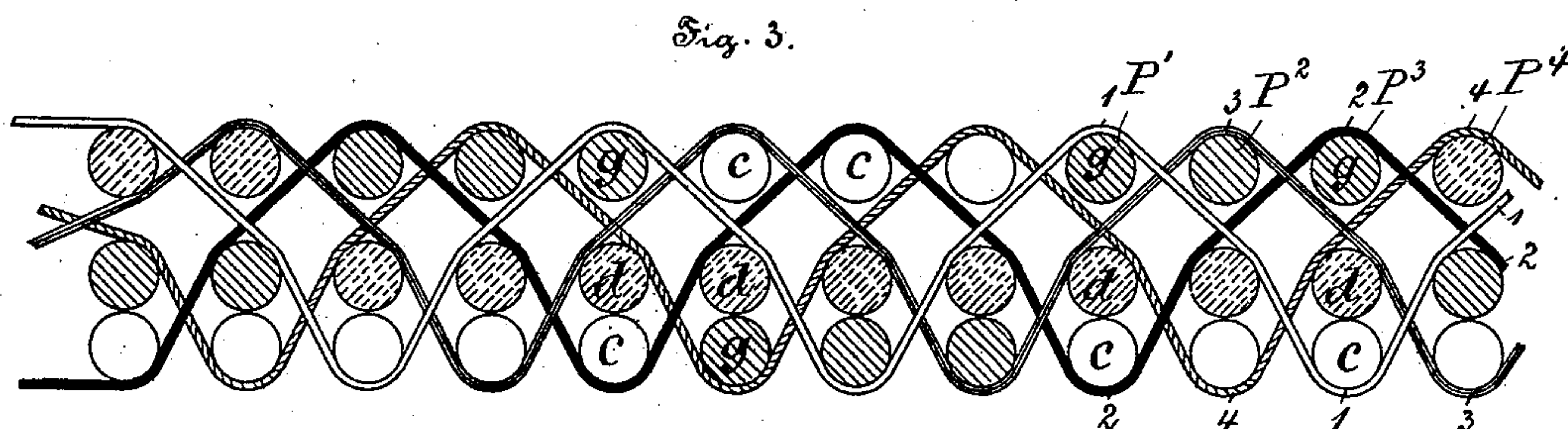
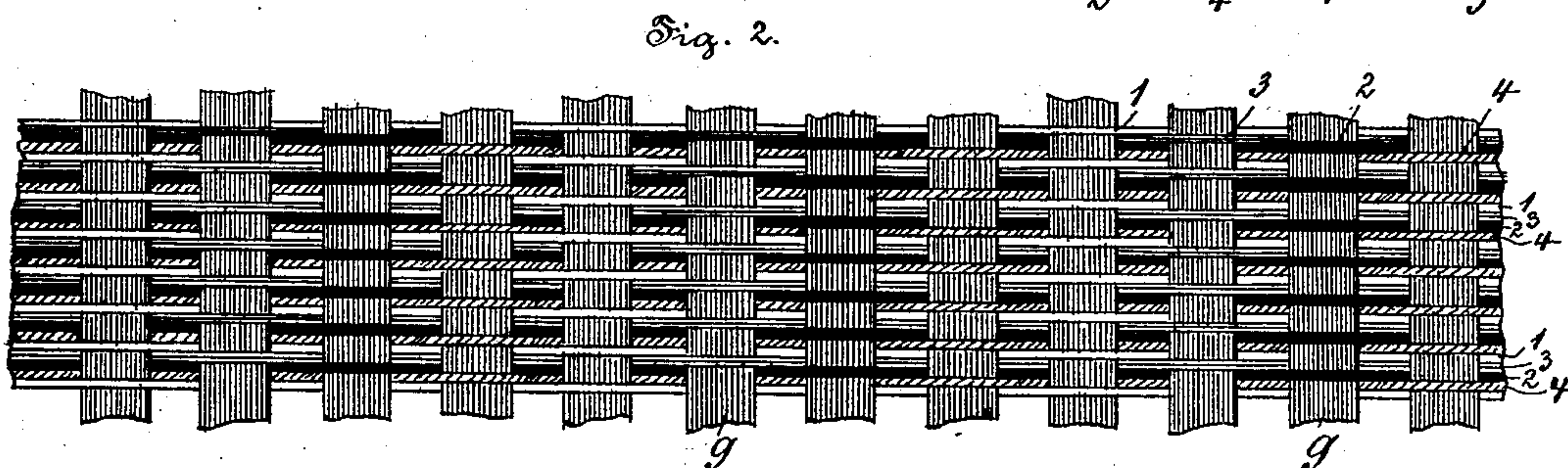
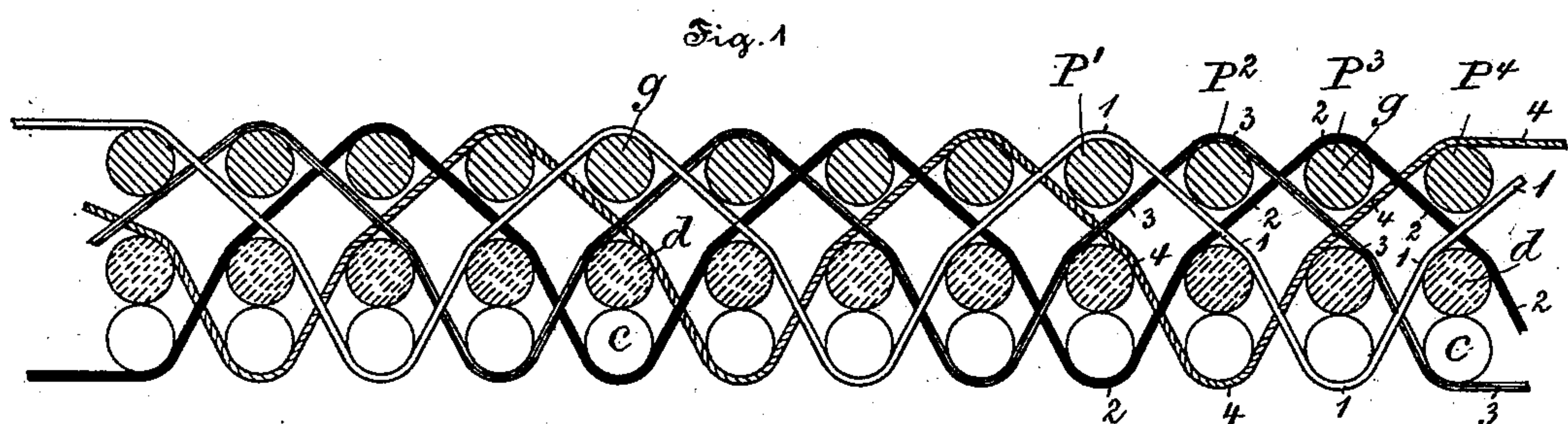





Fig. 5
green 
drab 
coffee 

Witnesses:
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UNITED STATES PATENT OFFICE.

IRVING McCALLUM, OF PHILADELPHIA, PENNSYLVANIA.

WOVEN FABRIC.

SPECIFICATION forming part of Letters Patent No. 453,288, dated June 2, 1891.

Application filed October 10, 1890. Serial No. 367,656. (Specimens.)

To all whom it may concern:

Be it known that I, IRVING McCALLUM, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Woven Fabrics, of which the following is specification.

My invention relates to a woven fabric especially adapted for use as a carpet, but capable of being advantageously used for other purposes.

The principal object of my present invention is to provide a carpet fabric having a three-ply and solid or unmottled color effect on the face produced by the employment of a full three-ply wefting and having an ordinary two-ply warp—that is, a warp in four divisions; and this object I attain in the manner hereinafter described, and particularly pointed out in the claim.

In a fabric embodying my invention, in the plain woven portions thereof—that is to say, where one color extends across the upper surface of the fabric—the weft-threads are divided into a single figuring weft-thread and two concealed figuring or ground weft-threads, and each single figuring weft-thread is disposed upon the surface of the fabric in one shed by itself and the two concealed figuring or ground weft-threads are disposed in a second shed located beneath the first, and both the single figuring weft-thread and the two concealed figuring or ground weft-threads are tied in their respective sheds and to each other at every beat-up of the loom. In order to change or vary the pattern across the middle of the fabric—that is to say, in order to produce figured cloth—the above-described weave is not changed, but the single figuring weft-thread which occupied the upper shed at the plain portion of the fabric is introduced into the lower shed containing the two concealed figuring or ground weft-threads, and one of said concealed figuring or ground weft-threads is withdrawn from the lower shed and introduced into the upper shed, so as to serve as a single figuring weft-thread in lieu of the single figuring weft-thread previously withdrawn from said upper shed and introduced into the lower shed. This interchange between the single figuring weft-thread and one thread of the series comprising two concealed

figuring or ground weft-threads may be repeated across the width of the fabric as frequently as is necessary to produce the color effect required by the design or pattern, so that there are in the finished fabric a series of rows or picks comprising, respectively, two ground wefts and a single figuring weft. The arrangement of the warp-threads is the same throughout the entire fabric, including the plain as well as the figured portions thereof, and is hereinafter more fully described.

The entire warp is divided into four divisions, and by explaining the disposition and arrangement of four threads, of which one appertains to each of these divisions, with reference to the weft-threads and to each other the arrangement of all the warp-threads of the fabric will be readily understood. Two of the warp-threads lie crosswise between the single figuring weft and the two ground wefts of every alternate row of picks and outside of every intervening row of picks, and the other two warp-threads lie in a similar manner, but outside said alternate rows of picks and crosswise between the single figuring and the two ground wefts of said intervening rows of picks, and this interchange of the warp-threads occurs at every successive row of picks throughout both the plain and figured portions of the fabric.

The nature and characteristic or distinguishing features of a fabric embodying my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a diagrammatical representation of a section of a plain portion of a fabric embodying my invention and taken in the direction of the warp-threads—that is, a section through the weft-threads. Fig. 2 represents a top or plan view of the fabric shown in Fig. 1, and shows in full or heavy lines the twilled effect produced by the figuring weft-threads passing under every fourth warp-thread. Fig. 3 is a diagrammatical representation of a section of a figured portion of the fabric illustrated in Figs. 1 and 2, showing the interchange of the figuring and non-figuring or ground weft-threads and showing the uniform disposition of the warp-threads throughout the fabric. Fig. 4 is a top or plan view of the

fabric shown in Fig. 3, showing the twilled effect upon the face of the fabric; and Fig. 5 is a key-chart showing in sections the wefts employed in Figs. 1 to 4, inclusive, and also 5 having the colors thereof designated.

Referring to the drawings, 1, 2, 3, and 4 are warp-threads of like or unlike texture and color. In the present instance they are of unlike color and texture; but my invention is 10 not limited to the employment of unlike threads, because excellent results have been obtained in practice by the employment of warp-threads of the same color and texture. For the sake of a further description of the 15 invention it will be assumed that three weft-threads of different colors—viz., green, drab, and coffee—are employed to produce the required pattern, although it must be understood that weft-threads of other colors may 20 be employed. In the drawings, *g* represents the green-colored weft-threads, *d* the drab-colored weft-threads, and *c* the coffee-colored weft-threads. It may be remarked that chenille wefts may be employed, if it be desired, 25 instead of ordinary wefts.

Referring now to Fig. 1 and assuming that the plain portion or face of the fabric is green, it will be apparent that the green weft-thread *g* is contained in the upper shed and that the 30 drab and coffee colored weft-threads *d* and *c* are both contained in the lower shed. Moreover, the threads *g* are tied or bound in the upper shed and the threads *d* and *c* are tied or bound in the lower shed, and the two sheds 35 are tied or bound together at every "beat-up" of the loom.

The above-described arrangement of the warp-threads is repeated at every fourth row of picks, as will appear by reference to 40 Fig. 1, in which the reference-letters *P'*, *P*², *P*³, and *P*⁴ indicate the successive rows of picks. Referring now to the row of picks designated by the letter *P'*, the warp-threads 1 and 2 are located at the respective surfaces 45 of the fabric and the warp-threads 3 and 4 cross each other between the single figuring weft-thread *g* and the two concealed figuring or ground weft-threads *c* and *d*. At the row of picks *P*² the warp-threads 1 and 2 cross 50 each other between the single figuring weft-thread *g* and the two ground weft-threads *d* and *c*, and the warp-threads 3 and 4 are located at the respective surfaces of the fabric. At the row of picks *P*³ the warp-threads 1 and 55 2 are located at the respective surfaces of the fabric (but the thread 1 is at the bottom and the thread 2 is at the top, instead of being disposed as at pick *P'*) and the threads 3 and 4 cross each other between the single figuring weft-thread *g* and the two concealed figuring 60 weft-threads *d* and *c*. At row of picks *P*⁴ the threads 3 and 4 are at the respective surfaces of the fabric and the threads 1 and 2 cross each other between the single figuring-thread 65 *g* and the two ground-threads *d* and *c*. At the next row of picks the above-described arrange-

ment of the warp-threads is repeated, and so on throughout the entire fabric.

Referring now to Fig. 3, it will be seen that the arrangement of the warp-threads at the 70 rows of picks *P'*, *P*², *P*³, and *P*⁴ is precisely the same as has been described with reference to Fig. 1, the only difference being that the green weft *g* at certain rows of picks—for example, the row of picks *P*⁴, Fig. 3—changes places 75 with either a drab weft-thread *d* or a coffee weft-thread *c*, according to the requirements of the pattern.

In order that the nature and characteristic features of a fabric embodying my invention 80 may be fully understood, a brief description of a practically efficient method of manufacturing such fabrics by means of a four-harness loom provided with a Jacquard machine will now be given, although other preferred 85 methods may be employed.

The warp is led into the loom in four divisions, there being four ends or threads in each dent of the reed. During the formation of each row of picks the weft-threads are in- 90 troduced in the following order: green *g*, drab *d*, and coffee *c*. During the formation of the row of picks *P'*, Figs. 1 and 3, the whole of the set or division of warps 1—i. e., a warp appertaining to each dent of the reed—is 95 raised and held up and the whole of the set of warps 2—i. e., a warp appertaining to each dent—is permitted to occupy its normal or depressed position by the ordinary operation of the journals, and the Jacquard ma- 100 chine operates once before the introduction of each weft—i. e., three times during the formation of each row of picks and in the following manner—that is to say, a pair of warp-threads appertaining to the sets 3 and 4 and 105 passing through certain of the dents of the reed are permitted, by the ordinary operation of the Jacquard, to occupy their normal or depressed position at such times as the weft is required by the pattern to appear upon the 110 face of the fabric, and are raised or jacked up at such times as the weft is required by the pattern not to appear at the face of the fabric.

During the formation of the row of picks 115 *P*², Figs. 1 and 3, the whole of the set or division of warps 3 is raised and held up, and the whole of the set of warps 4 is permitted to occupy its normal position by the ordinary operation of the journals, and the Jacquard ma- 120 chine operates upon certain pairs of threads appertaining to the sets 1 and 2 before the introduction of each shot of weft and in the manner above described with reference to the row of picks *P'*. 125

During the formation of the row of picks *P*³, Figs. 1 and 3, the whole of the set or division of warps 2 is lifted and held up and the whole of the set of warps 1 is permitted to occupy its normal position by the ordinary op- 130 eration of the journals, and the Jacquard machine operates upon certain pairs of thread

appertaining to the sets 3 and 4 before the introduction of each shot of weft and in the manner hereinabove described with reference to the row of picks P'.

5 During the formation of the row of picks P⁴, Figs. 1 and 3, the whole of the set or division of warps 4 is raised and held up, and the whole of the set of warps 3 is permitted to occupy its normal position by the ordinary
10 operation of the journals, and the Jacquard machine operates upon certain pairs of threads appertaining to the sets 1 and 2 before the introduction of each shot of weft and in the manner above described with refer-
15 ence to the row of picks P'.

After the fourth row of picks P⁴ the above-described operations are repeated successively and in regular order.

20 The following advantages possessed by the hereinabove-described fabric may be particularly pointed out. The two ground or concealed figuring wefts are both located in line with and beneath the single figuring weft, are both introduced into a ground shed, and are
25 both tied to place at every row of picks throughout the fabric, so that the center weft is not visible from the face of the fabric, and

the production of a mottled or broken color effect is avoided.

Having thus described the nature and ob- 30
jects of my present invention, what I claim as new, and desire to secure by Letters Patent, is—

A homogeneous fabric having rows of picks comprising two ground or concealed figuring 35
wefts and one figuring weft with warps in four divisions, whereof two lie crosswise between the single figuring weft and two ground wefts of every alternate row of picks and at the respective faces of every intervening row 40
of picks, and whereof the other two lie in a similar manner but at the respective faces of said alternate rows of picks and crosswise be-
tween the single figuring weft and two ground 45
wefts of said intervening rows of picks throughout the fabric, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

IRVING McCALLUM.

Witnesses:

CHARLES H. WEISS,
JOHN GREEN.