

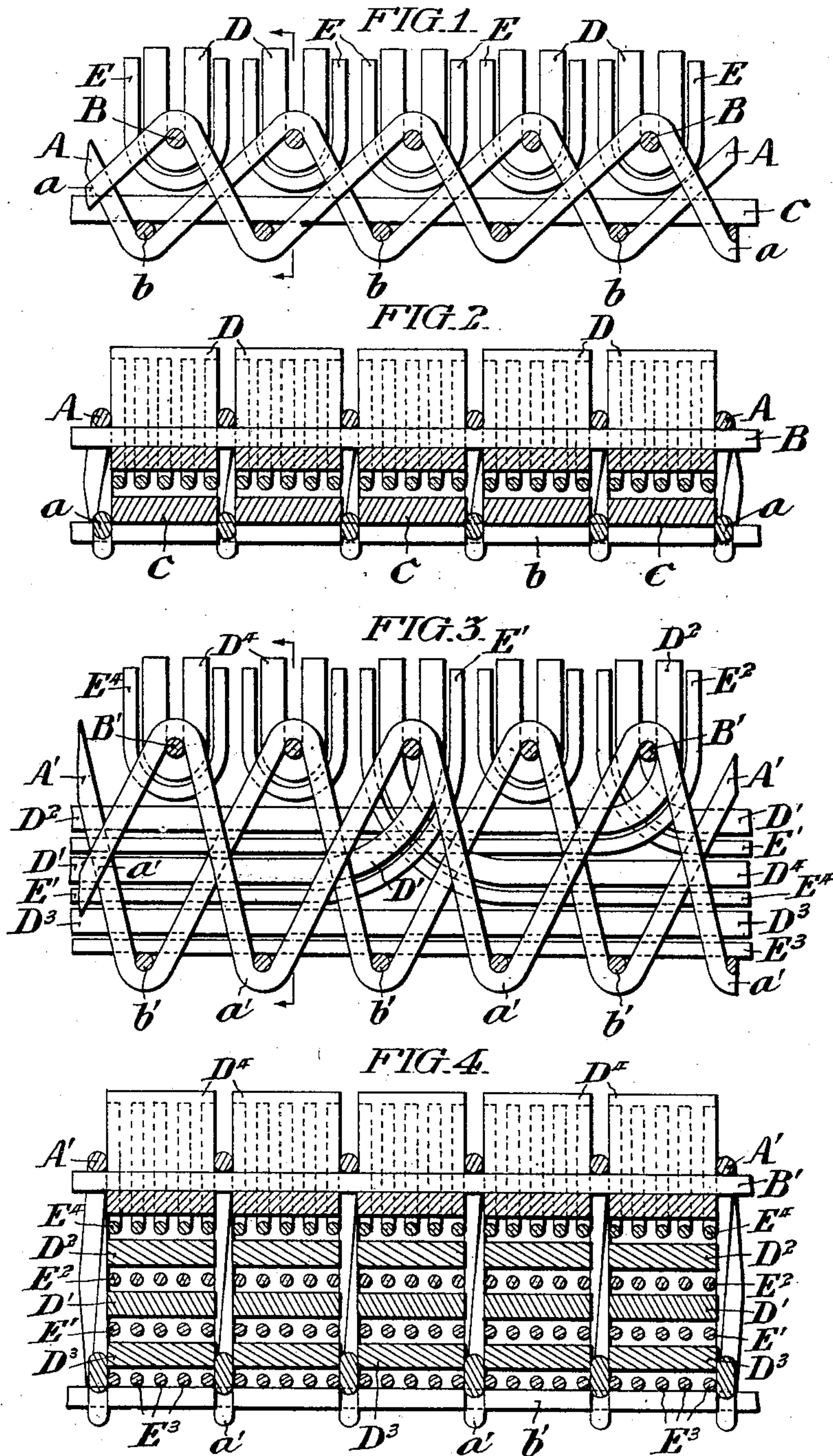
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C. C. GELDER.

PILE FABRIC.

APPLICATION FILED MAY 23, 1903.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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PILE FABRIC.

SPECIFICATION forming part of Letters Patent No. 782,745, dated February 14, 1905.

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To all whom it may concern:

Be it known that I, CHARLES C. GELDER, a citizen of the United States, residing at Cynwyd, county of Montgomery, and State of Pennsylvania, have invented certain new and useful Improvements in Pile Fabrics, whereof the following is a specification, reference being had to the accompanying drawings.

My invention is especially applicable to embodiment in carpet fabrics, and I shall therefore describe it as thus embodied.

The main purpose of the improvements is to facilitate the use in the pile of unspun materials—such, for instance, as felt, leather, &c.—these substances being preferably employed in strips of elongated rectangular cross-section, so as to obtain what may be termed “mosaic” effects on the surface of the carpet. One difficulty in utilizing such materials for the pile-forming elements of a fabric is found in the fact that they are liable to exhibit irregular and uncertain elasticity not only as compared with one another and with the other elements of the fabric itself, but even between different strips of the same material or different parts of the same strip. Hence under the tension of the weaving devices the pile-forming strips are liable to be laid in loops of irregular extent, the strain thereon not being uniformly resisted by the material itself and the result being an uneven and sometimes distorted appearance in the finished fabric. This is particularly objectionable in the production of mosaic effects, where the lines of the pattern should be clear and well defined.

I have discovered that by the employment in connection with the pile-forming strip of a special element having the uniform tension and elasticity which is characteristic of a properly-spun material uniformity in the pile-loops may be obtained notwithstanding the variation of the pile-forming material from the other elements of the fabric or even its own irregularity in different portions of the same strip.

In the accompanying drawings I have illustrated in Figures 1 and 2 what may be called a “simple” or “elemental” type of a cut-pile fabric embodying my improvements and in Figs. 3 and 4 a fabric constructed upon similar

principles, but characterized by a repetition or reduplication of elements. The essential or underlying principle of construction is, however, identical in both cases.

In said drawings, Fig. 1 represents a longitudinal section on a line parallel with the warp-threads through a fabric embodying my invention in its simple form. Fig. 2 is a transverse section thereof. Fig. 3 is a longitudinal section through a fabric in which several pile-forming strips are interchangeably employed, and Fig. 4 is a transverse section through the fabric indicated in Fig. 3. In both instances the fabric is represented as in its finished condition after the pile has been cut, and for purposes of clearness of illustration the relations of certain parts are somewhat exaggerated, as will be readily perceived.

Referring now to Figs. 1 and 2, the main warp-threads, which may be of cotton, are indicated at A *a*, and the weft-threads, which may be of linen, are indicated at B *b*. A filling of any ordinary character (indicated at C) is preferably employed to give body to the fabric; but it will be understood that this is not an essential part of the structure. The cut loops of pile-forming material are indicated at D. They may be of felt or other unspun material, and in this instance are shown as having a cross-section of greatly elongated rectangular form. Immediately adjacent to and following closely the configuration of the pile-loops is a thread (indicated at E) which should be of a spun material having definite and uniform elasticity. This thread, which may conveniently be termed the “pile-guard,” is introduced during the weaving process simultaneously with the pile-forming strip and is cut as an incident to the general cutting of the pile-loops proper. By reason of its presence at the time said loops are formed the strain under the conditions of weaving is substantially borne by it, and consequently the true pile-loops are relieved to such an extent that they will be of uniform length irrespective of their own inherent elasticity. Said pile-guard, therefore, is, in effect, the pile-forming skeleton which controls the structure of the pile, while the body of actual pile-

forming material, though structurally a mere attendant upon the pile-guard loops, determines and characterizes practically the entire surface of the finished fabric. This last-mentioned fact is emphasized by a feature which may occur in case the pile-guard is highly elastic and which is sought to be indicated in the drawings—to wit, the fact that when the pile is cut the free ends of the pile-guard threads will, owing to their relatively greater elasticity, be retracted inward and sink below the general surface of the pile. In such case the whole body of pile will appear to be of the felt or other similar material; but it must be understood that this feature is not essential to the fabric structure, as the pile-guard loops may be of such character as not to sink out of sight, but may remain and form an effective portion of the finished surface.

In Figs. 3 and 4 the general structure is precisely similar, comprising the warps A' a' , wefts B' b' , the filling C being omitted; but a plurality of pile-forming loops D' , D^2 , D^3 , and D^4 are interchangeably employed, each strip being attended by its own pile-guard, as shown at E' , E^2 , and E^3 . Said strips, with their attendant guards, are brought to the surface and thrown down in the usual manner employed in weaving this class of fabrics, so that strips of different colors and of different cross-section may be employed to produce a variegated pattern. The essential structural principle, however, is the same as before, consisting in the employment with the pile-forming strip of a pile-guard whose pres-

ence determines and regularizes the pile-loops throughout the fabric. I do not, therefore, deem it necessary to describe at length the distribution of the pile-forming strips when thrown to the surface or thrown down, as this feature will be readily understood by those skilled in the art. It may also be observed that while I have indicated the pile-loops as being ultimately cut the use of the pile-guard is not restricted to such a fabric, since its equalizing effect is manifested even when the pile is uncut.

Having thus described my invention, I claim—

1. In a pile fabric, the combination with the warp and weft threads, of a pile-forming strip of unspun material and a pile-guard of uniform and definite elasticity, arranged in pile-loops in the described relation to said pile-forming strip, substantially as set forth.

2. In a cut-pile fabric, the combination with the warp and weft threads, of a pile-forming strip of unspun material and a pile-guard of uniform and definite elasticity, arranged in pile-loops in the described relation to said pile-forming strip, the free ends of said pile-guard being below the level of the pile-surface proper, substantially as set forth.

In witness whereof I have hereunto signed my name, this 12th day of May, A. D. 1903, in the presence of two subscribing witnesses.

CHARLES C. GELDER.

Witnesses:

JAMES H. BELL,
M. K. TRUMBORE.