

# UNITED STATES PATENT OFFICE.

THOMAS CROSSLEY, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO AMERICAN WATER PROOF CLOTH COMPANY.

## IMPROVED FABRIC FOR CARPETS AND OTHER PURPOSES.

Specification forming part of Letters Patent No. 52,825, dated February 27, 1866.

*To all whom it may concern:*

Be it known that I, THOMAS CROSSLEY, of Bridgeport, county of Fairfield, and State of Connecticut, have invented a new and useful Improvement in the Manufacture of Carpets and other Goods having a Raised Terry or Pile Face; and I do hereby declare that the same has never before been known or used prior to my invention, and that the following is a true and correct specification of the same.

In all Brussels or pile fabrics heretofore made, except in some kinds of fine plush goods suitable for furniture-coverings, the cloth has been woven over wires in order to form the loop, after forming which the wires have been withdrawn, leaving only the linen foundation warp and linen weft composing the body of the cloth to hold the loop at its base, this being its only support, as the loop is raised entirely above the cloth and is the only part of the fabric exposed to wear. A Brussels or tapestry carpet is thus made from the indispensable necessity of allowing the warp only to show upon the surface, inasmuch as in Brussels, particularly, the Jacquard machine and harness is attached to and connected with the woolen or worsted warp only, and has no connection whatever with the linen back of the cloth so far as relates to forming the pattern or design. The linen filling and warp therefore is wholly hid from view and serves only to hold the fabric together.

In tapestry carpets the same rule applies as in Brussels, except that the former is woven from a woolen warp having the colors first printed upon it, and is woven in a plain loom without a Jacquard machine. The linen binding chain or warp and linen weft are used in the same manner and to the same extent as in Brussels, and is confined entirely to the back of the fabric. In tapestry carpets, however, an extra warp is used, composed usually of jute yarns, and is called the "dead chain"—that is, it runs through the back lengthwise and is held between the filling-threads of linen, but is not crossed or interwoven with them.

In Brussels carpets or pile fabrics, when a Jacquard machine is used in their construction, this dead chain of jute is unnecessary, as the back is filled with the surplus worsted not required for the face; but in tapestry Brussels

or velvet made from printed warps there is no surplus woolen warp, as a sufficient quantity only is printed to make the loop upon the face; therefore the necessity of using an extra warp of cheap material in addition to a binding-chain to give the back sufficient firmness and solidity.

In none of these fabrics which I have described has there ever been any plan adopted of strengthening or adding firmness to the loop or pile, tuft, or face, or to effectually prevent the pile or loop from drawing out by sweeping or by the ordinary wear of a carpet, except in the Brussels or looped fabric for which a patent was issued to me in July, 1865. I have since, however, made the further discovery that a Brussels or looped or terry fabric may be constructed in the following manner, and when so constructed will, I believe, wear at least double the length of time of ordinary Brussels, tapestry, or velvet carpets of equal weight, and can be afforded at an expense to the public not greater than the price of Brussels carpets.

I first put in the loom a warp of linen or jute yarn of the size for carpets, of what is technically called "six lea," to about the number of two hundred threads, more or less, upon a width of twenty-eight inches. This is drawn through a heddle or leaf of a harness and through the reed. I then draw in a warp of woolen or worsted or other yarn having about three times the number of threads to that of linen, or whatever number may be required, regard being had to the use for which the fabric is intended, through another heddle or harness, and through the reed. I then put upon the linen warp sufficient strain to prevent it from being interwoven with the other warp or with either of the other kinds of filling used. On the worsted warp but little strain or tension is used. When the heddle having the linen or jute warp is elevated the worsted warp is depressed. I then throw in a linen weft-thread, which, when the warps are reversed or crossed by the harness or heddle, serves to hold the slack worsted warp upon the under side of the tightly-strained linen warp. When the worsted warp is elevated and the linen depressed I throw in a weft-thread of woolen or other yarn of a size cor-



responding to the number of threads required upon an inch in length of cloth, and then cross and throw the linen weft as before.

By this method I am enabled to make a perfect pile or loop fabric, either cut or uncut, from the finest to the heaviest goods, and by the use of the woolen or other thread thrown under the loop upon the face of the fabric I secure great additional strength and firmness. The loop is thus firmly and immovably held in its original position, and cannot be loosened or disturbed either by sweeping or walking upon it, besides which the filling under the loop forms a foundation or cushion that serves to preserve it from becoming crushed.

A dead or stuffing chain or warp may be used in addition to the warp forming the face or loop and the linen warp before described, for the purpose of adding firmness and weight to the fabric, where the same is to be used without the addition of india-rubber or other gums or compounds, as the fabric being constructed as described, and having a back composed entirely of linen, jute, cotton, wool, or other fibrous material, is more firm, compact, and substantial than any other fabric of carpeting known as Brussels, velvets, or tapestries now in use.

By this method I am enabled to produce a fabric having all the beauty of a Brussels, yet more durable, and to raise a pile or loop without the tedious and expensive process of inserting and withdrawing wires, or wires may be inserted in lieu of filling-threads, and may be withdrawn either before or after the goods are vulcanized. When desirable to produce a velvet face, a knife or cutter may be attached to the end of the wire, which will cut the loop open at the top, as in the ordinary manner of cutting the pile of velvet carpets; or, if a filling-thread be used to form the pile or tuft, a fixed or revolving knife or cutter may be used upon a slide or carriage traversing across the face of the cloth, and so registered as to cut

each run of tufts separately, or in any required number at one time; or the face of the cloth may be submitted to a shearing process or the action of knives or saws, or their equivalents, either before or after it is attached to the back, and either the filling-threads under the loop or the wires or whatever other material may be used to form the pile may be liberated, leaving a cut pile or velvet face upon the goods. This fabric may be attached to a back of any material in the same manner and by the same or similar process as described by me in specification attached to patents issued to me by the United States in May, 1865, by the use of india-rubber or other vulcanizable compounds, or gutta-percha, or other gums, or may be dyed, or printed, or embossed after being so woven, or may be dyed or printed on the yarns before being woven, and may be attached to a back composed of linen, jute, flax, hemp, cotton, or other material, either before or after being dyed or printed, as before described.

I claim the following as my invention or new article of manufacture:

1. The fabric composed in the manner hereinbefore described, suitable to be dyed or printed as a carpet, or as the face of a carpet.

2. The carpet composed of said face and a jute, linen, or other back, either with or without being united by an india-rubber or other vulcanizable gums.

3. The fabric with the loops cut and the face finished in the manner above described, forming a velvet or other face similar to velvet and other tufted carpets.

4. The uniting of the face with the back of such fabrics by such other sheets of cement or water-proof compound which will serve as an equivalent for vulcanized india-rubber.

THOMAS CROSSLEY.

Witnesses:

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