

# United States Patent Office.

THOMAS CROSSLEY, OF BRIDGEPORT, CONNECTICUT.

*Letters Patent No. 73,512, dated January 21, 1868; antedated July 22, 1867.*

## IMPROVEMENT IN THE MANUFACTURE OF CARPETS AND OTHER FABRICS FROM JUTE, FLAX, &c.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS CROSSLEY, of Bridgeport, in the county of Fairfield, and State of Connecticut, have invented "Improvements in the Treatment of Fabrics made wholly or partly of Jute, Flax, Cotton, or Vegetable Fibres, so as to prepare them for dyeing or printing, and rendering them applicable for the manufacture of carpets or other printed goods;" and I do hereby declare that the following is a full and exact description of my said invention.

In the manufacture heretofore of carpets composed of jute or flax, the yarns have been dyed in the several colors, and the designs have been confined to stripes or checks or plaids, for the reason that the expense of producing an elaborate design upon such material, upon Jacquard machines, would be too expensive, thereby rendering it impracticable to manufacture a low-priced carpet from such material. It is also well known that the treatment required in producing certain colors upon jute or flax by the process of dyeing has had a tendency to make the fibre brittle, and to destroy its strength and elasticity, reducing it even to a dust or powder, when exposed to wear. This is particularly the case with red, scarlet, dark green, orange, or other high or full colors, when acids or combinations of acids and minerals are required to produce the full, brilliant shade at a high degree of heat in dyeing.

In my experiments heretofore made in the coloring of jute, flax, or cotton, I have always found that the strength of the fibre is weakened in proportion to the degree of heat, the strength of the dye-liquor, and the length of time required to obtain the desired color. Hence, in producing such colors as are generally known as high or full shades, requiring great heat and strength of dye-liquor, the result has always been to weaken and destroy the strength of the fibre in proportion to the time required to produce the desired shade, for the reasons before named.

After experimenting for several years in the manufacture of jute, flax, and cotton, and especially in coloring the same for carpets or other goods, where it is desirable to produce elaborate designs in coloring, I have discovered that the same may be woven in a light or heavy fabric, plain or uncolored, and that the fabric so produced may be submitted to a process by which it is prepared to receive any desired color, in any design, however elaborate, and the colors so produced, while they are very durable, do not cause the least injury to the fabric. The following process, by which I am enabled to produce this result, has been employed by me: The cloth, after being woven from the raw jute, flax, or cotton, is immersed in a bath of water, at, say, from 90° to 120° Fahrenheit, in which has been mixed a certain portion of either wheat or corn-bran, and sub or bicarbonate of soda. After remaining in this bath for a length of time sufficient to thoroughly dissolve the tannin in the jute or cotton, or the gluten or gum in the flax, I then remove the cloth and wash it thoroughly in clean water, and I afterwards immerse it in a bath of cold water, mixed with a solution of crystallized tin and muriatic acid, or strong muriate of tin, with twenty per cent. of sulphuric acid, at a strength of from one to two degrees Twaddell. After impregnating the cloth with this bath, it should be again washed in clean water, and then submitted to a bath of a weak solution of chloride of lime, after which the cloth is so washed clean and dried, and it is then ready for printing or dyeing.

I do not intend by the foregoing-described method of preparing this cloth to confine myself to this precise formula, or to the use of the ingredients named, or to the exact proportions described. I simply describe the above process as being the most thorough and practicable method for most colors I have yet used, but for certain other colorings, as, for instance, where a blue prussiate is to be made on the cloth, I should employ a different proportion and strength of preparation to that employed for Turkey reds or crimsons, or I might use any other alkali or other bath to dissolve and clean out the tannin or gum from the fibre, and any other chemical combination to prepare the fibre to receive the color, and any other suitable bath or treatment to bleach or whiten the fabric, in lieu of chloride of lime; as, for instance, instead of chloride of lime, I might use the smoke of brimstone and saltpetre; (sulphurous acid,) and obtain a similar or better effect, or even brimstone alone. But what I wish to describe, and secure as my invention or discovery, is the before-named process, or other chemical or alkaline preparations, by which I am enabled to remove the tannin or gluten from the vegetable fibres without injuring the fibres; and I also impregnate the fibres, so as to prepare them to receive the color, and I bleach them in order to obtain a good white.

By these means I am enabled to produce a carpet or other fabric, dyed or colored in any colors or design, by the process of dyeing or printing, without weakening or injuring the strength of the fibres, and at the same time to produce a carpet or other fabric, having all the richness and style of woollen or worsted goods, with equally durable colors, but at much less cost.

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

Treating fabrics, composed wholly or partly of jute, flax, cotton, or other suitable vegetable fibre, substantially in the manner herein set forth, so as to prepare the same for dyeing or printing, and the manufacture of carpets or other articles for which such fabric may be applicable.

I also claim the manufacture produced thereby.

In witness whereof, I, the said THOMAS CROSSLEY, have hereunto set my hand and seal, the eighteenth day of May, in the year of our Lord one thousand eight hundred and sixty-seven.

THOMAS CROSSLEY. [L. s.]

Witnesses:

J. B. DODSON,

CYRUS AINSWORTH,

*Clerks with Rowley & Page, Solicitors, Manchester.*