

# UNITED STATES PATENT OFFICE.

STEPHEN M. ALLEN, OF WOBURN, MASSACHUSETTS.

## NEW MANUFACTURE FROM HEMP, FLAX, &c.

Specification forming part of Letters Patent No. 42,265, dated April 12, 1864.

*To all whom it may concern:*

Be it known that I, STEPHEN M. ALLEN, of Woburn, in the county of Middlesex and State of Massachusetts, have invented a new and improved method of treating and preparing flax, hemp, jute, and other long-stapled fiber for the manufacture therefrom of cloth, felt, yarn, or thread; also, a preparation for bleaching, coloring, and printing said goods, so that the same will receive and hold color in a more permanent manner than this could be done heretofore; and I hereby declare that the following is a full, clear, and exact description of the same.

In the manufacture of thread or yarns and of textile and other fabrics from long-stapled fibers shortened for spinning or weaving on short-stapled machinery, either to be used as plain or as bleached, colored, or printed fabrics, I have found it difficult to impart to them softness together with strength or durability, or to make them take and hold colors. The overcoming of these difficulties are the principal desiderata in this manufacture, particularly as all attempts, both in this country and Europe, have so far failed either to make flax or hemp take and hold color, or in creating a soft yarn or cloth from the same; and I have found that yarns, when made from fiber before the germs are properly extracted, do not wear well, for the reason that the particles of gum adhering to the fiber cut the fiber and thread, and for the same reason prevent the taking and holding of color. I have overcome these difficulties in the production of cloth, felt, or yarn from long-stapled fibers by proceeding as follows: First, I dissolve the gums in the fiber by fermentation, and by steeping in water and alkaline or other suitable solutions, and by subsequently washing, squeezing, rubbing, or scraping the fiber by machinery, such as rollers, dash-wheels, &c.; second, after drying the same I reduce and strand the same by drawing-rollers or other equivalent machinery—*i. e.*, machinery producing substantially the same result, after which the same may be dried again, carded, and spun, woven, or felted, and bleached or printed. By thus proceeding it will be understood that the fermentation of long-line and tubular fibers under water or other liquids has the effect of softening and dissolving the glutinous matter more expeditiously and more

effectively than the same can be done in any other way. When thus softened to a proper degree for steeping in warm water (whether neutral or alkaline or acid) the steeping-liquors will separate the gummy matter, so that when the fiber is manipulated, rinsed, or passed between squeezing-rollers, hammers, or beaters it is dissolved or passed off.

When stranded by drawing process, the minute fibers being open at the ends and split or flossed, they interlace better in spinning, weaving, or felting, while the color will more readily penetrate within the tube of the fibril, and thus more perfectly adhere to it. Thus the cloth or yarn is soft and firm, the fibers having no crumbled resinous matter about them which would cut the thread and resist the color fastening itself to them.

In order to explain my invention so that others may make and use the same, I now proceed to give an exact description of the manner in which cloth or felt, yarn, twine, &c., may be made so that the same will receive and permanently hold color applied either by dyeing or printing process. I take flax, hemp, jute, china-grass, or other similar long-stapled fiber, either before or after the same has been cleaned from the shive, and subject the same to fermentation, followed by washing, squeezing, scraping, or other manipulation by hand or machinery in water, alkaline, acid, or other liquids for purifying and bleaching, if need be, usually preferring that the liquors be lukewarm at first and gradually raised up to the boiling-point, and thus to be manipulated till the gummy matter is completely dissolved and washed out. I then dry the same, strand and clean it by means of drawing-rollers, beaters, combs, and cards, shortening the same down to the proper length for the spinning on short-stapled machinery. I then spin, weave, or felt the fiber, with or without cotton or wool, and thus prepare not only a strong but soft thread, yarn, cloth, or felt, superior to any heretofore made from long-stapled fiber, but one that is well adapted for bleaching, coloring, or printing, so that the same will hold color much more perfectly than would be possible by any other known method.

Having thus stated my invention, I claim—

1. As a new article of manufacture, a cloth, felt, or yarn made from long-stapled fiber prepared in the manner herein set forth.

2. As a new article of manufacture, cloth, felt, yarn, &c., made from long-stapled fiber prepared in the manner described, and mixed with cotton or wool, as set forth.

3. As a new article of manufacture, cloth, felt, and yarn made from long-stapled fiber prepared as described, with or without admixture of cotton or wool, and dyed or printed, as herein set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

STEPHEN M. ALLEN.

Witnesses:

LYSANDER BURNETT,  
LEVI WILKINS.