

UNITED STATES PATENT OFFICE.

STEPHEN M. ALLEN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN PREPARING THE FIBER OF RAMIE AND OTHER PLANTS.

Specification forming part of Letters Patent No. **103,275**, dated May 24, 1870.

To whom it may concern:

Be it known that I, STEPHEN M. ALLEN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and improved method of preparing long-lined fiber, where the woody substance of the stalk is more hard, stiff, and unyielding than hemp or flax, and where a different mechanical and chemical process may be necessary to render the separation of the same easy from the parent stalk or woody substance that supports the fiber, as in the case of the stalk and fibrous bark of the common milk-weed and other like fibers, and particularly of the ramie or rhea and China grass, which latter fibers, when properly prepared, prove valuable substitutes for silk; and I hereby declare the following to be a full, clear, and exact description of the same.

I find that in the preparation of the ramie fiber for either long or short staple manufacture, great care is necessary to separate the same from the stalk in a continuous and unbroken condition, and to accomplish this end a chemical and mechanical action should be combined suited to the purpose.

I first take the stalks of the fibers before named, either when first separated from the root or after the same have been dried, and submit them to a bath in some fermenting-liquor, in which I keep them submerged for about twelve hours, or until the albuminous or glutinous properties or coloring-matter in the fibers have become decomposed and separated, and the nitrogeniferous properties of the same are so changed that the fibers will readily peel from the woody substance of the stalk when crushed or scraped by machinery or peeled by hand.

In the preparation of the fermenting-liquor I do not confine myself to any particular method or substance to establish a putrid condition, though usually I start the first bath by the admission of a bag of wheat-bran, which soon ferments and impregnates the whole liquor of the bath. After the liquor is thus once prepared, being kept in a tepid condition, the albuminous properties in the fiber will usually be sufficient to keep up a proper fermentation for the purpose. After the fermenting process is sufficiently advanced I remove the fiber from the bath, and usually wash, rinse, and dry the same for the scutching-brake, though sometimes, before or after drying, I

run the same through squeezing or crushing rollers, the better to disintegrate the fiber from the woody substances or bark of the stalk. I prefer to employ smooth rollers for the crushing operation. I then submit the remainder of the stalk and fiber to a scutching-brake made on the same principle as that patented by me for breaking and scutching flax, on the 30th of June, 1863, there being a necessity for scutching or scraping rollers following the breaking-rollers used for that purpose, so that by a regulation of gears every succeeding set of rollers shall revolve faster than the preceding set, so that while one set is revolving lightly over the fiber and scraping off the shives from the same, the preceding set, revolving slower, and geared closer, holds the fiber against the increased velocity of the succeeding set of rollers, rubbing or scraping the same. This scutching or cleaning process, by keeping the point of resistance in the fiber-holding rollers so near the scutching or scraping rollers, preserves the fiber long-line, so that the same can be bleached and colored and spun on any long-line machinery, or may be stranded and spun on short machinery, either pure or mixed with cotton, silk, wool, or any other fiber.

Having thus described my invention, I claim as follows:

1. The loosening or separating long-line fiber, like the rhea or ramie, from its hard woody stalk by means of a fermenting-bath, substantially as before described.

2. The separating and cleaning of long-line fibers in the manner before named, in combination with the use of fermenting process before named.

3. The breaking, scutching, and cleaning process before named, in combination with the fermenting, crushing, and squeezing process before named.

4. The method of treating ramie or rhea, China grass, or other like fibers to produce a long-line fiber, substantially in the manner herein described.

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

STEPHEN M. ALLEN.

Witnesses:

GEO. WM. JENKINS,
SAML. JENNISON.