UNITED STATES PATENT OFFICE.

BERTRAND S. SUMMERS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO CHARLES O. BORING, OF SAME PLACE.

METHOD OF REFINING VEGETABLE FIBER.

SPECIFICATION forming part of Letters Patent No. 616,988, dated January 3, 1899.

Application filed November 9, 1896. Serial No. 611,556. (No specimens.)

To all whom it may concern:

Be it known that I, BERTRAND S. SUMMERS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Methods of Refining Vegetable Fiber, of which the following is a full, clear, concise, and exact description.

My invention relates to an improved method of refining ramie and other vegetable fibers, my object being to provide a process of treatment for the fibers whereby a superior fiber may be produced at small cost.

In the practice of my invention the fibers are degummed and refined by subjecting the same to the conjoint action of two baths, the one a chemical bath containing a hydrate of an alkali metal, as potassium or sodium hydrate, the other being an electrochemical one containing a fluorid and a hydrate, the fibers being immersed in the isolated region of the positive pole of the electrolytic bath through the agency of a porous cup or similar pervious partition. After being subjected to the above-mentioned baths the fibers are cleansed and completed, preferably, by subjection to a bath of pure soap made into a paste and dissolved in water, the soap forming about five per cent. of the solution.

In the preferred manner of practicing my invention I first subject the fibers to the action of the hydrate bath, the fibers being immersed therein while in the crude state—that is, after having been decorticated—and after the action of this bath has proceeded to a stage wherein the bulk of the gum has been removed and to a point where further subjection would have the effect of attacking and weakening the fibers they are immersed in the combined hydrate and fluorid bath, wherein is completed the process of degumming the fibers and removing the various cementing and other objectionable materials originally associated with the fibers. This bath leaves the fibers in a silky condition, and after being cleansed by a soap or other bath and carded the fibers are available for use in the textile arts.

While the above procedure gives the most satisfactory results, I have performed the operation by subjecting the fibers first to the electrochemical bath and subsequently to the chemical bath, and I have also performed the operation by intermittently subjecting the fibers first to one bath and then to the other, repeating the change at intervals until the degumming and refining are completed. By subjecting the fibers to the conjoint action of the agents of the two baths in any of the above-mentioned manners the fibers are thoroughly treated without impairment and in a manner that cannot be secured by the continued employment of either bath alone.

In the electrochemical bath I have usually employed about five parts, by weight, of sodium fluorid to fifteen parts caustic soda and three thousand parts water, the current being regulated so that an acid reaction is produced at the positive pole within the porous cup.

During the process the baths are preferably subjected to heat, as thereby a more rapid action results. In the electrical bath the passage of the current furnishes the necessary heat.

While I have described my invention in connection with ramie fibers and have developed the process more particularly with ramie fibers in view, I appreciate the fact that my invention is applicable to the preparation of other fibers, and I do not, therefore, limit myself in this particular.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described method of transforming vegetable fibers from the crude state into degummed and refined fibers which consists in first subjecting the fibers to the chemical action of a hydrate of an alkali metal and subsequently subjecting the fibers to the electrochemical action of the reactive products of a combined hydrate and fluorid bath by immersing the same in the isolated region of the positive pole thereof and then passing an electric current through said bath, substantially as described.

2. The herein-described method of transforming vegetable fibers from the crude state into degummed and refined fibers which consists in subjecting the fibers between initial and final treatment and at different times to

the action of the following baths, viz., a chemical bath containing a hydrate of an alkali metal and an electrochemical bath containing a hydrate of an alkali metal and a soluble fluorid and passing a current of electricity through said latter-mentioned bath, substantially as described.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

BERTRAND S. SUMMERS.

Witnesses:

W. CLYDE JONES,

EDWARD E. PION.