UNITED STATES PATENT OFFICE.

MARY HANSON COLAHAN, OF CHICAGO, ILLINOIS.

PROCESS FOR TREATING FIBROUS TOW.

No. 867,704. Specification of Letters Patent. Patented Oct. 8, 1907.

Application filed August 27, 1906. Serial No. 332,220.

To all whom it may concern:

Be it known that I, MARY HANSON COLAHAN, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in a Process for Treating Fibrous Tow, of which the following is a specification.

My invention relates to the treatment of tow of flax, or hemp or other fibrous plants, that have not been previously subjected to retting processes, to obtain the cleaned fiber therefrom for manufacturing or commercial purposes.

The invention more particularly relates to the treatment of the tow straw in a continuous manner, which treatment will decompose or make soluble to a certain extent the gummy substances binding the fibers together, and facilitate the ready removal of the broken bits of woody matter from the fibrous mass by mechanical means.

The object of my invention is to provide a process for thoroughly and uniformly degumming, oiling, and softening fibrous materials of various kinds, and more particularly, flax tow, that has not previously been subjected to retting processes preparatory to hackling, spreading and drawing, or operations to which the material is subjected before spinning.

My invention involves the treatment of the material in a continuous manner, whereby the gummy substances binding the fibers together will be decomposed and made soluble to a certain extent, which facilitates the ready removal of the woody matter from the same by mechanical means.

The flax tow is produced in large quantities throughout the northwest from the flax straw that has been subjected to the threshing machine in the removal of the seed, for which the plant is primarily grown, and though the straw is somewhat broken and tangled, the fiber is not injured otherwise, but is not considered valuable for fibrous purposes or uses, in spinning, and heretofore there has been no practical way of economically degumming and cleaning the same to utilize the fiber. The application of my invention is conducive of economical results, and the production of a clean, soft fiber at a mere nominal cost, that can be drawn and spun into yarns, as it is rendered free from hards or shives, and its natural strength has been unimpaired. My process of treating this tow may be applied directly in the field, after threshing, as the devices used therein are portable and inexpensive and do not require special skilled labor.

In the application of my process I provide open tanks, containing the liquid or solvent, which is heated, and the fibrous material placed therein, or continuously moved therethrough, it being subjected to the action of the liquid or solvent a brief time, which is sufficient to thoroughly decompose the gummy substances, and render the fiber soft and pliable for future operations to which it may be subjected, as heretofore stated. Thus large quantities of fiber can be treated rapidly and continuously by my process, to prepare it for commercial purposes, and the fiber is of a superior quality, it being rendered clean, smooth, and of great tensile strength.

The degumming and softening of the material treated is due to the action of my new solvent, which I produce from a waste product obtained in large quantities at very little expense from petroleum and paraffin manufactures, and for which at present there is no use or market value.

Arising from the modern processes of manufacturing petroleum and paraffin products, involving many complex stages there is a neutralized waste discharge liquid from the first washings of the oils or first discharge from the agitators after the soda treatment, and from which the acid has been reclaimed but I find therein elements of hydro-carbons, acid, and alkali, having sufficient strength for a new purpose. I combine this liquid, which is of the appearance of creamy white water, with a small percentage paraffin oil, and blend the whole by the application of heat to a boiling temperature and also by agitation, which dissolves and unites the particles, thus forming a new solvent that is certain of effecting the incipient decomposition of the adhering pectic gums of the fibrous straw, when it is treated thereby, while at the same time the tensile strength is increased and a soft elastic quality is imparted to the fiber.

The desirability of a paraffin oil in preparation for spinning, after the retting and mechanical treating, is known to the art, but its application and use in the new combination by my process is novel, and economical, and the action of the solvent on the fiber does away with the former separate methods of retting, and thereafter softening by mechanical means, each requiring much time and experienced labor, as these results are obtained by my process in the single simple treatment of the fiber with the new solvent for only a few minutes, and the result is always certain and reliable, leaving the fiber, when dried and cleaned, in a finished condition ready for immediate use, or to store away, as time and atmospheric influences do not affect it.

In the application and operation of my process, I have used the mechanical appliances shown and described in Patent No. 828,813, Aug. 14, 1906, as by this means large quantities of straw are acted upon economically, but I do not confine the work to this special mechanism, which forms no part of this application.

In my experience I have treated the fibers in large quantities, and always produced a reliable quality of fiber for spinning purposes.

My process has many advantages, as it can be applied without manual labor or delay at any stage of the harvest, or later, as it is not influenced in regard to the sea-

sons, while the old processes were controlled by the time of retting, the weather, and other delays, requiring much manual labor.

Having thus described my invention what I claim and desire to secure by Letters Patent is;

1. The herein described process in degumming of flax tow or hemp or other fiber, which consists in subjecting the same to the action of a solvent produced from the elements contained in the first discharge white water that has been used in the washing of oils, combined with a small percentage of paraffin oil, and blended by heat and agitation, then drying the tow, and thereafter cleaning the same by mechanical means.

2. The herein described solvent for the degumming or retting, and softening of flax tow or hemp fiber which solvent is produced from hydro-carbon, acid, and alkaline elements contained in the waste discharge water that has been used in the manufacture and washing of petroleum and paraffin oils, by combining this liquid with small percentage of paraffin oil, and blending the same by heat and agitation, for the purposes described.

3. The herein described process for the treatment of unretted tow or other fiber, which consists in subjecting it to the action of a solvent herein described, to degum and soften it, whereby the retting and softening are effected by one operation, and then drying the tow, and thereafter cleaning it.

4. As a new solvent, the product obtained in the discharge and washing of petroleum oils, known as "white-water", containing slight traces of hydro-carbons, acid and alkali elements used in treating the oils; combined with a small percentage paraffin oil, then blended by agitation and heat to dissolve and unite the particles for the purposes herein described.

MARY HANSON COLAHAN.

Witnesses:
CHARLES COLAHAN,
EDMUND A. GRAY.