

# UNITED STATES PATENT OFFICE.

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## PROCESS FOR PRODUCING FIBERS FROM RHEA-PLANTS.

No. 881,489.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, GUSTAV HERMANN ROEDER, a citizen of the Republic of Brazil, residing in Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Processes of Producing Rhea Fibers from Their Stalks, of which the following is a specification.

10 This invention relates to an improved process of treating the stalks of the rhea fiber for obtaining the fibers from the same.

Many attempts have been made heretofore for producing the rhea fibers, as the same form a very valuable substitute for silk and an important fiber for the textile industry. These attempts have not been successful for the reason that the dried stalks were treated, and the textile industry using the fibers were compelled to obtain the same from China, where the fibers could be obtained at a less expense owing to the cheap hand labor in that country. Notwithstanding repeated attempts for treating the rhea fiber by mechanical, chemical and combined mechanical and chemical means, these attempts were unsuccessful and the culture of the rhea plant in the different sections of the world was therefore discontinued, for the reason that a reliable, effective and comparatively cheap process has not been invented.

The rhea fibers, to be capable of general introduction in the textile industry, must cost about the same as the cotton fibers. For this reason it is necessary to improve the mechanical and chemical operations to which the fiber is subjected in such a manner that they not only permit the production of the fiber at a low price, but leave also to the cultivators of the plant a sufficient profit for inducing them to raise the same.

45 The object of my invention is to furnish an improved process by which the advantages above referred to are fully met, and a splendid fiber, is obtained, so that thereby the cultivation of the rhea plant and the production of the fiber from the same can be economically and profitably carried out; and for this purpose the invention consists of a process of producing rhea fibers, which consists first in subjecting the green stalks of the rhea plant to a decorticating action, then

squeezing the decorticated fibers so as to express the sap or juice from the same, then subjecting the fibers to a grinding action for separating the fibers one from the other, then subjecting them to the action of a suitable hydrocarbon solvent for extracting the gummy substances contained in the fibers, and finally washing and drying the fibers.

60 In carrying out my improved process for producing fibers from rhea and plants of the same genus, the stalks are cut off in the green state by hand or machine, and are then subjected, in green condition, to the action of a decorticating machine, in which the entire stalks are gradually broken up so as to remove the leaves and break up the bark and woody parts. From the decorticating machine, the fibers of the stalks are passed through squeezing rolls, which exert a flattening or squeezing action on the decorticated material, and express at the same time the sap or juice contained in the same, which is utilized as a by-product, by treating it in the usual manner with diluted acids or diastase so as to convert the starch and dextrin in the sap into glucose, from which, after fermentation and distillation, alcohol is obtained. During the decorticating of the stalks, the small limbs, leaves, etc., are beaten off from the stalks and are then collected, and subjected with the small stalks that are not of the proper length for the decorticating action, to the action of a grinding mill so as to be comminuted and then placed in a cooking vessel, such as is used in the manufacture of sulfite pulp, and subjected to the action of a concentrated alkali lye, the fiber obtained being utilized in the manufacture of paper, in the usual manner. The decorticated and squeezed fibers from the squeezing rolls are subjected to the action of a grinding mill of that class in which the rolls are rotated on a suitable foundation, so that thereby the lateral connection of the fibers is discontinued by the comminuting of the connecting parts. This grinding action is necessary so as to break up the interior lateral connection of the particles of the fibers, which is not sufficiently accomplished by the action of the squeezing rolls. The decorticated, squeezed and laterally separated fibers are then subjected to a hydrocarbon solvent,



such as benzin, ether, sulfid of carbon or other solvent by which the gummy substances contained in the fibers is removed. The fibers which are thus freed from the gummy substances are then subjected to a hand washing operation, or to the action of a washing machine, and are then separated from each other and slowly dried. Should the fibers be insufficiently separated by the action of the grinding mill, they may be passed through a separating machine so as to complete the longitudinal separation of the fibers. The so prepared and dried fibers are then capable of being spun, without requiring any bleaching, especially in such cases where the fabric woven from the fibers is to be dyed. In case, however, the fabric is not to be dyed, it is preferable to subject the woven fabric to a bleaching operation.

My improved process of treating rhea plants for obtaining the fiber from the same, produces a long fiber of white tenacious quality, which produces textile fabrics that approach closely silk fabrics, and which can be used as a substitute for the same. The production of the fiber is accomplished directly after the harvesting of the plants, so that the cultivation of the rhea plant in such countries of the world where it can be grown can be taken up to advantage, and thereby the

rhea fiber supplied in larger quantities and in a better condition for use in the textile industry, than heretofore.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

The process herein described of producing fibers from the rhea plant, which consists in, first, decorticating the stalks while still in a fresh or green condition for removing the bark and woody parts; second, slowly squeezing the decorticated fibers for expressing the thin sap or juice from the same; third, subjecting the decorticated and squeezed fibers to a grinding action for separating the fibers from each other and for removing the remaining woody parts; fourth, removing the gummy substances still contained in the fibers by subjecting the same to the action of a mixture of alkali lye and a suitable hydrocarbon solvent; fifth, removing the fibers from said solvent; and, lastly, washing and drying the same.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GUSTAV HERMANN ROEDER.

Witnesses:

PAUL GOEPEL,  
C. P. GOEPEL.