UNITED STATES PATENT OFFICE.

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PROCESS OF OBTAINING GUM FROM VEGETABLE MATTER.

No. 824,116. Specification of Letters Patent. Patented June 26, 1906.

Application filed March 3, 1906. Serial No. 304,069.

To all whom it may concern:

Be it known that I, EDUARD HEBER, a subject of the German Emperor, and a resident of the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Processes of Obtaining Gum from Vegetable Matter, of which the following is a specification.

This invention relates to the process of extracting gum from vegetable matter, and has for its object to render the process more expeditious and considerably cheaper. The process is particularly adapted to extracting caoutchouc, gutta-percha, and chicle from trees, shrubs, and vines containing these gums.

The method heretofore used for preparing the different gums from the gum-yielding trees, shrubs, &c., is the following: The material is extracted with solvents, such as toluol, benzol, resin-oil, xylol, &c., and the dissolved gum separated by precipitation or by evaporation of the solvent. A method which has lately been proposed for obtaining the gum from trees, &c., consists in heating the wood with an alkaline solution under pressure. There are serious defects in both of the above-described methods. According to the method first described above resin and other incrusting substances of the wood are dissolved, and it is necessary, therefore, to resort to an elaborate method of purification in order to isolate pure caoutchouc, gutta-percha, and chicle. Independent of the fact that the solvents required are very difficult to obtain in the countries where the gum-producing trees and shrubs grow, the carrying out of this manufacturing method requires a considerable amount of apparatus, which makes the process very expensive. The faults of this process are recognized by the many manufacturers have brought out the second method, according to which the wood is heated under pressure with caustic-alkali solution. This method is extremely simple, but it is not altogether successful, because a complete separation of the caoutchouc, gutta-percha, and chicle from the other ingredients of the wood is not obtained. This fact can be very plainly seen in a British patent, No. 19,728, issued in the year 1897. According to the method described there the wood is first treated with caustic-alkali solution in order to swell the woody fiber and then treated with solvents to remove the gum. If the first part of the invention mentioned above had accomplished the entire purpose, the inventor would certainly not have considered it necessary to add this very expensive and difficult extraction process in order to obtain the gum.

All the disadvantages of both the methods mentioned above are avoided by my invention, which shows a way to obtain in a cheap and easy manner a quick and complete separation of the gums from the other components of the wood. The method consists in heating the wood with soap either under pressure or at an ordinary atmospheric pressure. Soap solutions, as is well known, possess the property of dissolving or emulsifying caoutchouc, gutta-percha, chicle, and other insoluble hydrocarbons or their derivatives. This peculiarity of soap solution is made use of to effect the direct solution of the gum and its complete separation from the other components of the wood. Of course, if desired, the wood may be subjected to a preliminary swelling or plumping process by heating with a caustic-alkali solution, as described in the British patent, No. 19,728, of the year 1897.

My process which I have described yields a product which can be used without any further purification. In many cases it is preferable, in order to hasten the solution, to add to the soap solution certain solvents for caoutchouc, gutta-percha, and chicle—such as benzol, toluol, resin-oil, xylol bisulfid of carbon, &c.; but only comparatively very small quantities of these solvents are necessary.

The following examples will explain my process:

First, one hundred kilos of the disintegrated wood are heated under atmospheric pressure for six hours at or below the boiling-point with six hundred kilos of six-per-cent. soap solution. By "six-per-cent. soap solution" I mean six units of ordinary or common soap—such, for instance, as ivory soap—dissolved in one hundred units of water.

Second, one hundred kilos of the disintegrated wood are heated for several hours from 110° to 165° centigrade in an autoclave with five hundred kilos of an eight-per-cent. soap solution.

Third, one hundred kilos of the disintegrated wood are heated for several hours in an autoclave with five hundred kilos of a five-per-cent. soap solution, to which five kilos

of benzol, toluol, xylol, or similar solvent has been added. The soap solution contains the gum either dissolved or suspended—that is, emulsified. The separation from the remaining constituents of the wood is effected by filtration, centrifugation, or some similar process. The precipitation of the gum from the filtered or otherwise separated solution is effected best by standing or by the addition of salt. The working formula must naturally be varied to correspond with the percentage of gum in the different woods treated.

I claim—

1. A process for obtaining caoutchouc, gutta-percha or chicle from the gum-yielding members of the plant kingdom which consists in heating the disintegrated wood at ordinary or high pressure with soap solution.

2. Method for obtaining caoutchouc, gutta-percha or chicle from the gum-yielding members of the plant kingdom which consists in heating the disintegrated wood with soap solution to which has been added certain solvents for gums such as benzol, toluol, xylol, resin-oil and the like.

3. The process of obtaining vegetable gum from vegetable matter which consists in heating disintegrated vegetable matter in a soap solution both being contained in a suitable retort.

4. The process of obtaining gum from vegetable matter, which consists in heating vegetable matter in a soap solution in a suitable retort until the gum contained in the vegetable matter is dissolved or emulsified and then separating the other constituents from the gum and precipitating the gum.

Signed at New York city, in the county of New York and State of New York, this 21st day of February, A. D. 1906.

EDUARD HEBER.

Witnesses:

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