UNITED STATES PATENT OFFICE.

EDWARD C. LE BOURGEOIS, OF SPRINGFIELD, MASSACHUSETTS.

PRODUCING PULP FROM SUGAR-CANE, &c.

SPECIFICATION forming part of Letters Patent No. 287,302, dated October 23, 1883.

Application filed July 20, 1883. (No specimens.)

To all whom it may concern:

Be it known that I, EDWARD CHARLESS LE BOURGEOIS, of Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Producing Pulp or Paper-Stock from Sugar-Cane or other Fibrous Vegetable Material; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the production of pulp or stock for paper and other purposes from sugar-cane or other fibrous vegetable substances; and my invention consists in subjecting the sugar-cane or other fiber-producing material to pressure of sufficient density to disintegrate and break up the cellular formation of the cane, so that when dissolved or separated it will be found to be in the nature of pulp, after which it goes through a boiling and purifying process.

In carrying out my invention I take the sugar-cane before the saccharine juices have been extracted and subject it to a pressure of sufficient force to break up the cellular formation of the cane, and at the same time express all the sugar-producing juices therefrom; or I may first subject the cane to the action of crushing-rollers—such as are commonly used in breaking up and extracting the juice from the cane—after which the macerated stalk is subjected to the required pressure, as above stated. The compressed product, if desired for paper-stock, is subjected to a boiling process, in order to thoroughly disintegrate the fiber of the paper-producing stock. This boiling is preferably done in a rotary boiler or digester, having the usual agitators, for the purpose of keeping the stock constantly in motion when being boiled, thus insuring a uniform reduction throughout the whole mass. When the pulp is sufficiently boiled, I introduce into the vessel holding it a sufficient quantity of caustic to insure the liquefaction of matter foreign to the nature of the pulp—such as pitch, silica, resin, &c.—which, if left in the pulp, would greatly lessen the value thereof. After giving a sufficient time for the perfect liquefaction of the ojectionable matter, I submit the whole mass of pulp and liquid to a series of baths, in order to free the pulp from the solution of caustic and resin, silica, &c. The pulp is then thoroughly dried by any convenient well-known means, after which it is found to be in a perfectly pure state.

I have thus far described the reduction of the sugar-cane to pulp by means of pressure and boiling; but it is obvious that the ordinary cornstalks, cotton-plants, palmetto, swamp-cane, and all fiber-producing vegetable substances may be treated in the same manner to produce paper or other stock.

I may find it convenient and desirable in some instances to use steam in connection with pressure in the reduction of fibrous material to pulp for the purpose of softening the fibers and facilitating the breaking up of the cellular tissues; but ordinarily the material can be reduced to pulp by pressure alone. By this means I am enabled to prepare blocks of fibrous substance which can be readily transported to the place where the final reduction takes place, or where the fibers are made into paper. The necessary pressure is obtained by means of an apparatus described by an application filed in the United States Patent Office, October 28, 1882.

The present invention is an improvement on that described in the United States Patent granted me on June 5, 1883, and No. 278,977.

Having thus described my invention, what I claim, is—

The method herein described of producing pulp or paper-stock from sugar-cane or other fibrous vegetable matter, the same consisting in subjecting the material to a pressure of sufficient density to break up the cellular tissue, then putting it into a boiler and keeping it in an agitated condition while boiling, then adding caustic, whereby all the matter foreign to fiber is dissolved, then separating the fiber from the solution by washing, and leaving it in a pure state of paper-pulp.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

EDWARD CHARLESS LE BOURGEOIS.

Witnesses:

H. D. VAN RENSSELAER,

F. E. CARPENTER.