

# UNITED STATES PATENT OFFICE.

GEORGE R. SHERWOOD, OF OAKPARK, ILLINOIS, ASSIGNOR TO NATIONAL FIBER & CELLULOSE CO., OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

PROCESS OF MANUFACTURING PRODUCTS FROM CORNSTALKS OR ANALOGOUS PLANTS.

SPECIFICATION forming part of Letters Patent No. 720,851, dated February 17, 1903.

Application filed December 1, 1902. Serial No. 133,379. (No specimens.)

*To all whom it may concern:*

Be it known that I, GEORGE R. SHERWOOD, of the city of Oakpark, county of Cook, and State of Illinois, have invented a new and useful Process of Manufacturing Products from Cornstalks or Analogous Plants, whereby I obtain new and useful products, of which the following is a specification.

My invention relates to the manufacture of products from the stalks of Indian corn and plants having an analogous structure; and its object is to produce from the pith and fibrous portions of such stalks separately digested a composite product adapted to numerous uses, including, among others, the manufacture of parchment and various articles made of cellulose paper-stock, wood, and other substances.

It has been found that where the pith and fibrous portion of the cornstalk are treated together in a digester or a boiler for the purpose of disintegrating or dissolving and converting into paper-stock the pith (which absorbs water much more rapidly than the fibrous portion and is also more sensitive to the action of the chemical agents) obstructs the proper treatment of the fibers and undergoes such conversion as to be injurious to the product. Hence it is important to separate the pith from the fibrous portion of the stalk as thoroughly as practicable before subjecting either to such chemical treatment or disintegration. I have discovered that the pith and fibrous portions of the stalk thus separated may be treated in separate digesters or boilers under conditions specially adapted to each and after such digestion reunited in any suitable proportions, (according to the properties desired in the product,) producing a composite product possessing valuable properties not obtainable by dissolving the pith and fibrous portions together.

I separate the pith from the fibrous portion or outer wall of the stalk by mechanical means—such, for instance, as that illustrated in United States Patent No. 627,882, granted me (then a resident of Kearney, county of Buffalo, Nebraska) June 27, 1899, for machine for pithing stalks, or the improved mechanism upon which I am about to make applica-

tion for Letters Patent—then treat the pith in any suitable digester until it is so far dissolved or digested that it will form a glutinous parchment-like film in drying. This may be done by using a solution of caustic soda in about the following proportions, viz: to twenty-five pounds of pith, two pounds of caustic soda mixed in from forty to fifty gallons of water boiled for about two hours under a pressure of from fifty to seventy pounds. If less heat is used, more time will be required or a stronger solution, and the conditions or agents for effecting the digestion may be varied provided care is taken to have sufficient water in proportion to the pith and to prevent the digestion being carried so far as to injure the product, while having it carried far enough to obtain the desired plastic and adhesive or glutinous condition, in which it will when spread thin form a parchment-like film in drying. It will be observed that the proportion of water above mentioned is several times that which would be required in digesting the fibrous portions of the stalk, while the treatment is gentler than that required for the proper digestion of the fibrous constituents. After separately digesting the fibrous constituents under conditions suitable to them I unite them with the digested pulp in such proportions as may best meet the purpose for which the manufactured article is intended, thus obtaining a strong product which is less pervious than that produced from the fiber alone and much superior to ordinary paper as a wrapping for packages and for many other purposes. While a digester suitable for applying heat under pressure may be used to advantage in this treatment, it may be dispensed with and the proper digestion obtained by increasing the time or strength of the solution as the amount of heat applied is decreased. I include under the term "digester" any receptacle in which a proper dissolution of the pith may be carried on. I have found the stalk of Indian corn or maize especially adapted for such manufacture; but other plants of the same species or having analogous structure may be used when conveniently and economically obtainable.



I claim as new and desire to secure by Letters Patent—

1. The improvement in the manufacture of products from Indian corn, or analogous  
5 plants, consisting in separating the pith from the fibrous portion of the stalk, thereafter separately digesting each for the purpose of dissolving the intercellular structure of the  
10 shell and reducing the pith to a suitable glutinous condition, and thereafter uniting the same.

2. The improved product from the stalks of Indian corn, or analogous plants, consisting in the combination, in any desired proportions, of the cellulose product obtained  
15 from separately digesting the pith and the fibrous product obtained from separately digesting the fibrous constituents.

GEORGE R. SHERWOOD.

Witnesses:

ROBERT CATHERWOOD,  
CHARLES L. HINE.