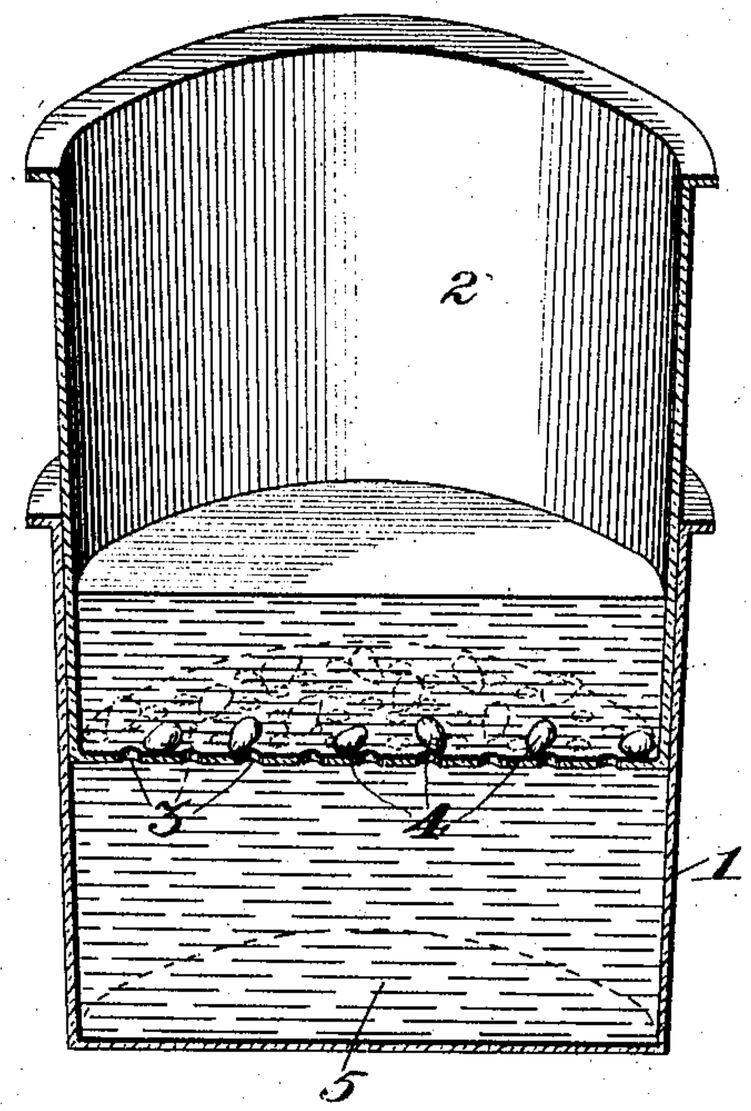
No. 789,977. PATENTED MAY 16, 1905.

I. KITSEE.

TREATMENT OF COTTON SEED.

APPLICATION FILED SEPT. 17, 1904.



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No. 789,977. Patented May 16, 1905.

UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA.

TREATMENT OF COTTON-SEED.

SPECIFICATION forming part of Letters Patent No. 789,977, dated May 16, 1905.

Application filed September 17, 1904. Serial No. 224,832.

To all whom it may concern:

Be it known that I, ISIDOR KITSEE, of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in the Treatment of Cotton-Seed, (Case No. 222,) of which the following is a specification.

My invention relates to an improvement in the treatment of cotton-seed.

As is well known, cotton-seed now used principally for the production of the so-called "cotton-seed" oil is subjected to one of the following processes for the purpose of extracting the oil. One process is to first destroy the short hairs or fuzz left on the hull of the seed after the ginning process and then to extract the oil through mechanical means. The second process is to first crush the seed to a fine powder and then through mechanical means sift the fuzz out of the crushed particles, whereby such fuzz may be used in the manufacture of articles, such as paper of a very low grade. Both processes have their disadvantages, and it is the aim of my invention to improve upon said processes and to produce a useful article out of the fuzz without necessitating the breaking up of the seed.

Persons versed in the art are aware that the pure cotton fiber is one of the best materials for the production of a soluble cellulose, either through a nitrating or through similar means.

In practicing my invention I preferably employ the following steps: I first subject the seed, with its covering of fuzz, to the process of nitration for a length of time, so that the short fibers of cotton are thoroughly nitrated, but the hull of the seed proper remains substantially in the original state. After the necessary washing I subject the seed, with the nitrated fiber, to the action of a solvent, either in the liquid or gaseous state, whereby the nitrated fiber is dissolved, but the unnitrated hull remains intact. If the dissolving process is carried out in the liquid state, the hull is entirely freed from the fiber and can be directly carried to a drying-room and then to a crushing-room, wherein the hull is broken up and the oil is extracted from the kernel. If the solvent is used in gaseous state, then it is best to free the hull by mechanical means from the dissolved cellulose.

In my experiments, in which I used the seeds just as they came from the ginning process, I subjected the same to nitration in a solution consisting of sulfuric and nitric acids in equal parts. They were left in this solution for about three and one-half minutes, were taken out of this solution after this time, were washed in running water, and were then subjected to the action of acetone. The seeds, which were formerly covered with more or less fuzz, were taken out of the acetone in their naked or black state entirely free of any fiber. In breaking up these seeds I found the kernel in as good condition as the kernels of seeds not subjected to the nitrating process. The solution containing the nitrated cellulose was clear and transparent and gave a product equal in quality to a product wherein cotton-boll was used as the raw fiber.

The advantages of this process may be readily seen, and it is only necessary for me to point out that these seeds as such remained in their original state and that the fiber had been directly converted into a useful article always able to command a good market.

To enable persons to practice this my invention even on a small scale, I illustrate in plan view the preferred apparatus for making soluble the adherent fiber on the seed; but it is obvious that other devices may be substituted therefor.

In the figure, 1 is a containing vessel containing the liquid 5. 2 is a vessel the bottom of which is provided with the perforations 3. On this bottom are placed the seeds 4 to be treated.

The *modus operandi* of my invention with this apparatus is as follows: The seeds are placed, as stated, at the bottom of the vessel 2. Then this vessel is slowly immersed in the containing vessel 1. Through the perforations 3 the liquid will rise in the vessel 2, covering thereby the seeds, which will be subjected to the action of such liquid, and if this liquid consists of nitric and sulfuric acids it is obvious that the fiber on the seeds will be subjected to the nitrating action of this

liquid, and therefore become soluble. After a predetermined time the vessel 2 is removed from vessel 1, and the seeds, which will remain in the vessel 2, are washed and then subjected to the action of a solvent. This solvent may also be contained in a vessel similar to vessel 1, and then the vessel 2, with its seeds, may be immersed in the solvent contained in such vessel.

As the dissolving of a soluble fiber is well understood by persons versed in the art, I do not deem it necessary to go more into the detail of same. It suffices to say that, if it is desired, the dissolving step may be made to follow immediately after the nitrating step, or the nitrated fiber may be allowed to remain on the seeds till such time as it is desired to remove the same therefrom through the dissolving process.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The method of treating cotton-seed which consists in subjecting the seed with its adherent fiber to a chemical action, whereby the fiber is made soluble, and afterward subjecting said seed with said adherent fiber to a chemical action whereby said fiber is dissolved.

2. The method of producing an amorphous cellulose out of the fiber adhering to cotton-seed which consists in first subjecting the cotton-seed with its adherent fiber to a nitrating process and then subjecting said cotton-seed with its nitrated fiber to a chemical capable of dissolving said nitrated fiber.

3. In the treatment of cotton-seed, the method which consists therein that the seed with its adherent fiber is first subjected to a process whereby the fiber is nitrated, then to a process whereby the nitrated fiber is dissolved, and finally to a process whereby the dissolved fiber is removed from the seed.

In testimony whereof I hereby sign my name, in the presence of two subscribing witnesses, this 15th day of September, A. D. 1904.

ISIDOR KITSEE.

Witnesses:
EDITH R. STILLEY,
H. C. YETTER.