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PROCESS FOR CONVERTING TOBACCO STEMS INTO PULP

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This invention relates to a process for converting tobacco stems and stalks into a pulp to make a tobacco sheet.

The principal object of the invention is a process for effecting such conversion and by which the resulting tobacco sheet will possess satisfactory burning qualities when the sheet is used as a wrapper for tobacco smoking products. It is to be understood that the present invention only relates to the conversion of tobacco stalks and stem into the pulp and that it does not have anything to do with the method or process of converting the pulp into the tobacco sheet. When the tobacco sheet is used as wrappers for cigars and little cigars also cigarettes, it is very important that the tobacco sheet shall possess satisfactory burning qualities and that the original tobacco taste be maintained. It is well known to those familiar with the art that the stalks and stems of tobacco possess certain elements that are extremely detrimental to the burn, and very irritating and offensive to the taste. Many attempts have been made to develop processes with the view of overcoming these disadvantages and in removing the elements that are detrimental to these qualities. In addition to having satisfactory burning and taste qualities, the tobacco sheet must also contain a fibrous structure to give the sheet sufficient strength. However, none of the processes known today have produced the desired results.

Through extensive experiment, I have found that the following process will produce a pulp, and the tobacco sheet made from such pulp has very satisfactory burn and taste qualities, and also is of such texture that it can be used as a substitute for paper in automatic cigarette-making machines.

The first step consists in cleaning the tobacco stems, or stalks, in the dry state, and separating the foreign material. This step may be carried out by any suitable apparatus, preferably by screening. After the stalks, or stems, have been screened, I break them into small pieces by running them through a hammer mill which renders them very effective to the treatment hereafter set forth. The stalks, or stems, are not cut, but are broken into small pieces having frayed edges and are rendered porous at their ends so that the fibers can be more easily separated.

After the stems, or stalks, have been crushed in the hammer mill, they are placed in a rotary vat, or cylinder, and sufficient water is added so that the crushed pieces are immersed. To this mass is added caustic soda to the amount of five to ten percent of the weight of the stems, or stalks. The exact amount of caustic soda depends upon the nature of the stems and stalks being treated. From two to three percent of soda ash, or bicarbonate of soda, is also added to extract the caustic soda. The rotary vat is then closed, and a steam line of not less than forty pounds pressure is applied to the vat, and the latter is rotated for ten minute periods at half hour intervals over a period of ten hours or more, depending on the hardness of the stalks, or stems.

The steam pressure is maintained at at least forty pounds during this entire period, with the exception that every two and one-half hours, the steam is shut off and the rotary vat is opened to allow foul and obnoxious odors to escape and to inspect the condition of the mass. The vat is then closed, and the steam turned on, as set forth above.

After the stems and stalks have reached the stage where the fibrous matter can be readily separated, the whole mass is pumped into a combination filtering press and washing machine, where the mass is strained through a canvas, or wire cloth, under pressure of not less than twenty-five pounds. This operation is carried on until each chamber in the press is completely filled with cakes made up of tobacco fibers. Clear water is then forced through the fiber cakes until clear water comes through at the outlet. These operations extract the phosphoric acid, ammonia, potash, and other undesirable matters which are detrimental to the burn and offensive to the taste.

The cleaned cakes of fiber are removed from the filtering press and run through a grinding, or beating, machine for the purpose of cutting and separating the fibers

after which they are then placed in a regular beating machine.

Clear water is added in an amount equal to about twice the amount of fiber stock. This mass is beaten for one hour or more depending on the opening and softening of the fibers. The mass is then again pumped into the combination filtering press and washing machine, strained and washed to remove any traces of the undesirable elements that may still remain in the mass up to this time. The cakes of fiber are again broken up, water added, and the mass reduced to pulp of proper consistency, for sheet making. Ten percent, or more, of calcium carbonate is added to this mass before it is ground in the beater, the exact amount of calcium carbonate is dependent entirely upon the condition of the tobacco stems, or stalks, some kinds of tobacco requiring a larger percentage than others. The calcium carbonate is added to the last beating mass to obtain a degree of porosity in the finished sheet. This is particularly essential where the finished sheets is to be used as a wrapper for tobacco smoking products, as the porosity tends to create a freer and more even burning quality.

What I claim is:

1. The process of converting tobacco stems into pulp for the purpose of making tobacco sheet, which consists in separating the foreign material from the stems, crushing the stems, treating the crushed stems in a solution of caustic soda, pressing, washing, and grinding the mass, and subjecting the mass to the action of a beating machine.

2. The process of converting tobacco stalks and stems into pulp for the purpose of making sheet tobacco, which consists in separating the foreign material from the stems, crushing the stems, treating the crushed stems in a solution of caustic soda under not less than forty pounds steam pressure, pressing, washing, and grinding the resultant mass, and then subjecting the mass to the action of a beating machine.

3. The process for converting tobacco stems into pulp for the purpose of making tobacco sheet, consisting in removing the foreign material from the tobacco stems, reducing the stems to a porous condition and immersing the stems in water containing caustic soda in an amount equal to five to ten per cent of the weight of the crushed stems, treating the mass in the caustic soda solution under not less than forty pounds steam pressure from eight to fourteen hours, removing the stems from the solution, washing, and pressing the mass, grinding the mass, mixing the mass with clear water, and subjecting it to the action of a beating machine.

4. The process of converting tobacco stalks and stems into pulp for the purpose of making sheet tobacco consisting in separating the foreign matter from the stems, breaking the stems into small pieces, placing the broken stems into a vat containing water and caustic soda to the amount of five to ten per cent of the weight of the broken stems, closing the vat, subjecting the mass therein to a steam pressure of not less than forty pounds for eight to fourteen hours, pressing the mass, and washing it with clear water, grinding and subjecting the mass to the action of a beating machine for a period of twenty-five hours, permitting the mass to stand for ten hours, draining the solution, and adding sufficient clear water to reduce the mass to the consistency of pulp.

5. The process of converting tobacco stems into pulp for the purpose of making sheet tobacco consisting in cleaning and crushing the stems, subjecting the crushed stems to treatment under forty pounds steam pressure in a solution containing caustic soda in an amount equal to five to ten per cent of the weight of the stems for a period from eight to fourteen hours, removing the liquid from the stems, washing and grinding the stems, soaking the ground stems in clear water for ten hours, draining the water, subjecting the stems to the action of a beating machine until reduced to sheet making pulp.

6. The process of converting tobacco stems into pulp for the purpose of making sheet tobacco consisting of cleaning and crushing the stems, immersing the stems in a solution of caustic soda for a period from eight to fourteen hours, pressing the liquid from the stems, washing and grinding the stems, permitting the stems to stand in clear water for a period of ten hours, draining the water, adding fresh water and subjecting the stems to the action of a beating machine until reduced to the consistency of sheet making pulp, permitting the pulp to stand for ten hours, draining the liquid and adding fresh water to bring the mass to the consistency of sheet making pulp.

7. The process of converting tobacco stems into pulp for the purpose of making sheet tobacco consisting in cleaning and crushing the stems in a rotary vat containing a solution of caustic soda, treating the stems in said solution for a period of eight to fourteen hours under not less than forty pounds steam pressure, rotating the vat periodically and opening the vat periodically during said period, pressing the liquid from the stems, washing and grinding the stems, soaking the ground stems in clear water, draining the liquid, adding fresh water and subjecting the mass to the action of a beating machine until reduced to sheet making pulp, permitting the mass to stand in the beating machine for ten hours, draining the liquid, adding fresh water to again bring the mass to a consistency of sheet making pulp.

8. The process of converting tobacco stems into pulp for the purpose of making tobacco sheet, which consists in separating the foreign material from the stems, crushing the stems, treating the crushed stems in a solution of caustic soda under steam pressure, pressing, washing, and grinding the mass, adding ten percent of calcium carbonate to the mass and subjecting the same to the action of a beating machine until the mass is reduced to pulp of proper consistency.

9. The process of converting tobacco stems into pulp for the purpose of making sheet tobacco, which process consists in removing the foreign material from the tobacco stems, crushing the stems, emersing the crushed stems into a solution of water containing caustic soda to an amount equal to five to ten percent of the weight of the crushed stems, treating the mass under steam pressure until the fibers are separable, washing and pressing the mass, adding water to the mass, and grinding the same, washing and pressing the ground mass, and grinding the same again in a solution containing not less than ten percent calcium carbonate until the stems have been reduced to a sheet making pulp.

In testimony whereof, I have hereunto signed my name, at York, in the county of York, and State of Pennsylvania, this 16th day of April, 1932.

JOHN F. REICHARD.