UNITED STATES PATENT OFFICE.

FRIEDRICH ALBERT REICHMANN, OF BARMEN, GERMANY.

PROCESS OF OPENING FOR SPINNING AND WEAVING PURPOSES THE VEGETABLE FIBERS CONTAINED IN STRAW, GRASSES, BAST, HARL, AND THE LIKE.

946,272. Specification of Letters Patent. **Patented Jan. 11, 1910.**

No Drawing. Application filed June 16, 1909. Serial No. 502,528.

To all whom it may concern:

Be it known that I, FRIEDRICH ALBERT REICHMANN, a citizen of the Swedish Kingdom, residing at Barmen, in the Province of Rhenish Prussia and Kingdom of Prussia, Germany, have invented certain new and useful improvements in processes for opening for spinning and weaving purposes the vegetable fibers contained in straw, grasses, bast, harl, and the like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It is a well known fact that the demand for jute cannot be met. The so-called Silvalin and Licella yarns which have recently been placed on the market as substitutes for jute are, however, ill adapted for the manufacture of sacks, packing and the like, as they do not produce a closure.

The subject-matter of the present application is a process by means of which the vegetable fibers contained in straw, grasses, bast, harl and similar raw materials can be opened and made serviceable for spinning and weaving purposes, an unexceptionable substitute for jute being produced which substitute in consequence of the straw materials from which it is made being cheaply and easily procurable is not half the price of the cheapest sorts of jute. The opening of the fibers is effected by utilizing alkali lyes and hydrofluoric acid.

Attempts have hitherto been made to obtain from materials containing a very large proportion of cellulose fibers capable of being spun and woven. In these attempts alkaline lyes and hydrofluoric acid both alone and also in conjunction with other chemical and mechanical methods of treatment were employed. All these well known processes gave, however, no satisfactory result. On the contrary by means of the present new process in which alkaline lyes and hydrofluoric acid are used in a very definite peculiar manner, the problem in question is solved in a perfect manner.

In carrying out the process the quantity of raw material, for example threshed rye-straw, to be worked up at the time, is put in a wooden or iron vessel provided with a heating device and then a solution of caustic soda of a strength of $\frac{1}{2}$° Bé. is poured over it and it is boiled in the same until the gliadin is dissolved and the straw divides up readily into its fibers. After the dirty lye has been run off a cold caustic soda or caustic potash solution of 15–20° Bé. or of even higher concentration is poured over the fiber. The result of this is that the individual fibers curl. They are thus displaced relatively to one another and are so separated from one another. During the operation care must be taken that the lye penetrates everywhere and if desirable this must be assisted by stirring. After the action has continued sufficiently the lye is removed and the fibers are preferably washed with warm water which may be collected and used again. Upon the fibers thus treated a solution of hydrofluoric acid of 1–2° Bé. is poured and the silicic acid in the straw lixiviated therewith. This process must be carried out in a wooden or leaden vessel and it may be performed either hot or cold. Finally the material is washed and neutralized with water to which small quantities of ammonia and chlorid of magnesium are added. After the material has been dried it may be fed into the carding-machine.

What I claim as my invention and desire to secure by Letters Patent is:

1. Process for opening for spinning and weaving purposes the vegetable fibers contained in straw, grasses, bast, harl and the like raw material, consisting in boiling said raw material in a caustic alkaline solution until the gliadin is dissolved, in removing said solution, in adding a cold alkaline lye of 15–20° Bé. or higher concentration for the purpose of separating the fibers from one another, in removing said lye, in adding a solution of hydrofluoric acid of 1–2° Bé. and in washing and neutralizing the material.

2. Process for opening for spinning and weaving purposes the vegetable fibers contained in straw, grasses, bast, harl and the like raw material, consisting in boiling said raw material in a caustic soda solution until the gliadin is dissolved, in removing said solution, in adding a cold alkaline lye of 15–20° Bé. or higher concentration for the purpose of separating the fibers from one another, in removing said lye, in adding a solution of hydrofluoric acid of 1–2° Bé. and in washing and neutralizing the material.

3. Process for opening for spinning and

weaving purposes the vegetable fibers contained in straw, grasses, bast, harl and the like raw material, consisting in boiling said raw material in a caustic soda solution of about ½° Bé. until the gliadin is dissolved, in removing said solution, in adding a cold alkaline lye of 15–20° Bé. or higher concentration for the purpose of separating the fibers from one another, in removing said lye, in adding a solution of hydrofluoric acid of 1–2° Bé. and in washing and neutralizing the material.

4. Process for opening for spinning and weaving purposes the vegetable fibers contained in straw, grasses, bast, harl and the like raw material, consisting in boiling said raw material in a caustic alkaline solution until the gliadin is dissolved, in removing said solution, in adding a cold alkaline lye of 15–20° Bé. or higher concentration for the purpose of separating the fibers from one another, in removing said lye in washing the material with warm water, in adding a solution of hydrofluoric acid of 1–2° Bé. and in washing and neutralizing the raw material.

5. Process for opening for spinning and weaving purposes the vegetable fibers contained in straw, grasses, bast, harl and the like raw material, consisting in boiling said raw material in a caustic alkaline solution until the gliadin is dissolved, in removing said solution, in adding a cold alkaline lye of 15–20° Bé. or higher concentration for the purpose of separating the fibers from one another, in removing said lye, in adding a solution of hydrofluoric acid of 1–2° Bé. and in washing and neutralizing the material with water containing small quantities of ammonia and chlorid of magnesium.

6. Process for opening for spinning and weaving purposes the vegetable fibers contained in straw, grasses, bast, harl and the like raw material, consisting in boiling said raw material in a caustic alkaline solution until the gliadin is dissolved, in removing said solution, in adding a cold caustic soda lye of 15–20° Bé. or higher concentration for the purpose of separating the fibers from one another, in removing said lye, in adding a solution of hydrofluoric acid of 1–2° Bé. and in washing and neutralizing the material.

7. Process for opening for spinning and weaving purposes the vegetable fibers contained in straw, grasses, bast, harl and the like raw material, consisting in boiling said raw material in a caustic soda solution of about ½° Bé. until the gliadin is dissolved, in removing said solution, in adding a cold caustic soda lye of 15–20° Bé. or higher concentration for the purpose of separating the fibers from one another, in removing said lye in washing the material with warm water, in adding a solution of hydrofluoric acid of 1–2° Bé. and in washing and neutralizing the material with water containing small quantities of ammonia and chlorid of magnesium and in drying the material.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

FRIEDRICH ALBERT REICHMANN. [L. S.]

Witnesses:

OTTO KÖNIG,

WILLY KLEIN.