UNITED STATES PATENT OFFICE.

LEON DE WOLF WANTE, OF BOWDON, ENGLAND.

DIVIDING, LANIFYING, AND BLEACHING BAST FIBER.

1,247,757. Specification of Letters Patent. Patented Nov. 27, 1917.

No Drawing. Application filed January 14, 1913, Serial No. 741,972. Renewed February 5, 1917. Serial No. 146,930.

To all whom it may concern:

Be it known that I, LEON DE WOLF WANTE, a subject of the King of Belgium, and a resident of Bowdon, England, have invented certain new and useful Improvements in Dividing, Lanifying, and Bleaching Bast Fibers, of which the following is a specification.

This invention has reference to a novel process for simultaneously dividing, lanifying and bleaching bast fibers such as jute, hemp, flax, cocoa and other fibers that are obtained by steeping or retting.

The invention pertains particularly to improvements in a process for which I have filed application for Letters Patent of the United States the 7th day of September, 1912, under Ser. No. 719,142 in which process the fibers referred to are treated in one bath composed of caustic alkali lye and hypochlorite solutions and finishing the fibers in a bath which imparts softness and luster. I have discovered that the hypochlorite in such bath may be replaced by other means of oxidation, such as peroxid of hydrogen, peroxids of the alkali metals, and alkali persalts, as perborate, persulfate, and percarbonate.

I have further discovered that the fiber becomes a great deal softer if a certain quantity of a soap which may be acid, alkaline or neutral, or of a product of the Turkey red oil group or other soaplike compounds, or of mixtures of the same, is added to the oxidizing lanifying and bleaching bath. For instance I treat the fiber in a bath composed of 5 parts by volume of caustic soda lye of 36° Bé. and 5 parts by volume of hydrogen peroxid having 2% of active oxygen. This treatment is continued for from one quarter of an hour to 4 hours and longer yet according to the kind of fiber. For soft fibers a bath composed of 3 parts by volume of caustic soda lye of 36° Bé., 4 parts by volume of hydrogen peroxid, and 3 parts by volume of water will suffice. Relative to the addition of substances for lanifying the fibers I obtain good results if I add to the lanifying and bleaching bath about 5 to 10 grams of a high grade Turkey red oil to each liter of the bath. For instance I prepare a bath composed of 300 ccm. caustic soda lye of 36° Bé., 200 ccm. sodium hypochlorite solution of 20° Bé., and 5 gr. of soda Turkey red oil of 90% which latter is dissolved in the quantity of water still required to make one liter. The duration of the treatment varies within the above mentioned limits. The bath may also be prepared of 3 parts by volume of caustic soda lye and 30 gr. of peroxid of sodium dissolved in the necessary quantity of cold water to which is added about 5 to 10 gr. of Turkey red oil of 90% which was dissolved in water, then I add water until the volume of the bath is one liter; then a finishing bath for imparting luster may be used.

The bleaching effect further is greatly increased and the dissolution of the incrusting substances greatly facilitaed if the fiber is treated in an oxidizing bath before it is placed in the lanifying and bleaching bath. This preliminary oxidizing bath contains, besides alkalis or alkaline acting substances, effective oxidizing agents such as alkali hypochlorite, hydrogen peroxid, peroxids of the alkali metals, alkali-persalts, and if desired a neutral, alkaline or acid soap or a product of the Turkey red oil group. Likewise any other soaplike product or a mixture thereof may be used. This bath is heated to the required temperature for rendering the oxidizing agents effective. Good results are also obtained, if the fiber is treated for about two hours in a bath having ordinary temperature and containing 120 ccm. of sodium hypochlorite solution of 20° Bé., per liter. The fiber is then pressed out and further treated in the above mentioned lanifying and bleaching bath.

I also obtain good results if I treat the fiber for about 15 minutes in a bath which is heated to 60° C., said bath containing per liter 80 ccm. sodium hypochlorite solution. If desired I may add to this bath 5 to 10 gr. of Turkey red oil. Likewise the results are excellent if the fiber is subjected to a preliminary treatment for 1 hour in a bath of 90° C. This bath is slightly alkaline and contains per liter 5 gr. of Turkey red oil and

80 to 100 ccm. of peroxid of hydrogen of 4%. After this preliminary treatment the fiber is treated in one of the hereinbefore mentioned oxidizing lanifying and bleaching baths.

I have further discovered that the process of dividing the fiber and the bleaching of the same is greatly improved if the fiber is softened after it has been treated in a lanifying bath. This is effected in a bath containing an alkaline, acid or neutral soap which may be replaced by a product of the Turkey red oil group. Likewise any soap like compound or mixtures of the same to which one of the stated oxidizing agents is added may be employed. Such bath is heated to such a degree as to render the oxidizing agent sufficiently effective.

The fiber, which was rinsed after having passed through the lanifying bath, is for instance treated for 10 minutes in a bath which contains 10 gr. of Marseilles soap and 20 ccm. of sodium hypochlorite solution of 20° Bé. per liter which bath is heated to 90°, then I press out and dry the fiber or I first rinse, press out, and then dry it. Another bath may be prepared containing per liter 40 ccm. of peroxid of hydrogen of 4% and 10 gr. of Marseilles soap. This bath is heated to 90° and the fiber is treated therein for one half hour whereupon it is pressed out and dried. A similar bath may be prepared containing per liter about 10 gr. Marseilles soap, 5 gr. of Turkey red oil and 20 gr. of a mixture of one part of peroxid of sodium, and 3 parts of persulfate of ammonium. The peroxid of sodium and persulfate of ammonium are mixed in a dry condition and put into cold water under the usual precautions. The solution thus obtained is added to the soap bath. This bath is used like the one last described.

I have further found that this oxidizing soap bath may also be used effectively for the bleaching and softening of fiber which was lanified solely by caustic alkali lye. The fiber is for instance treated in caustic soda or potash lye of 25° Bé., pressed out, rinsed, and treated for about 20 minutes in a bath of about 90° C. containing about 5 gr. of Marseilles soap, 5 gr. of soda castor-oil soap, and 80 ccm. of sodium hypochlorite of 20° Bé. Then the fiber is presed out and dried or first rinsed and then pressed out and dried.

I have further discovered that oils, fats, oleic acids, fatty acids or artificial or natural mixtures of these substances may be added to the bleaching soap bath for the purpose of more effectively lanifying the fiber without any decrease in whiteness. For the purpose of effecting a better emulsion, halogen hydrocarbons which are soluble in soap or Turkey red oil may be added to the bath. Good results are for instance obtained by mixing 10 gr. of Turkey red oil with 5 gr. of carbon tetrachlorid and 4 gr. of olive oil. This mixture is stirred into the soap bath after the same was heated to 90° C., said soap bath containing 5 gr. of Marseilles soap per liter, finally 10 ccm. of sodium hypochlorite of 20° Bé. per liter are added to the bath. After about 10 minutes the fiber is taken out, pressed out and dried, or first rinsed and then pressed out and dried.

I claim as my invention.

1. The process for dividing, lanifying and bleaching bast fibers such as jute, hemp, flax, cocoa and the like fibers obtained by steeping or retting, consisting in subjecting the fibers to a bath composed of caustic alkali lye, and a solution of peroxid compounds.

2. The process for dividing, lanifying and bleaching bast fibers such as jute, hemp, flax, cocoa and the like fibers obtained by steeping or retting, consisting in subjecting the fibers to a bath composed of caustic alkali lye, a solution of a peroxid compound, and some soap solution.

3. The process for dividing, lanifying and bleaching bast fibers such as jute, hemp, flax, cocoa and the like fibers obtained by steeping or retting, consisting in preparing the fiber first in a preliminary oxidizing bath, then subjecting it to a lanifying and bleaching bath composed of caustic alkali lye, and a solution of peroxid compounds.

4. The process for dividing, lanifying and bleaching bast fibers such as jute, hemp, flax, cocoa and the like fibers obtained by steeping or retting, consisting in preparing the fiber first in a preliminary oxidizing bath, then subjecting it to a lanifying and bleaching bath composed of caustic alkali lye, a solution of a peroxid compound, and some soap solution.

5. The process for dividing, lanifying and bleaching bast fibers such as jute, hemp, flax, cocoa and the like fibers obtained by steeping or retting, consisting in preparing the fiber first in a heated preliminary oxidizing bath, then subjecting it to a lanifying and bleaching bath composed of caustic alkali lye, a solution of a peroxid compound, and some soap solution.

6. The process for dividing, lanifying and bleaching bast fibers such as jute, hemp, flax, cocoa and the like fibers obtained by steeping or retting, consisting in preparing the fiber first in a preliminary oxidizing bath, then subjecting it to a lanifying and bleaching bath composed of caustic alkali lye, a solution of a peroxid compound, and some soap solution, and then softening the fiber.

7. The process for dividing, lanifying and bleaching bast fibers such as jute, hemp, flax,

cocoa and the like fibers obtained by steeping or retting, consisting in preparing the fiber first in a preliminary oxidizing bath, then subjecting it to a lanifying and bleaching bath composed of caustic alkali lye, a solution of peroxid of hydrogen, and some soap solution, and then softening the fiber.

Signed at Ghent, Belgium, this 23 day of December, 1912.

LEON DE WOLF WANTE.

Witnesses:
JULIUS A. VAN HEE,
B. FLEIROHER.