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METHOD OF IMPROVING THE COLOR OF PULP.

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This invention relates to a process of lightening the color of paper pulp materials after they have become darkened due to combination of organic acids with the iron of the apparatus used.

In processes of obtaining pulp from chestnut wood, in which the wood, either before or after the extraction of tannic acid, is treated with solutions of cooking chemical which are neutral or mildly alkaline, and in which the chemically treated wood is further submitted to grinding, pulping, beating or other form of disintegration in iron or steel machines, a dark colored pulp is obtained. The color is due to the reaction of the tannic acid which is present in the wood with the iron or steel parts of the disintegrating devices. The color of the pulp, and paper made from it, is black or dark grey, the color being darker, the greater the amount of tannic acid present, and the longer the contact of the pulp with the iron or steel surfaces. This color is objectionable and efforts have been made to make this color lighter or change it to a brown color.

I have discovered that the chemically treated chestnut wood chips may be pulped, ground, beaten or disintegrated in the presence of an oxide or hydroxide of one of the alkaline earths, as for example, with calcium or strontium or barium hydroxide. The oxides of the alkaline earths may be used, since they combine with water very readily to form the hydroxides, and when dissolved in the water, they are present as hydroxides. Furthermore, the addition of such oxides, or hydroxides of the alkaline earths may be made to the pulp subsequently to the operation of pulping, grinding, beating or disintegrating, either when the pulp is being washed, or when the pulp is being made into paper. The oxides and hydroxides of the alkaline earths may be added to the suspension of the pulp in water as it enters the paper machine.

The black coloring material present in the pulp is a compound of iron and tannic acid. By mixing lime with the pulp, for example, a reaction takes place, in which the calcium salt of tannic acid is formed together with ferric hydroxide. Both of these substances are brown in color, and the color of the pulp and paper after treatment with the lime, is a light brown, which is more pleasing to the eye and is quite similar in color to grades of paper known as kraft and wrapping in the paper industry.

It will be observed that the terms oxide and hydroxide are used interchangeably and the reason for this will be obvious from the manner of use. During the operation of a process any oxide present quickly is converted to hydroxide in its intermingled contact with the water solutions in the apparatus.

I claim:—

1. In the pulping of vegetable fibrous material containing organic acids the process of making lighter the color of the pulp after it has been treated with apparatus containing parts formed of iron and dark colored iron and acid compounds have been formed, which process comprises adding an oxide of an alkaline earth to the pulp and effecting a reaction between the alkaline material and the acid and the formation of ferric hydroxide with resulting lightening of color.

2. In the pulping of vegetable fibrous material containing tannic acid the process of making lighter the color of the pulp after it has been treated mechanically with apparatus containing iron parts and dark colored iron and acid compounds have been formed in the pulp, which process comprises adding calcium oxide to the pulp and effecting a reaction between the calcium material and the acid and the formation of ferric hydroxide with resulting lightening of color.

3. In the pulping of chestnut wood after it has been subjected to mechanical treatment in apparatus having iron parts in contact with the chestnut pulp and dark colored compounds of iron and tannic acid have been formed which process comprises adding an oxide of an alkaline earth to the pulp and thereby effecting a reaction between the alkaline material and the chestnut wood tannic acid and the formation of ferric hydroxide with resulting lightening of color.

4. In the pulping of chestnut wood after it has been subjected to mechanical treatment in apparatus having iron parts in contact with the chestnut pulp and dark colored compounds of iron and tannic acid have been formed which process comprises adding a calcium oxide to the pulp and thereby effecting a reaction between the calcium

oxide and the chestnut wood tannic acid and the formation of ferric hydroxide with resulting lightening of color.

5. In the pulping of vegetable fibrous material containing tannic acid and which material has been subjected to chemical treatment and to mechanical disintegration in apparatus containing iron and dark colored iron and acid compounds have been formed in the pulp, which process comprises adding an oxide of an alkaline earth to the pulp and effecting a reaction between the alkaline material and the acid and the formation of ferric hydroxide with resulting lightening of color.

In testimony whereof I affix my signature.

FRANCIS G. RAWLING.