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DEINKING PAPER STOCK.

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To all whom it may concern:

Be it known that I, JOSEPH E. PLUMSTEAD, a citizen of the United States, and resident of Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Deinking Paper Stock, of which the following is a specification.

My present invention relates to a process of de-inking printed stock or de-colorizing colored stock and bleaching the same in order to produce commercial pulp and paper therefrom.

The principal object of the invention resides in simultaneously deterging and bleaching the printed or colored stock in one and the same batch.

To this end the invention contemplates the mixing of the macerated mass of printed stock with a reagent which contains a mixture of alkali and its hypochlorite, ordinarily in the presence of elevated temperature.

The usual method for de-inking paper stock at present in vogue among commercial plants, is to macerate the stock in water until the consistency is such that the stock will flow.

This macerated stock is agitated with an alkali in order to saponify the ink vehicle and free the ink or color pigment which is usually carbon. After this operation has been carried on for a proper length of time, the stock is washed free of the alkali and ink and then a calcium hypochlorite bleach used. The use of commercial calcium hypochlorite bleach is undesirable because of the fact that there is a considerable amount of carbon dioxide present in the batch which results in the formation of insoluble calcium carbonate which cannot be completely removed which tends towards producing an inferior product. After the bleaching period a second washing must take place, making the normal number of steps four in all.

I propose to reduce the number of steps in the de-inking and decolorizing from four steps to two steps. I propose to macerate the stock to be de-inked with alkali bleaching solution in order to disintegrate the fibers, thoroughly saponify the vehicle and at the same time to whiten any organic coloring matter which may be present. I have found that the proportion of the alkali which must be present as hypochlorite will vary from 25% to 75% of the total soda used and that the total soda used will vary from 5 pounds to 20 pounds per 100 pounds of paper stock used. These variations are caused by the difference in the desired quality of ultimate product and also by the differences in the quality of stock to be treated. I have also found that it is necessary to agitate the heated mixture for periods varying from 30 minutes to 6 hours depending upon the kind of stock used and the quality desired in the finished product.

By the use of soda ash, or caustic soda, and liquid chlorine in the reaction mixture, I find that I am able to simultaneously deterge and beach in the one operation, and get at the same time a superior color in addition to cutting down the time of operation and the quantity and cost of materials used.

I have found that either soda ash or caustic soda may be used, as the alkali in the process, the choice of the two depending upon which is commercially available, as each gives excellent results.

Having thus described my invention, what I claim is:

1. A method of de-inking paper stock, which consists in treating the same with an alkali and a corresponding hypochlorite.

2. A method of de-inking paper stock, which consists in macerating the stock and then treating the same with a soluble alkali and a soluble hypochlorite.

3. A method of de-inking paper stock, which consists in macerating the stock and then treating the same simultaneously with an alkali and sodium hypochlorite.

4. A method of de-inking paper stock, which consists in macerating the same, agitating the macerated stock with an alkali, introducing chlorine to said mixture, and cooking the resultant mixture.

5. A method of de-inking paper stock, which consists in macerating the same with an alkaline sodium compound, introducing liquid chlorine to the agitated mass until from 25 to 75% of the soda has combined therewith to form sodium hypochlorite, and then cooking the mass.

In testimony whereof, I affix my signature.

JOSEPH E. PLUMSTEAD.