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PROCESS OF PRETREATING WOOD CHIPS IN THE PRODUCTION OF SODA CELLULOSE.

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In the production of cellulose from wood or wood-like raw material, as well as from straw, grass, and so forth, by boiling with alkaline or acid boiling liquids the practice hitherto generally followed is to supply the boiling lye or boiling acid directly to the raw material to be treated. Certain mills have made use of a preparatory treatment of the raw material with steam, but it has not been possible to point out any particular advantages which will compensate for the loss of time caused by the pre-treatment, except in the production of sulphite cellulose. The conditions of the manufacture of cellulose, particularly in the sulphate process, are therefore at the present time such that it is considered to be better the drier the wood is, and that a better economy of heat is attained by the waste liquors being obtained in a more concentrated form.

The present invention relates to a process of pre-treating the wood chips or wood-like raw material, such as bamboo in the production of soda cellulose which process has proved in practice to give an increased yield of cellulose, and which pre-treatment may simultaneously be carried out in such manner that the waste liquors obtained have an equally high concentration as according to the processes of producing cellulose hitherto practised. The process consists broadly in this that before the treatment with the chips are treated with a hot diluted waste liquor from a previous boiling at a temperature lower than 100° C., so that the percentage of water of the chips is increased, for instance up to 40 to 60 per cent. When the portion of the pre-treatment liquid which has not been absorbed by the chips, has been wholly or partly removed, the ordinary boiling liquid is admitted, when it is to be observed that said liquid possesses such high concentration that the desired concentration of the boiling liquid is obtained when the liquids have become mixed with one another. As a result of this pre-treatment the chips become impregnated with a hot neutral liquid, owing whereto the action of the boiling liquid is accelerated but is simultaneously modified to a very high extent, so that an essentially increased yield of cellulose is obtained. The yield of cellulose may be increased by 10 to 25 per cent as compared with that obtained without the use of this pre-treatment. By this pre-treatment more water is supplied to the chips than according to the practice here-

tofore followed, but the dilution of the boiling lye caused hereby may be compensated by using such great quantity of waste liquor, when preparing the boiling lye, that the percentage of organic substances of the lye still remains normal.

It has proved to be most advantageous to use a pre-treatment liquid having a temperature of 80 to 90° C. The time of treatment will thus become comparatively short, and it varies, for instance for ordinary wood chips from half an hour to a few minutes, depending upon the percentage of water of the wood chips before the treatment. Again, when bamboo chips are used the pre-treatment may require up to one hour in order that the desired result shall be attained. The desired effect of the pre-treatment only being obtained if the liquid used is hot, this pre-treatment may be applied with advantage also to so moist chips that they possess beforehand the percentage of water of approximately 50 per cent above referred to, as the percentage of water of the chips will not be materially increased by treating moist chips with hot liquids.

The chips may be pre-treated in this manner either before they are admitted into the boiler, or in the boiler. In the latter case a saving of heat is gained, and the advantage is also attained that the quantity of liquid absorbed by the chips is easily measured, by measuring the difference between the quantity of liquid supplied to the boiler and the quantity afterwards removed therefrom. It is most advantageous to carry out the pre-treatment in the boiler, as otherwise there will easily be a loss of lye.

The practical application of the process is suitably carried out in such manner that the pre-treatment liquor is kept in hot state in a special receptacle from which it may be rapidly tapped or pumped into the boiler. A greater quantity of the liquid than that which may be absorbed by the chips may be let into the boiler, or only the quantity which it is desired shall be absorbed. The admission of the liquid into the boiler may suitably begin when the boiler has been approximately half filled with chips and may be performed so rapidly that all of the treating liquid is supplied when the boiler is filled with chips. Afterwards the liquid is retained in the boiler during the required period of time during which it should preferably be kept in motion so that the chips will

become intimately mixed with the liquid. This may be effected either by rotating the boiler or by causing the liquid to circulate. Meanwhile, the liquid may also be heated directly or indirectly, if considered suitable. 5 The treatment having been finished, the liquid which has not become absorbed by the chips, or which it is desired to remove from the boiler, is again drained off or pumped 10 off into the same receptacle and may again be used after compensating for the material retained in the boiler. As regards the suitable quantity of treating liquid it may be stated as an example that in a rotary boiler 15 having a capacity of 30 cu. m., 10 to 15 cu. m. treating liquid is used.

For heating the pre-treatment liquid the steam generated when the contents of the boiler are blown over to the diffusers, may 20 suitably be used. The lye and fibres which are then possibly carried along, will stop in the pre-treatment liquid, so that no special arrangement for collecting the same is necessary, but the receptacle for the pre-treatment 25 liquid may form the required collecting device.

The process of pre-treatment above described, when carried out in the proper manner, is exceedingly simple and does not 30 materially increase the time of boiling, particularly when it is considered that the yield of cellulose becomes considerably increased. In addition, the cellulose obtained is of a higher quality than that which it is possible to obtain 35 if the wood chips are boiled directly without pre-treatment. As regards the re-

sult attained the present process has therefore a quite different effect from that of the old treatment of the wood chips with steam.

I claim:

1. The process of pre-treating wood chips 40 in the production of soda cellulose, which consists in impregnating the wood chips before the treatment with the boiling liquid proper with hot diluted waste liquors at a 45 temperature lower than 100° C. for the purpose of attaining a rapid but modified action of the boiling liquid when afterwards supplied to the material.

2. The process of pre-treating wood chips 50 in the production of soda cellulose, which consists in impregnating the wood chips before the treatment with the boiling liquid proper with hot diluted waste liquors at a 55 temperature between 80° C. and 90° C. for the purpose of attaining a rapid but modified action of the boiling liquid when afterwards supplied to the material.

3. The process of producing soda cellulose, 60 which consists in impregnating wood chips with hot diluted waste liquors at a temperature lower than 100° C., and afterwards treating such impregnated wood chips with a caustic soda lye.

4. The process of producing soda cellulose, 65 which consists in impregnating wood chips with hot diluted waste liquors at a temperature between 80° C. and 90° C., and afterwards treating such impregnated wood chips with a caustic soda lye.

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