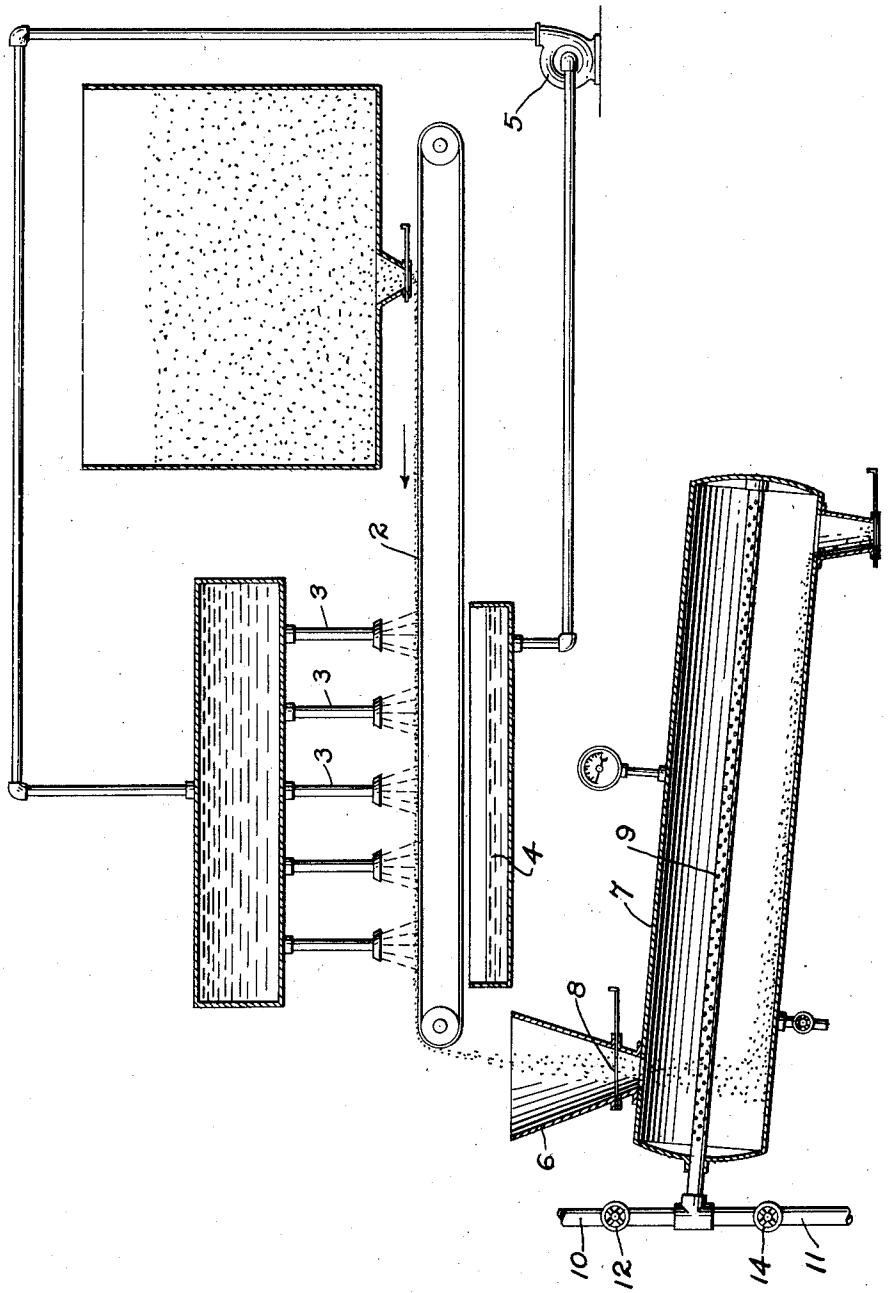
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METHOD OF TREATING FIBROUS MATERIALS

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METHOD OF TREATING FIBROUS MATERIALS

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This invention relates to a method of treating fibrous materials derived from a vegetable source, and particularly to a method whereby the fibrous material may be deodorized, sterilized and bleached.

The object of the present invention is to generally improve and simplify methods of the character described, to provide a method whereby fibrous materials derived from a vegetable source may be quickly and economically deodorized, sterilized and bleached, and especially to provide a method whereby fibrous materials in the form of lumber, sawdust, and the like, may be deodorized, sterilized and bleached by moistening the material with an alkaline solution and then subjecting it to the action of chlorine gas in such a manner that the reaction between the alkaline solution and the chlorine gas forms an alkaline hypochlorite directly in and on the fibrous material.

For the purpose of clearly describing the invention reference will be made to the accompanying drawing which diagrammatically illustrates one form of apparatus that may be employed.

The method is applicable to practically any fibrous material obtained from a vegetable source. Sawdust may be taken as an example, and briefly speaking, is treated in the following manner: first, by moistening it with a dilute alkaline solution, secondly, subjecting it to the action of chlorine gas so as to form sodium hypochlorite directly in and on the sawdust particles, and finally washing and drying the sawdust. Numerous forms of apparatus may be employed, but I prefer to employ an endless foraminated conveyor, such as indicated at 2. The sawdust to be treated is placed on the conveyor and is passed under one or more sprinklers, such as shown at 3. A dilute alkaline solution is sprayed on the sawdust, and any excess delivered drains through the conveyor and is received by a tank 4. The solution employed is formed by dissolving approximately one-half to one per cent by weight of sodium carbonate in water. The solution is maintained in continuous circulation by means of a pump or the like, indicated at 5. The sawdust, when saturated, discharges from the end of the conveyor 2 into a hopper 6 from where it is delivered into a tank 7, and when the tank is filled the hopper opening is closed by a valve or the like, indicated at 8. A perforated pipe 9 extends into the tank and this is connected with a source of steam by means of a pipe 10, and is also connected with a source of chlorine gas by means of a pipe 11. The steam is first admitted through valve 12 and the moistened sawdust is heated to an approximate temperature of 100° F. The chlorine gas is then turned on by opening the valve 14, and the valve is so regulated that sufficient gas is admitted to react with the sodium carbonate present and thereby form sodium hypochlorite, the reaction taking place being substantially as follows:

$$Na_2CO_3+2Cl_2+H_2O= 2NaCl+CO_2+2HOCl$$

The actual quantity of gas required is approximately .3 to .6 grams of chlorine per pound of sawdust, and the time required is approximately three minutes, the reaction being rapid and the result being a deodorized, sterilized, bleached product. At the end of the operation the sawdust is again subjected to the action of low pressure steam or wash water to remove excess soda and chlorous compounds, the wash water is drained off and the sawdust is removed and dried in a kiln, or the like, in any suitable manner. The product finally obtained is exceedingly light in color, due to the bleaching action to which it has been subjected, it is sterilized, and is in most instances substantially odorless.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A method of treating a fibrous material derived from a vegetable source, which consists in moistening the material with a dilute solution of sodium carbonate, heating the moistened material to a temperature of substantially 100° F., then subjecting the material to the action of chlorine gas to cause a reaction between the sodium carbonate and the chlorine to form an alkaline hypochlorite

directly on the material, and then washing and drying the material.

2. A method of treating fibrous material derived from a vegetable source which consists in moistening the material with an alkaline solution, heating the material with steam and at the same time subjecting the material to the action of chlorine gas, thereby causing a transitory formation of sodium hypochlorite and hypochlorous acid which, under the conditions of temperature break down, liberating nascent oxygen in the material which effectively bleaches, decolorizes and deodorizes the material.

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