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PROCESS FOR BLEACHING TOBACCO

Hermann Baier, Frankfort-on-the-Main, Germany, assignor to Deutsche Gold und Silber Scheideanstalt vormals Roessler, Frankfort-on-the-Main, Germany, a corporation of Germany

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This invention relates to the bleaching of tobacco and, more especially, to a process for bleaching tobacco utilizing hydrogen peroxide. Hydrogen peroxide has been found effective not only for improving the color of the tobacco but also for rendering it milder. This application is a continuation-in-part of my copending application Serial Number 61,053 filed January 27, 1936, now U. S. Patent 2,170,107, issued August 22, 1939, which latter application, in turn, is a continuation in part of my earlier applications Serial Number 759,597 filed December 28, 1934 (now U. S. Patent 2,148,147 issued February 21, 1939), and Serial Number 18,879 filed April 28, 1935, all relating to the bleaching of tobacco.

Several processes have been recommended and are now employed in the treatment of tobacco with hydrogen peroxide. One of these processes is the well-known dipping process for refining tobacco in which the tobacco is soaked for a certain period of time in an alkaline solution of hydrogen peroxide. Subsequent to this soaking it is removed and dried. Other methods for treating tobacco involve a spraying process.

In the spraying process the tobacco may be treated with an alkaline, preferably ammoniacal, solution of hydrogen peroxide which is applied to the leaf or cut tobacco through suitable nozzles. A variant of this process is the ammonia vapor process in which the tobacco is first sprayed with a solution of hydrogen peroxide and then treated with ammonia vapor. The latter procedure has the distinct advantage that after completion of the bleaching the tobacco is free from hydrogen peroxide, whereas in other processes undecomposed hydrogen peroxide remains on the tobacco.

However, the use of a process in which the tobacco is subjected to the action of ammonia vapor requires a relatively complex and expensive apparatus, and its use in many factories would necessitate the scrapping of old equipment and its replacement by new. For these reasons it has been customary in the past to employ one of the other processes which do not require additional plant expense. Indeed the industry has usually preferred the simple spraying process, using an ammoniacal solution of hydrogen peroxide, chiefly for the reason that it may be utilized without materially changing the apparatus now installed in the factories engaged in the processing of tobacco.

After the tobacco is treated with hydrogen peroxide utilizing the spraying method previously referred to, it has been found that some of the hydrogen peroxide still remains undecomposed in or on the tobacco. Just after the treatment is completed the tobacco still possesses its full aroma and is very pleasant and mild. However, during the storage period which necessarily occurs after the treatment much of the aroma is lost, and the flavor becomes very much less pleasant when the tobacco is smoked.

The invention with which this application is concerned is based on the discovery that during storage the quality of the tobacco is impaired by the residual hydrogen peroxide which remains in the undecomposed state on the tobacco at the conclusion of its treatment with the bleaching and refining agent. Research has revealed that the tobacco is capable of chemically combining with the hydrogen peroxide, its ability to do this varying, however, with different types of tobacco. The ability to combine chemically with the peroxide is much more pronounced in tobaccos of relatively high aroma than in those which possess a poor aroma. During the storage period the residual hydrogen peroxide gradually decreases, and after a certain period of time no residual hydrogen peroxide remains. The period of time necessary for complete decomposition of the undecomposed hydrogen peroxide depends essentially on the quality of the tobacco. When a mixture of 50% domestic and 50% foreign tobacco is prepared it has been found that the tobacco must be stored from 4 to 10 days before it is completely free from hydrogen peroxide and of constant chemical composition.

I have now found that all of these changes in the chemical characteristics of the tobacco, with consequent deterioration to its quality, occurring during the storage period, may be avoided if the tobacco is subjected to the action of an agent which causes decomposition of the residual hydrogen peroxide. These agents may be applied at the conclusion of the hydrogen peroxide treatment step or may be added to the tobacco prior to contacting the tobacco with the solution of hydrogen peroxide. The residual hydrogen peroxide may conveniently be removed either by chemical action such as by reduction or by the action of catalysts. As an agent to react with the hydrogen peroxide and destroy the residual peroxide, sulfurous acid, salts of sulfurous acid such as potassium or sodium bisulfite, a metal permanganate such as sodium or potassium permanganate, or glucose (grape sugar) may be used. The treatment to chemically remove remaining peroxide is preferably carried out by spraying the tobacco which has been treated with the hydrogen peroxide with a dilute solution of the treating agent.

As the agent for destroying residual hydrogen peroxide I prefer to use the reducing agent glucose, in dilute solution, and this sugar solution may be readily sprayed by means of a nozzle or any similar apparatus directly on the tobacco after the peroxide treatment. As an alternative method of applying the glucose, it may be added directly to the tobacco sauce so that the usual tobacco saucing treatment and the treatment with glucose are carried out in a single operation. These customary tobacco sauces contain or comprise the well known substances which improve the taste or the smell of the tobacco. Such substances are for instance extracts of currants, raisins, cinnamon, aniseed, sugar, glycerine, hygroscopic substances such as calcium chloride, also substances with a disinfecting effect, such as benzoic acid and the like.

After tobacco has been subjected to the action of hydrogen peroxide, the adhering undecomposed hydrogen peroxide may also be destroyed by contacting the tobacco with certain substances which act catalytically to decompose hydrogen peroxide. The same effect may be obtained if these substances are added to the tobacco before the tobacco is treated with hydrogen peroxide, as for example, before the tobacco is treated with the tobacco sauce. Any suitable decomposition catalyst for hydrogen peroxide may be utilized and I have found particularly useful cobalt salts, nickel salts, and iron salts. Certain organic catalysts may also be used in the removal of residual hydrogen peroxide, as may ultra-violet light or ozone, both of which also operate to remove or decompose the hydrogen peroxide remaining in the treated tobacco.

As an alternative method of carrying out the process, there may be added to the tobacco, before the tobacco is treated with hydrogen peroxide, a material which will react chemically with the hydrogen peroxide. The tobacco may then be contacted with the solution of hydrogen peroxide and at the conclusion of the treatment is substantially free from undecomposed hydrogen peroxide, since the residual peroxide is destroyed by chemical action with the materials previously added to the tobacco. The tobacco may then be further treated with a substance effecting decomposition of any excess or residual hydrogen peroxide remaining, which substance may conveniently be added in conjunction with the tobacco sauce, applied to the tobacco in the usual saucing treatment.

By the process described in which the residual hydrogen peroxide is removed from the tobacco after the latter has been subjected to refining action of this oxygen-evolving compound I have found that raw, unpleasant tobacco is transformed into tobacco of a much milder quality which is more desirable for smoking purposes. At the same time the lightened color, attributable to the bleaching action of hydrogen peroxide, is much preferred by the general smoking public. By the use of the lighter, milder tobacco prepared in accordance with my process, it has been found that the expensive foreign tobacco now blended with domestic tobacco in the preparation of smoking mixtures may be dispensed with either in whole or in part since domestic tobacco refined in accordance with my process can replace it.

Various changes may be made in the process that I have described and in the reagents that I have given as illustrative which will nevertheless still fall within the scope of my invention. The various details given are to be considered as illustrative and not restrictive and the scope of the invention is to be determined solely in accordance with the appended claims.

I claim:

1. A process for refining tobacco which comprises subjecting the tobacco to the action of hydrogen peroxide and subsequently contacting said tobacco with a decomposition catalyst for decomposing hydrogen peroxide in order to destroy hydrogen peroxide remaining undecomposed on said tobacco.

2. A process for refining tobacco which comprises adding to said tobacco a substance which acts catalytically to decompose hydrogen peroxide and then contacting said tobacco with a solution of hydrogen peroxide, whereby the tobacco at the conclusion of the treatment is substantially free from undecomposed hydrogen peroxide.

3. A process for refining tobacco which comprises adding to said tobacco a material which reacts chemically with hydrogen peroxide and then contacting said tobacco with a solution of hydrogen peroxide, whereby the tobacco at the conclusion of the treatment is substantially free from undecomposed hydrogen peroxide.

4. A process for refining tobacco which comprises adding to said tobacco a material which reacts chemically with hydrogen peroxide, contacting said tobacco with a solution of hydrogen peroxide, whereby the tobacco at the conclusion of the treatment is substantially free from undecomposed hydrogen peroxide and further adding a substance which effects decomposition of the excess of hydrogen peroxide in conjunction with the tobacco sauce subsequently applied to the tobacco.

5. A process for refining tobacco which comprises treating said tobacco with hydrogen peroxide in the presence of an agent for decomposing hydrogen peroxide, whereby the tobacco, at the conclusion of the treatment, is substantially free from undecomposed hydrogen peroxide.

6. A process for refining tobacco which comprises treating said tobacco with hydrogen peroxide in the presence of a substance which acts catalytically to decompose hydrogen peroxide, whereby the tobacco, at the conclusion of the treatment, is substantially free from undecomposed hydrogen peroxide.

HERMANN BAIER.