

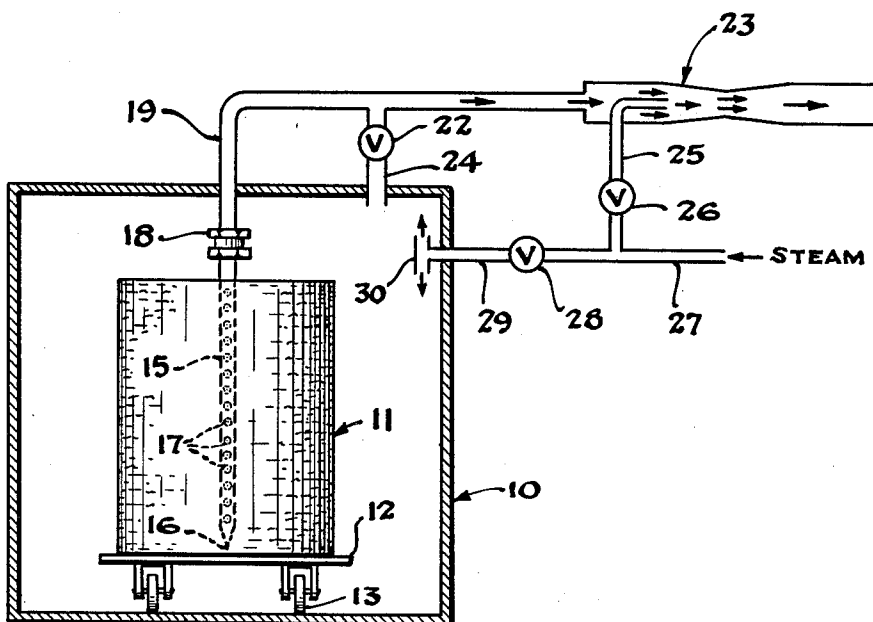
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TOBACCO MOISTENING PROCESS

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1

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TOBACCO MOISTENING PROCESS

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The present invention relates to a process for the conditioning of tobacco.

Prior to the manufacture of cigarettes, etc., the tobacco is placed in hogsheads and stored for some period of time. During this period, the tobacco becomes quite dry. In order to facilitate the use of this tobacco in subsequent manufacturing operations, to prevent breakage, etc., the tobacco must be remoistened at the time that the body of tobacco in the hogshead is removed therefrom and before the individual leaves making up that body are separated from the body.

Throughout the history of tobacco manufacturing operations this remoistening process has proven troublesome. Obviously, one of the difficulties encountered has been to uniformly remoisten all portions of the body of tobacco removed from the hogshead. While numerous methods have been devised for performing this process, invariably they are time-consuming if a uniform remoistening is to be achieved. While some have proven to be better than others from a time standpoint, the best of the processes in use prior to the existence of the present invention have not been able to achieve uniform remoistening in any less time than about thirty-five minutes to an hour.

The principal object of the present invention is to provide a process for suitably conditioning of such bodies of tobacco removed from hogsheads in a period of time much less than that involved in present commercial practices. By substantially cutting the time period for the conditioning process, the equipment may be more productively used, i.e. with a conditioning apparatus of a given cubic capacity, the number of hogsheads of tobacco that may be processed in a working day may be substantially increased. Thus, the plant capacity may be increased or, if it is so desired, the investment in equipment necessary to process a given number of hogsheads of tobacco a day may be substantially reduced.

In the carrying out of my process much of the existing equipment utilized in many plants for the conditioning of tobacco may be salvaged and adapted to carry out my process. While some piping rearrangement may be necessary in such cases, in general the more expensive items of equipment presently used may be arranged to carry out the new process. Thus in such cases, it is not necessary for a manufacturer to invest in a completely new processing unit in order to greatly increase his production in accordance with my invention.

Another object and advantage of my invention is that the cost of the steam utilized during the conditioning process in accordance with my invention is very substantially reduced as compared to the steam cost of many of the conventional processing units presently in operation. For example, in one processing system presently in use in which steam is not only used to provide moisture for the tobacco but also is utilized to obtain a vacuum (by means of a jet) during certain stages of the processing, the equipment utilizes about 1000 pounds of steam during the course of one 35 minute cycle with a two-hogshead chamber. As compared to this, one cycle following the present invention requires 15 minutes time and a total of about 270 pounds of steam are used during this time with the same chamber. The tobacco processed in accordance with the teachings of my invention will be at least as uni-

2

formly moistened as tobacco processed in the 35 minute cycle, and generally actually will be better.

A further advantage of my invention resides in the fact that lower capacity air movement apparatus may be employed. In some of the prior art practices in which air is being constantly circulated through the apparatus during the steaming process, it is necessary to have large capacity equipment to move the volume of air present. In the present invention the air is first substantially all removed from the treating chamber before the steaming process ever commences. Thus during the course of the steaming step the capacity of the equipment need not be greater than that necessary to handle the volume of steam employed.

Additional objects and advantages of my invention include: the cycle of operation of apparatus operating in accordance with the present invention is very simple and ideally suited for fully automatic operation; apparatus constructed to carry out the method may be constructed of generally available, relatively inexpensive components; and the perforated pipe that ordinarily will be inserted into the center of the tobacco in the carrying out of the process may be substantially smaller than is necessary with other types of equipment, with the result that there will be less damaged and broken tobacco resulting from the insertion of the pipe.

Further objects and advantages will be apparent from the following description taken in conjunction with the drawing illustrating schematically an apparatus for the carrying out of the process of my invention.

The drawing illustrates a treating chamber 10 in which the conditioning of a body of tobacco 11 is accomplished. The body of tobacco 11 represents the cylindrical unit removed from a hogshead of tobacco. The tobacco is supported on a dolly having a platform 12 mounted on wheels 13. Chamber 10 is provided with a door (not shown) through which the dolly carrying the tobacco may be wheeled in and out. The door is of such a nature that it may be hermetically sealed while the tobacco is being conditioned in the chamber 10.

A probe 15 is inserted axially of the cylindrical body of tobacco 11. Probe 15 has a closed, pointed, end 16 and a plurality of perforations 17 about the periphery of the probe throughout the majority of the length of the probe within the body of tobacco 11. A coupling 18 is used to connect the probe 15 to a pipe 19. The structure of such a probe and its coupling to a pipe so that the interior of the probe is in communication with the pipe is illustrated and described in U.S. Patents 2,869,556 and 2,864,381.

Pipe 19 connects to a valve 22 and to the low pressure side of a steam jet ejector 23 utilized as a vacuum pump. A pipe 24 connects valve 22 with the interior of chamber 10. Steam is supplied to the ejector 23 by a pipe 25 through a valve 26 from a pipe 27 leading to a suitable source (not shown) of steam. Pipe 27 also connects to a valve 28, which in turn connects to a pipe 29 leading to the interior of chamber 10. Means are provided on the chamber end of pipe 29 to prevent the steam from being directed at the body of tobacco 11. In the illustrated embodiment, this means comprises a T 30 on the end of pipe 29 with the two openings in the T being positioned away from the body of tobacco.

In the method I have devised, the space about the body of tobacco to be treated, i.e. the interior of chamber 10, is first evacuated. This may be done by opening valve 26 to cause the steam from pipe 25 to draw a vacuum in pipe 19. Valve 22 may be opened to place the interior of chamber 10 directly in communication with pipe 19, or the air within chamber 10 may be evacuated by being drawn through the body of tobacco 11, perforations

17 and the interior of probe 15. The pressure in chamber 10 should be reduced below about 10 inches of mercury, abs. I find that it is particularly advantageous to reduce the pressure below about 5 inches, mercury, abs. With a suitable injector, this will take a period of time of about 5 minutes.

If valve 22 was opened during the evacuation of chamber 10, it is now closed. Thus the source of vacuum, ejector 23, is in communication with the interior of chamber 10 solely through probe 15, openings 17, and the body 11 of tobacco. Valve 28 is now opened to admit steam to the interior of chamber 10 through the pipe 29. Preferably the steam entering pipe 29 is approximately at saturation. It is admitted initially at the rate of about 700-800 pounds per hour, which is greater than the rate of evacuation of ejector 23. As the steaming process continues, the rate of steam flow usually may be reduced.

The steaming process is continued for a period of between about 5 minutes and about 20 minutes. During this period of time, the steam entering the chamber is drawn through the body 11 of tobacco by reason of the low pressure being created in the interior thereof by means of the vacuum applied to probe 15. A steaming period of about 10 minutes has been found to be eminently satisfactory. At the end of this period, the tobacco making up body 11 has been uniformly moistened and is in condition to be separated for further processing. Upon the completion of the steaming the temperature within chamber 10 is about 130-140 degrees F. The valves 26 and 28 are closed and after the interior of chamber 10 has been returned to atmospheric pressure, the door is opened for the removal of the dolly carrying the body 11 of tobacco.

It has been the general belief in the industry that tobacco could be most effectively and quickly moistened if the atmosphere within which it was placed was substantially saturated. Those skilled in the art will recognize that when the steam from pipe 29 is ejected into the low pressure existing within chamber 10, the moisture content of the steam is greatly reduced. Thus the atmosphere surrounding the body 11 of tobacco is quite different from what had been generally believed to be the most effective atmosphere for the conditioning of tobacco. Despite this fact, the process I have devised is much faster and fully as effective in the uniform moistening of the body of tobacco 11 as compared to prior art practices.

While the reason for this is not clear, it may be due to the fact that in other processes a very substantial volume of air is being passed through the body of tobacco during the treating process. The fact that the body of air is large reduces the ability to simultaneously pass steam through the tobacco. In my process, the air is substantially all removed before the steaming ever commences. Thus all that will pass through the body of tobacco during the steaming process is the steam that is being injected into chamber 10 through pipe 29.

The fact that air is not being passed through the body of tobacco during the steaming process also may account for the fact that no "cold spots," i.e. unmoistened sections within the tobacco body, occur when the present process is utilized. It is possible that the movement of air through the body of tobacco in the prior art processes

channelizes the movement of steam and that a similar effect does not occur when the air is first substantially all removed in the present process.

The drawing illustrates my method being applied only to treat a single unit of tobacco. It will be apparent to those skilled in the art that chamber 10 may be sufficiently large to hold a plurality of units of tobacco 11, each removed from a single hogshead, and such plurality of units all are treated by my method at a single time.

I claim:

1. The process of moistening a body of tobacco comprising the steps of: inserting a perforated probe into the body of tobacco in substantially the central area thereof and positioning said probe within said body such that it extends therethrough substantially the full depth of said body, the perforations on said probe extending substantially the fully length of the probe; placing the probe bearing body of tobacco into an enclosed chamber, said chamber being constructed to facilitate the creation and maintenance of subatmospheric pressure therein; evacuating said chamber within which the body of tobacco is placed to a subatmospheric pressure to remove substantially all air from said chamber; and, introducing steam into said enclosed chamber while simultaneously evacuating said chamber through said perforated probe, and continuing said steaming with evacuation through said probe simultaneously to thereby move substantially pure steam through said body of tobacco for a period of time until the body of tobacco is substantially uniformly treated to a predetermined moisture level.

2. The process of moistening a body of tobacco comprising the steps of: inserting a perforated probe into the body of tobacco in substantially the central area thereof and positioning said probe within said body such that it extends therethrough substantially the full depth thereof, the perforations on said probe extending substantially the full length of the probe; placing the probe bearing body of tobacco into an enclosed chamber, said chamber being constructed to facilitate the creation and maintenance of subatmospheric pressure therein; evacuating said chamber through a first evacuating means to a subatmospheric pressure to remove substantially all air from said chamber; isolating said evacuated chamber from said first evacuating means when said subatmospheric pressure and air removal is realized in the chamber; with, introducing steam into said enclosed evacuated chamber while simultaneously evacuating said chamber through said perforated probe, and continuing said steaming and evacuation through said probe simultaneously to thereby move substantially pure steam through said body of tobacco until the body of tobacco is substantially uniformly treated to a predetermined moisture level.

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